

JBL

PROFESSIONAL

VTX SERIES
SYSTEM SOLUTIONS

VTX A6 | User Manual



GENERAL INFORMATION

VTX A6 - User Manual

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JBL PROFESSIONAL

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Thank you for purchasing JBL VTX Series products



In more than 75 years of JBL innovations, the VTX Series stands apart as a milestone in the practical application of creative engineering. VTX products herald the next generation in line array loudspeaker systems: a new era in performance, system integration and user friendliness. VTX products draw on multiple JBL patents in driver, waveguide, and suspension technology, as well as custom amplification, DSP, control, and system management designs created in collaboration with HARMAN Professional sister companies.

VTX loudspeakers marry custom transducer design and in-house manufacture, breakthrough technologies, and a comprehensive system approach to deliver a premium experience for all who come into contact with them, from the FOH mixing engineer to the systems engineer, rigger, road crew, warehouse manager, and, of course, the audience. Designed for operators of portable and fixed systems alike, the VTX Series features JBL's legendary sound quality coupled with expert support and advanced tools that enable optimal specification, configuration, and operation of VTX systems in any venue, anywhere in the world. The VTX Series delivers a comprehensive solution: the finest sound quality available, plus efficient and intuitive setup, tuning, networking, and control.

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1 - SAFETY

1.1 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 if liquid has been spilled or objects have fallen into the apparatus, or if 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.

1.2 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. Compliant hardware will be referenced with a working load limit (WLL) and a traceability code.

1.3 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.

1.4 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.

1.5 ARE YOU NEW TO RIGGING?

If you are new to rigging, you should:

- Know the rules for safe rigging.
- Attend a safe rigging seminar.
- Meet and establish a relationship with a licensed mechanical or structural engineer. Get in the habit of asking them questions instead of assuming their answers. Learn from what they tell you.
- Research and understand the codes, practices and requirements of the venues where you intend to operate your sound system.

1.6 INSPECTION AND MAINTENANCE

Suspension systems are comprised of mechanical devices and, as such, 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 a speaker until the proper corrective action has been taken.

Installed systems should be inspected at least once a year. The inspection must include a visual survey of all corners and load-bearing surfaces for signs of cracking, water damage, delamination, 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 once a year or as required by local ordinance. The inspection must 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 must be checked for possible spin-out of the enclosure.

Refer to the manufacturer's guidelines for inspection and maintenance of all other hardware and fittings.

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.

1.7 SYMBOLS

The following symbols are used in this document:



CAUTION: This symbol gives notice of a potential risk of harm to the individual or the equipment. Instructions 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.



TIPPING HAZARD: This symbol gives notice of a potential tip hazard. Use caution when moving the cart/apparatus combination to avoid injury from tip-over.

1.8 RESOURCES AND DOCUMENTATION

Several resources are available to VTX Series owners to illustrate proper and safe use of the equipment. Below is an overview of what is available and a brief description of each resource:

USER MANUAL: This document focuses on the electromechanical aspects of the system, including amplification, wiring, speaker pre-sets, tuning, and optimization. User manuals do not include information regarding rigging and suspension hardware.

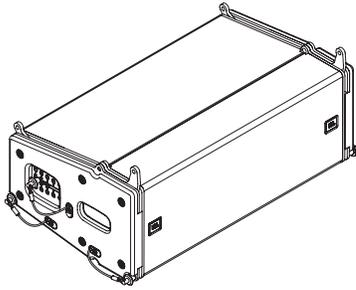
RIGGING MANUAL: This document focuses on the mechanical aspects of the system, including step-by-step rigging instructions, accessory usage, mechanical limits, and safety instructions. All users must read this document.

SPECIFICATION SHEETS: These documents include detailed specifications for loudspeakers and accessories. Specifications include acoustical performance, material types, weight, and general mechanical information. Specification sheets are available for each product.

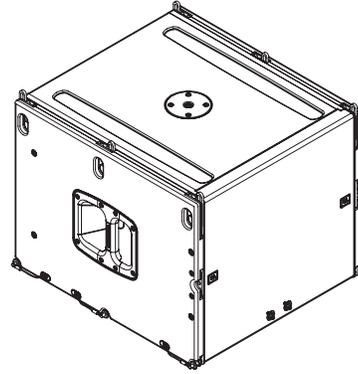
CUSTOMER DRAWINGS: This is a collection of files that includes detailed drawings for each SKU. The collection consists of detailed dimensional 2D PDF/DXF documents and simplified 3D DXF models. Depending on the product, additional types of 3D files might be available for download at www.jblpro.com.

VIDEO TUTORIALS: Software and hardware video tutorials are available for watching on the JBL Professional [YouTube channel](#).

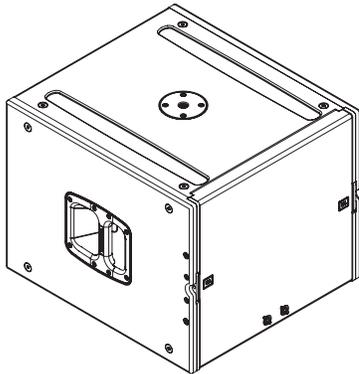
2 - SYSTEM COMPONENTS



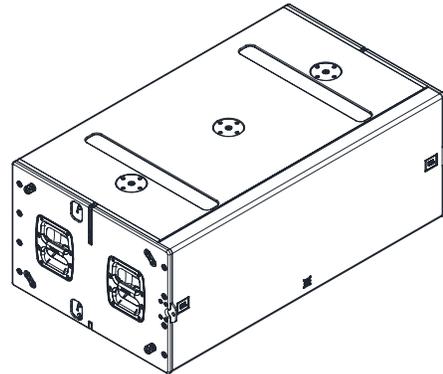
VTX A6



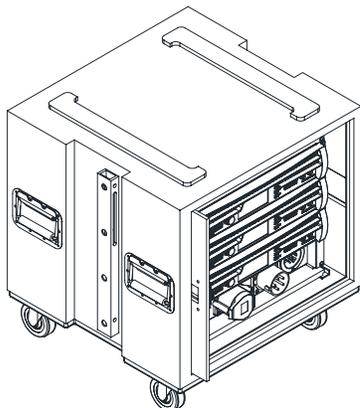
VTX B15



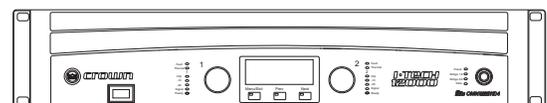
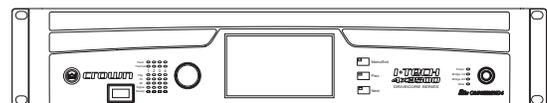
VTX B15G



VTX B18 | VTX B28



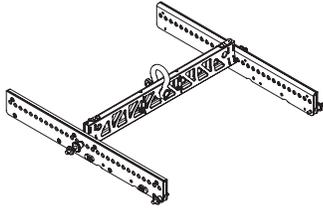
Crown Audio V-Rack



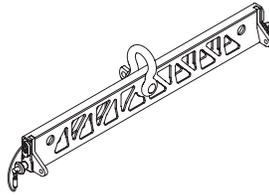
Crown I-Tech HD Amplifiers

3 - COMPATIBLE ACCESSORIES

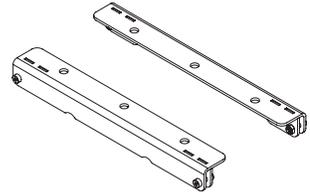
All listed accessories are compatible with the VTX A6 and, in some cases, the VTX B15. For subwoofer specific accessories refer to the **B15 User Manual** and **Rigging Manual** found at www.jblpro.com.



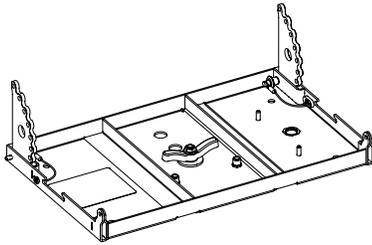
VTX A6 MF | Mini Frame



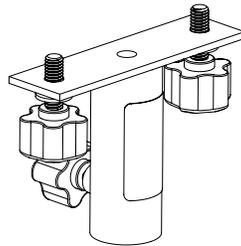
VTX A6 SB | Suspension Bar



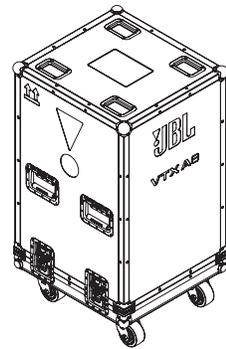
VTX A6 CM | Ceiling Mount



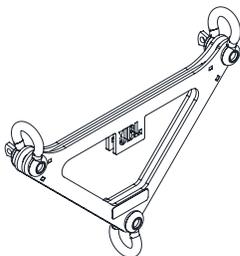
VTX A6 BP | Base Plate



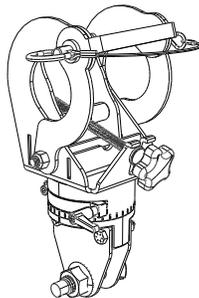
VTX PM | Pole Mount



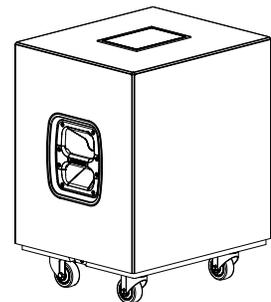
VTX A6 Road Case



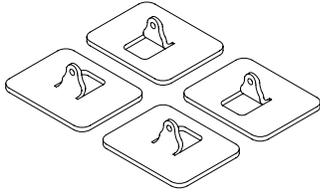
VTX DELTA | Delta Plate



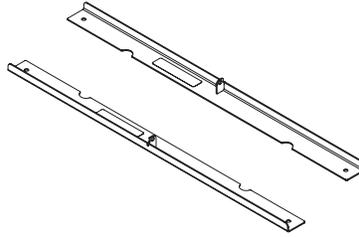
VTX RC500 | Rotating Clamp



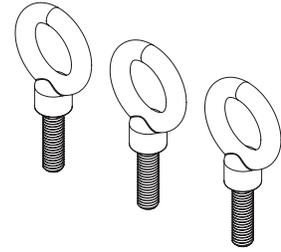
VTX B15 ACC | Caster Board & Cover



VTX B1 GND | Ground Stack Accessory



VTX B28 GND | Ground Stack



229-00009-01 | M10 Eyebolt Set

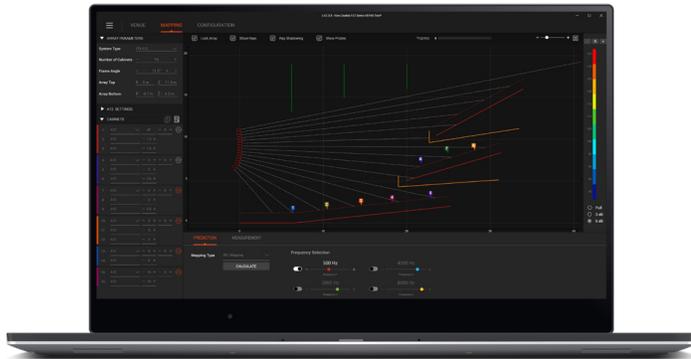


TIP: For subwoofer-specific accessories, refer to the subwoofer user and rigging manuals found at www.jblpro.com.



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.

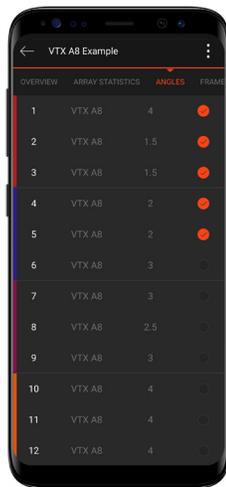
4 - SOFTWARE



4.1 LINE ARRAY CALCULATOR 3™

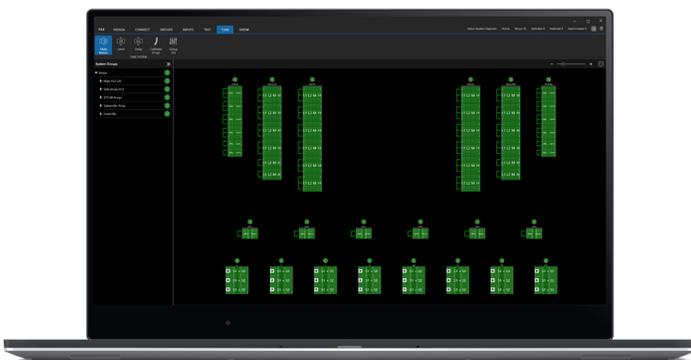
LAC-3 is simulation software for designing and predicting VTX Series systems. LAC-3 predicts the acoustical performance of line array systems, as well as flown and ground-stacked subwoofer arrays. Subwoofer delay values can be generated for electronic delay steering (EDS) using the built-in coverage calculator. LAC-3 also performs mechanical validation of rigging hardware, calculates weight limits, and generates safety warnings.

www.jblpro.com/lac3



4.2 ARRAY LINK™

Array Link is a mobile companion app that works in conjunction with LAC-3 software to assist in deployment of VTX Series systems. Array Link uses a QR code system to transfer all mechanical array information from the main LAC-3 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 their respective app stores.



4.3 PERFORMANCE MANAGER™

Performance Manager is a configuration and control application for networked audio systems. Performance Manager's user interface guides system designers through the complete system design, configuration, and control processes. A dedicated show mode provides all monitoring and control functions needed to deliver a complete picture of the system's performance in real time.

www.jblpro.com/performancemanager

5 - OVERVIEW

5.1 VTX A6



The A6 line array element brings our flagship VTX A-Series technologies to a subcompact form factor for small to medium-sized touring systems and fixed installations. The fully passive, two-way loudspeaker is a versatile solution for production companies, touring acts, rental houses, theaters and houses of worship, or anyone who demands superior sound reinforcement at any scale. Like all VTX products, the A6 is engineered for stunning sonic performance and ease of integration and deployment, as a standalone solution or as a supplement to larger VTX systems. The A6 houses two custom 6.5-inch woofers and a three-inch annular diaphragm compression driver and features all of the acoustic innovations that are hallmarks of the VTX series, from the patented Radiation Boundary Integrator™ (RBI) to our proprietary Differential Drive® woofers. The A6 uses the industry-leading VTX A-Series rigging system, and a suite of available accessories allows a range of flown, ground-stacked, and installed configurations.

INSIDE THE INNOVATIONS

The A6 acoustic design is centered around the RBI technology, which places both the high and low frequency transducers on a single unified horn, improving horizontal directivity while reducing size. Specifically placed, low frequency projection apertures seamlessly integrate the woofers onto the high frequency horn, and the positioning and spacing of the apertures control the LF horizontal directivity, ensuring proper transition to the high frequency driver. The unusually large unified horn extends to the edges of the cabinet, providing ample loading for the compression driver and extending its usable operating range below 1 kHz. The result is a passive two-way system that exhibits performance characteristics of larger three-way designs.

HIGH FREQUENCY SECTION

The A6 uses an innovative high frequency section that integrates the compression driver, phasing plug, and waveguide into a single unified device. The three-inch lightweight, polymer annular diaphragm re-

duces mass and improves high frequency extension. The V-shape of the diaphragm reduces breakup modes that cause distortion and time smear. A unique sinusoidal-shaped exit provides multiple paths, ensuring sound from the entire diaphragm reaches the waveguide entrance. The large diaphragm offers better low frequency extension, allowing for a lower crossover point and providing a perfect directivity match between the LF and HF sections. The A6 HF section shares the same materials and design as the A8 and A12, maintaining the A-Series HF sound signature and providing common voicing across the family.

INNOVATIVE RIGGING SYSTEM

The A6 uses the VTX A-Series' patented rigging system for accurate, easy deployment. Angles are set on the ground; once the system is suspended, a locking mechanism automatically secures cabinets in designated positions. Accessories allow for a wide range of flown, ground-stacked, and installed configurations.

5.2 VTX B15 AND B15G



The VTX B15 Compact Arrayable 15-inch Subwoofer extends the low end performance of VTX full-range sound reinforcement systems, including the VTX A6 Subcompact Dual 6.5-inch Line Array Element. The B15 is a versatile solution for production companies, touring acts, rental houses, theaters, houses of worship, or anyone who demands superior sound reinforcement when space is at a premium. The B15 joins the VTX B-Series subwoofer family in harnessing VTX acoustic innovations such as SlipStream™ double-flared exponential ports and Differential Drive® dual voice coil woofer design. The B15 has the same width and suspension hardware as the A6, allowing the two products to be combined in a range of flown and ground-stacked configurations. Together with the A6, the B15 brings flagship VTX sound quality and performance to a compact footprint, whether supporting small and midsize applications or supplementing large VTX systems. It's never been easier to deliver impactful, VTX-quality sound at any scale.

TRANSDUCER DESIGN

The B15 features a high performance 15-inch woofer based on the patented Differential Drive technology, which uses a unique dual voice coil, dual gap design. The extra surface area provided by the dual four-inch voice coil design delivers better heat dissipation and lower power compression than conventional single-coil designs. The dual neodymium magnets are placed inside the coils, reducing weight and improving magnetic efficiency. The outside of the woofer is a unified cast aluminum frame, which acts as a large heat sink to cool down the woofer. The ultra-robust carbon fiber-based cone creates a rigid diaphragm, significantly reducing mass and cone break-up distortion. The result is a robust 15-inch woofer with an impressive peak-to-peak maximum excursion that rivals 18-inch designs.

CONTROLLABLE COVERAGE

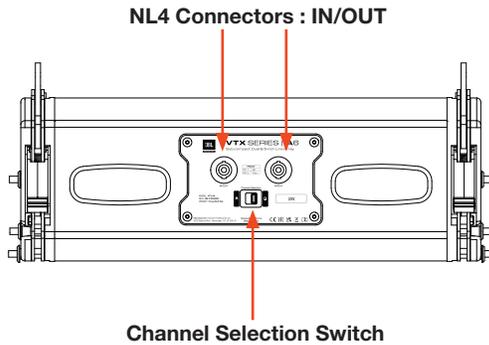
The B15 makes it simple to form omnidirectional or cardioid arrays. Speaker connectors are available on both front and rear panels, streamlining cable management in either configuration. A switch on the rear input panel allows selecting between channel one or two of the NL4 cable, minimizing cable requirements.

VTX A6 COMPATIBILITY

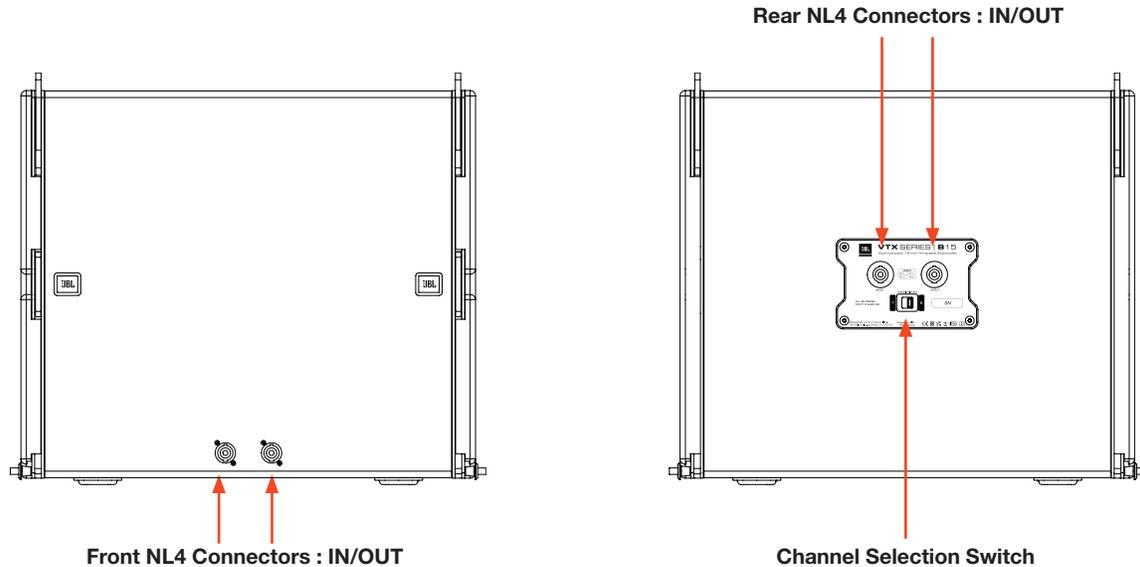
The B15 features a captive, spring-loaded mechanism for quick deployment and quiet operation. The rigging system allows for omnidirectional or cardioid configurations in small and large-scale flown or ground-stacked arrays. The rigging system is compatible with the A6, allowing B15 subwoofers to be suspended above A6 cabinets in flown arrays, or stacked on top of B15 using the A6 Base Plate accessory. All A6 suspension accessories are compatible, and arrays of up to 15 subwoofers can be created.

6 - CONNECTIONS

The A6 is equipped with two Neutrik NL4 speakON connectors which are wired in parallel and can be used as the system input or as a through connection for daisy-chaining multiple cabinets. The connectors are installed upside down, making the locking pin position visible from under the array. The channel selection switch selects between pins 1 (“A” position) and 2 (“B” position) of the NL4 connector.



The B15 is equipped with four Neutrik NL4 speakON connectors, two on the rear and two on the front grill. All four connectors are wired in parallel and can be used interchangeably. The front connectors are typically used when B15s are in a cardioid mode, where some enclosures are pointed backwards. The connectors are installed upside down, making the locking pin position visible from under the array.

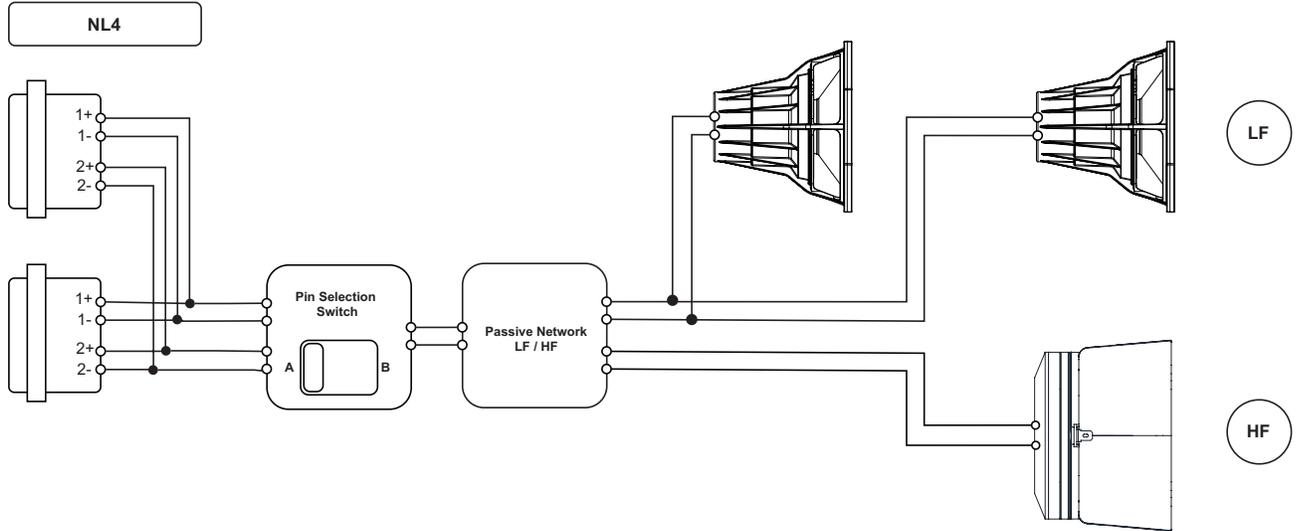


A channel selection switch available at the rear of the B15 selects between pins 1 (“A” position) and 2 (“B” position) of the NL4 Connector. The switch is wired after the NL connectors and affects all connections equally. For more information on the B15, refer to the **VTX B15 User Manual**.

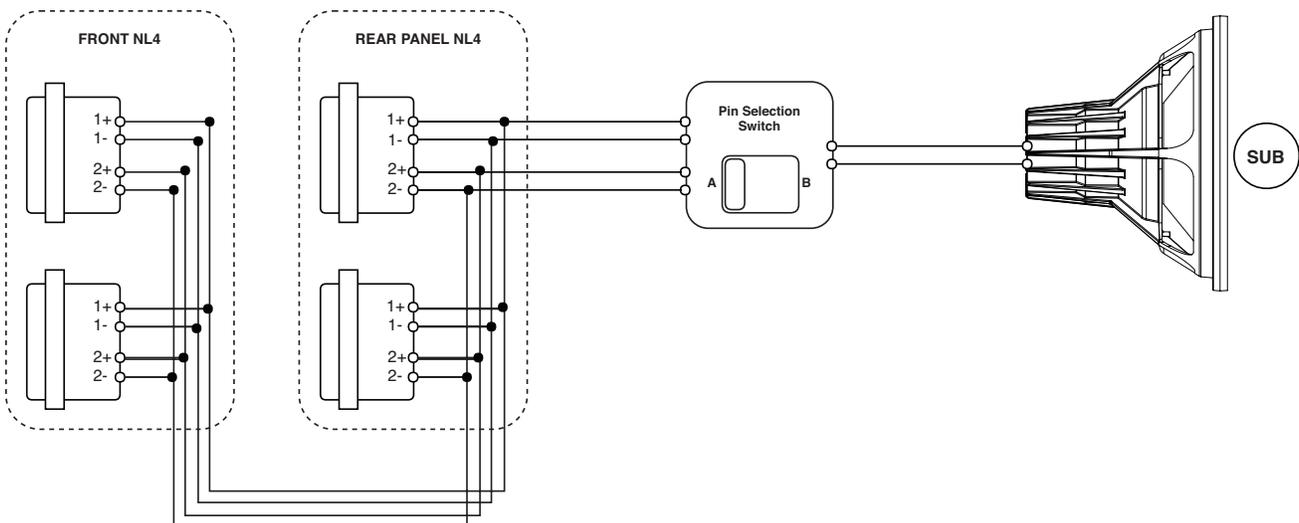


CAUTION: Always use high-quality insulated speaker cables made by reputable manufacturers. Keep cable length as short as possible, with sufficient gauge for the application.

6.1 A6 INTERNAL WIRING



6.2 B15 INTERNAL WIRING



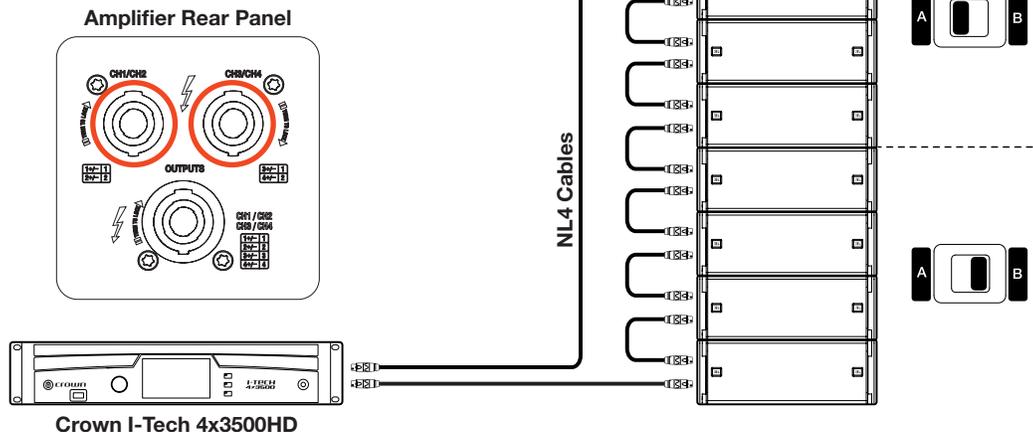
7 - AMPLIFICATION & WIRING

Like all other VTX systems, the A6 and B15 are powered exclusively by Crown I-Tech HD amplifiers, providing consistency and optimum performance anywhere in the world. All speaker processing is performed by the I-Tech HD's internal processing, which includes the advanced LevelMax™ three-stage limiter suite, to ensure proper, reliable operation under any conditions. LevelMax incorporates excursion control, RMS limiting, and long-term thermal protection for the transducers. I-Tech HD amplifiers also offer a user-adjustable input section for equalization, time alignment, and electronic delay steering. Standard JBL presets are available for both the Crown I-Tech 4x3500HD and I-Tech 12000HD. The most up-to-date presets are available for download from www.jblpro.com, and bundled in the latest version of Performance Manager control software.

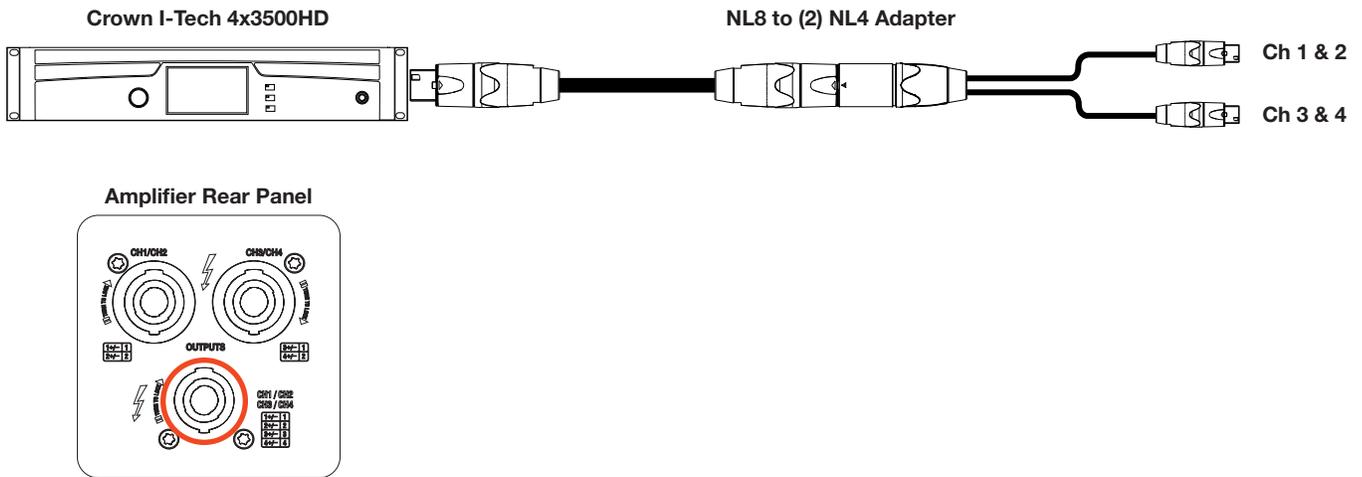
7.1 USING A6 WITH CROWN I-TECH 4X3500HD

When using Crown I-Tech 4x3500HD amplifiers, up to 16 VTX A6 loudspeakers can be powered per amplifier, four per circuit group. Circuit groups with two or three cabinets can be used to create smaller coverage areas in the venue for finer control. The example below illustrates how to connect 16 VTX A6 cabinets to an I-Tech 4x3500HD amplifier using standard four-contact NL4 cables and the A6 channel selection switch.

AMPLIFIER CHANNELS	
Channel 1	A6 LMH
Channel 2	A6 LMH
Channel 3	A6 LMH
Channel 4	A6 LMH



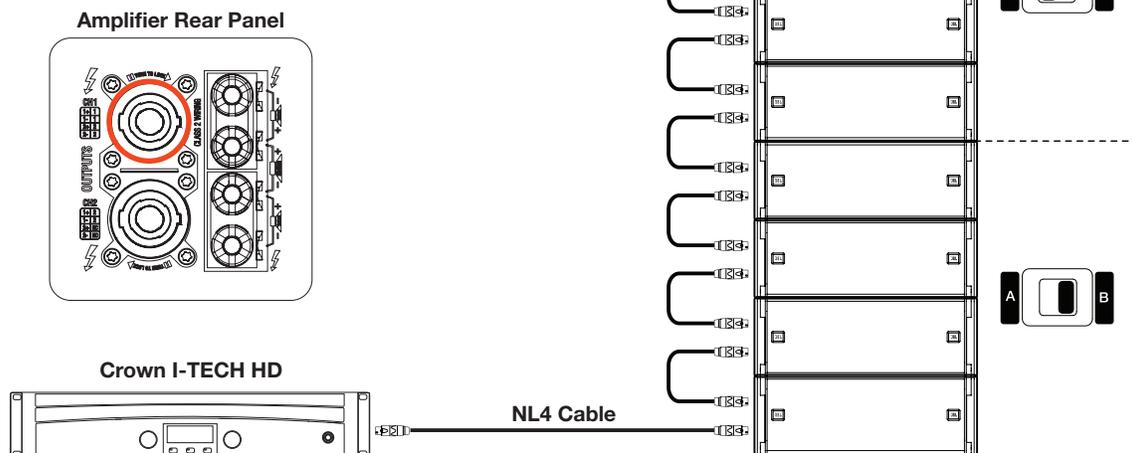
Standard NL8 cables can be used to connect A6 cabinets to a Crown I-Tech 4x3500HD amplifier using an NL8-to-two-NL4 breakout cable. Using this breakout cable, up to 16 VTX A6 cabinets can be connected to a four-channel amplifier using a single NL8 cable to save cables and simplify wiring.



7.2 USING A6 WITH CROWN I-TECH HD (2-CH)

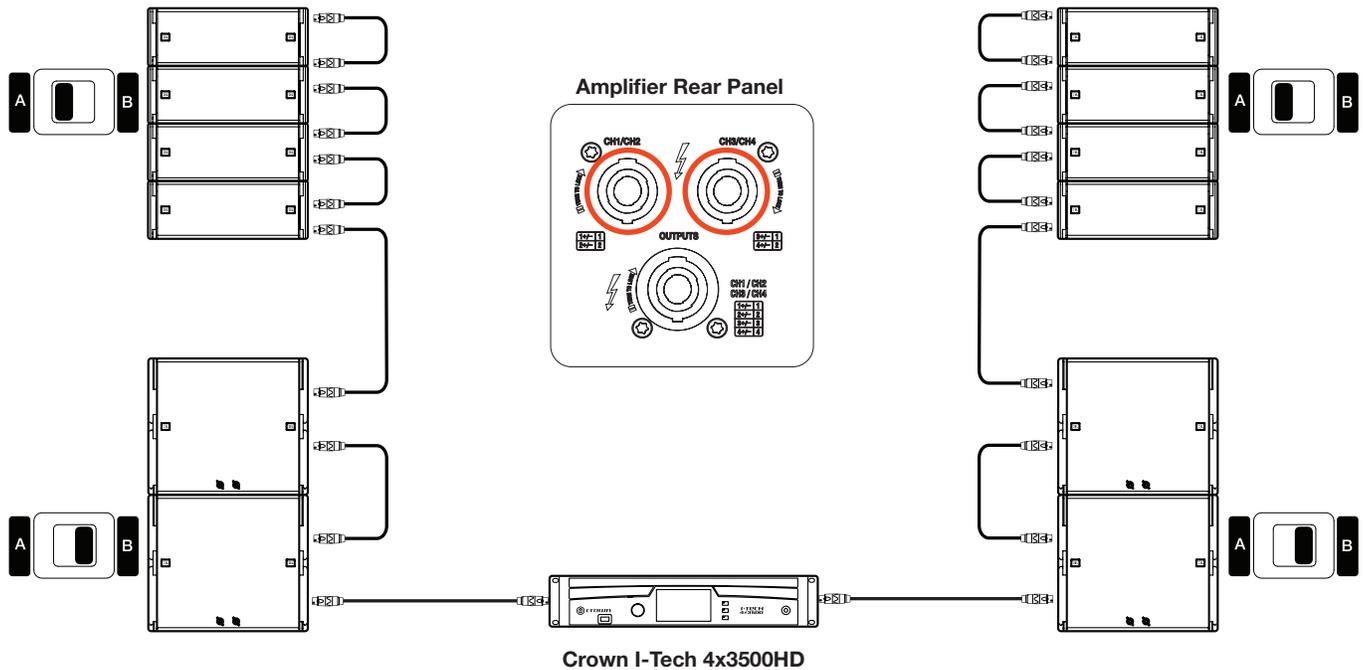
When using Crown I-Tech HD amplifiers (two-channel), up to eight A6 loudspeakers can be powered per amplifier. Circuits with two cabinets can be used to create smaller coverage areas in the venue for finer control. The example below illustrates how to connect eight VTX A6 cabinets to a two-channel I-Tech HD amplifier using a standard four-contact NL4 cable.

AMPLIFIER CHANNELS	
Channel 1	A6 LMH
Channel 2	A6 LMH



7.3 USING A6 AND B15 WITH CROWN I-TECH 4X3500HD

A6 and B15 products can be combined on a single I-Tech 4x3500HD amplifier. In this case, the amplifier has enough resources to power four B15 subwoofers and six to eight A6 cabinets.



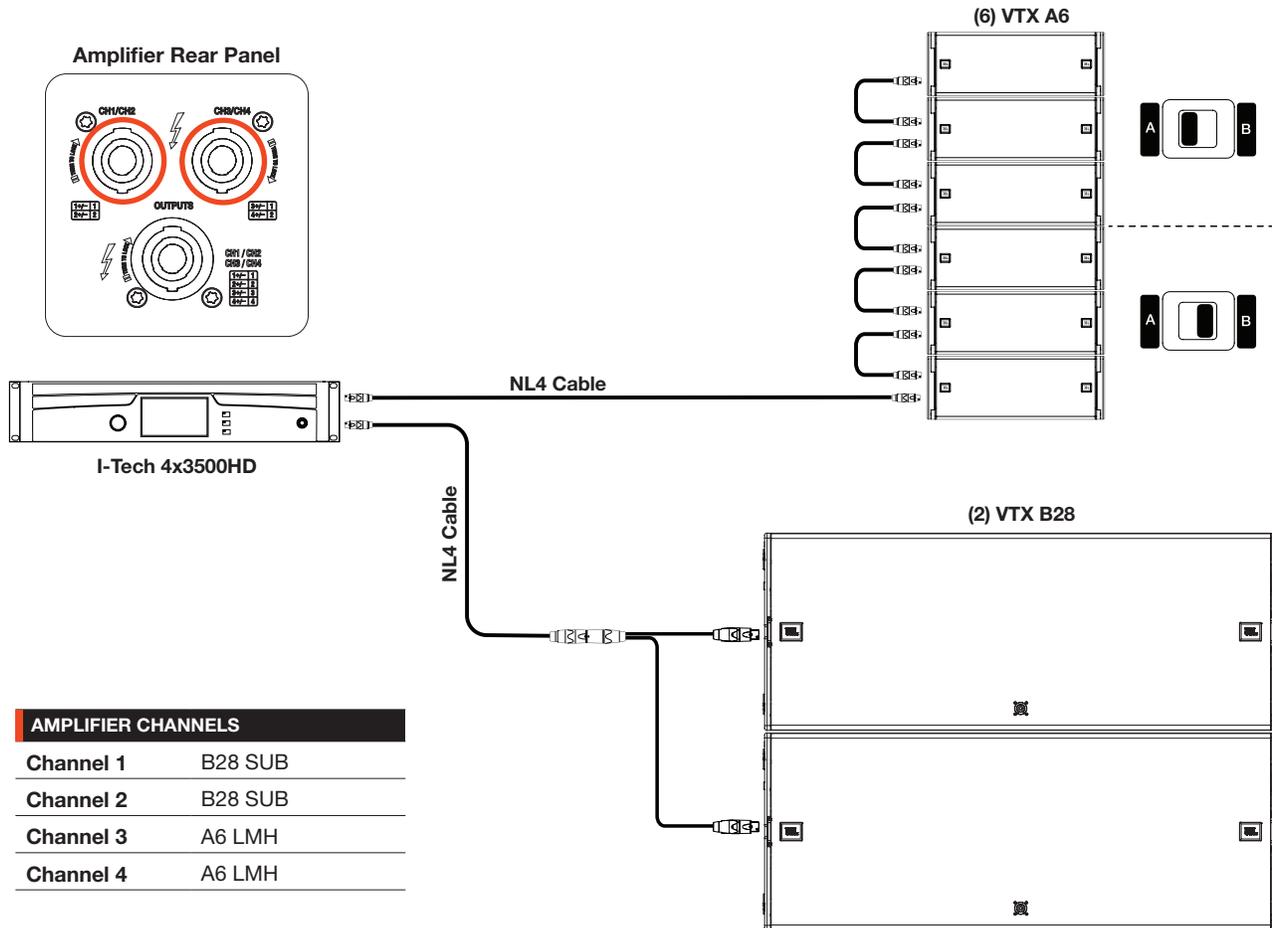
AMPLIFIER CHANNELS	
Channel 1	B15 SUB
Channel 2	A6 LMH
Channel 3	B15 SUB
Channel 4	A6 LMH



TIP: The factory VTX preset libraries for iTech HD amplifiers are configured with the same speaker preset for all amplifier channels. Use JBL Performance Manager to freely assign speaker presets to amplifier channels and create the desired preset combination.

7.4 USING A6 AND B28 WITH CROWN I-TECH 4X3500HD

When using Crown I-Tech 4x3500HD amplifiers, up to two VTX B28 subwoofers can be powered per amplifier and the remaining channels can be used to power a JBL full-range speaker, such as the VTX A6.



CAUTION: Attempting to drive more than two B28 enclosures from a single 4X3500HD is not recommended and may degrade performance.

7.5 CROWN V-RACK

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

8 - PRESETS LIBRARY

The A6 preset library includes standard array, small array (SA), and fill (FL) operating modes. VTX presets are exclusively developed for Crown I-Tech HD amplifiers and come bundled with Performance Manager control software. Audio Architect™ presets are also available and can be downloaded from www.jblpro.com. Below is a description of A6 operating modes and subwoofer processing options. Refer to the Preset Library setup sheets for preset descriptions, memory locations, and output channel assignments.

8.1 A6 PRESET MODES

Three preset modes are available:

VTX A6 FL 80: The FL preset (short for FILL) has nominally flat frequency response and used in situations where individual A6 cabinets are appropriate, such as distributed front fills or under-balcony fills. With this preset, the acoustical low frequency response of the system extends down to 80 Hz.

VTX A6 SA 80: The SA preset (short for Small Array) is appropriate in situations where two or three A6 cabinets are used. A gentle high frequency shelving response is applied to offset LF/MF array buildup for small arrays. With this preset, the acoustical low frequency response of the system extends down to 80 Hz. Use this preset when A6 cabinets are placed on a pole on top of subwoofers.

VTX A6 80: This is the standard VTX A6 preset for use with arrays larger than three cabinets. A high frequency shelving response is applied to offset LF array buildup for nominally focused arrays (equally spaced impact points over the desired audience coverage area). This mode is compatible with the Array Size Compensation filter, which can further shape the array buildup depending on array length. With this preset, the acoustical low frequency response of the system is set to 80 Hz.

8.2 VTX B-SERIES PRESET MODES AND OPTIONS

The A6 presets are compatible with all VTX B-Series subwoofers including the B15, B18 and B28. VTX subwoofers support 60 Hz and 80 Hz modes which can be selected depending on the full-range speakers used. In the case of the A6, the 80 Hz presets must be selected.

VTX BXX 60: The 60 Hz preset mode extends the upper frequency response of the subwoofer to 60 Hz. The 60 Hz preset is normally employed when VTX cabinets are used in full-range mode.

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

VTX BXX 80: The 80 Hz preset mode extends the upper frequency response of the subwoofer to 80 Hz. The 80 Hz preset is normally employed when VTX full-range cabinets are set to 80 Hz.

VTX BXX 80 REAR: The 80 Hz rear preset was designed to be work in conjunction with the standard 80 Hz preset to drive rear-facing cabinets in cardioid configurations.



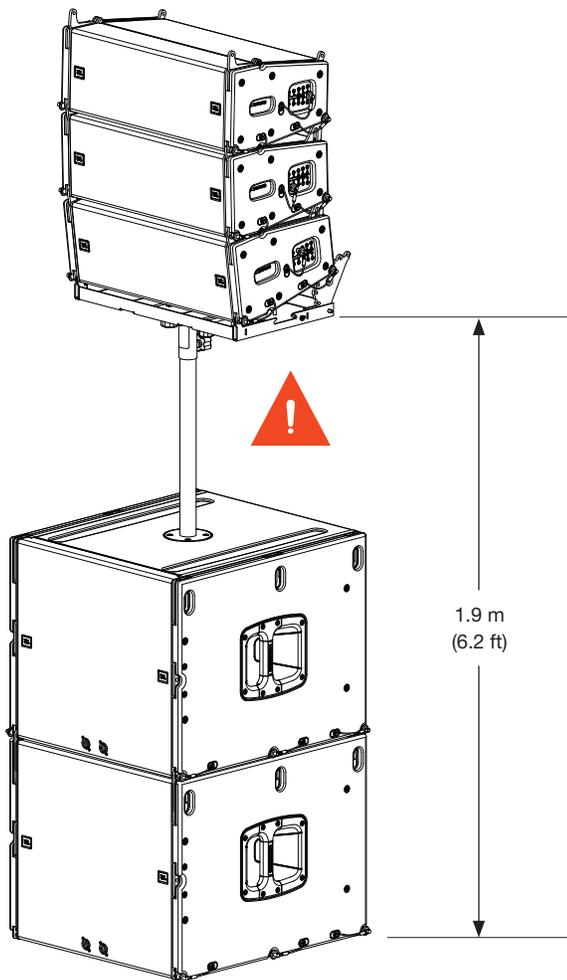
TIP: The VTX A6 presets provide a well-balanced tonal starting point for a given array size. The Array Size Compensation filter found in the JBL Line Array Control Panel (LACP) can be used to further fine-tune the tonal balance of an array for a given size and shape.

9 - POLE-MOUNTING VTX A6

The VTX A6 BP Base Plate can be mounted on top of a standard 35 mm pole when used in conjunction with the VTX PM. This pole mount accessory attaches directly to the bottom of the Base Plate using two included M10 thumb screws. For optimum performance the bottom speaker should be placed above ear height (1.9 m or 75 in), and the angles provided below are a good starting point for a flat 20 m (60 ft) deep venue. **In this case, the VTX A6 SA 80 preset, which optimizes the performance of the system for this configuration, must be used. Refer to section 8-Preset Library for more info on A6 preset options.**

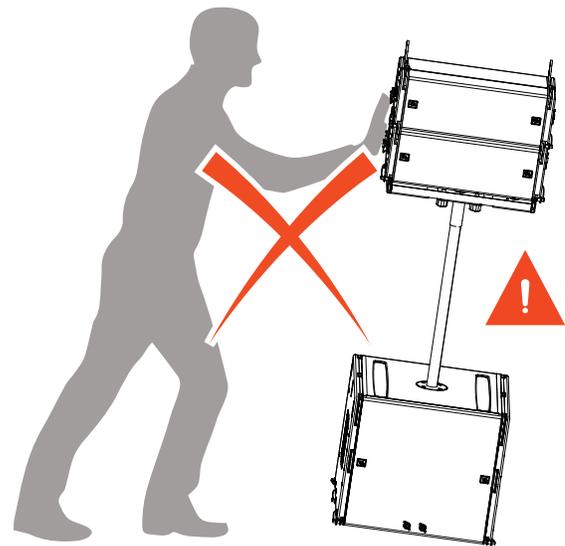
9.1 - INTER-ENCLOSURE ANGLES

Refer to the chart below for Inter-enclosure angles, given the height of the A6 Base Plate.



COMPONENT	ANGLE
Top A6	15° (STORAGE)
Middle A6	1°
Bottom A6	6°
Base Plate	-10°

Configuration Example



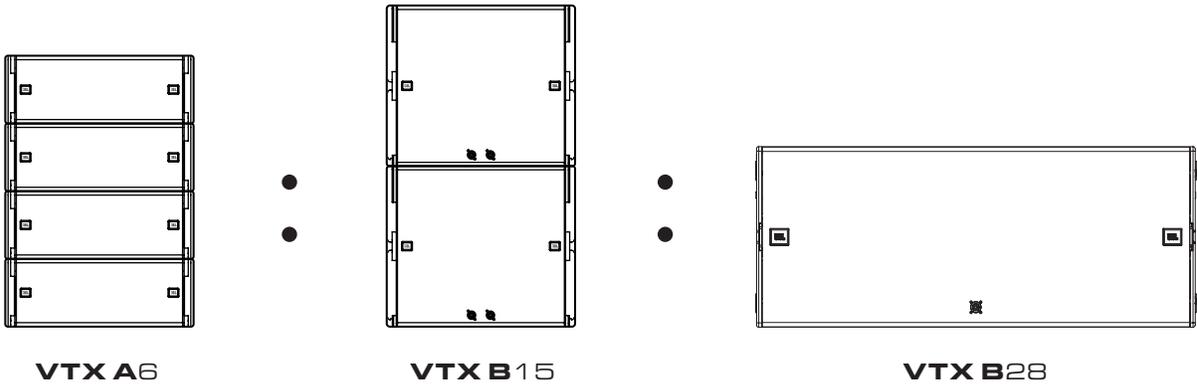
CAUTION: Do not deploy ground-stacked arrays on non-flat surfaces to avoid tipping hazards. Safe limits for ground-stacked arrays always assume that the stacking surface (floor and stage) is flat.



CAUTION: Lifting or pushing the extension rod, or sliding the subwoofer with a loaded extension rod, is unsafe. This can result in permanent damage or reduce the capacity of the M20 plate, potentially leading to a falling loud-speaker and personal injury.

10 - SUBWOOFER OPTIONS

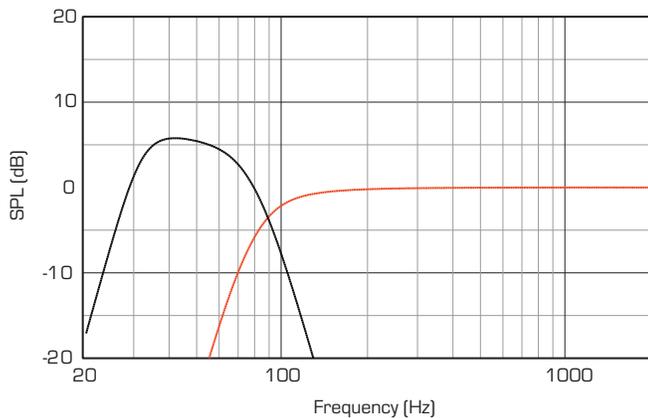
VTX A6 presets are designed for a 2:1 minimum cabinet ratio when used with the VTX B15, and a 4:1 ratio when used with dual 18-inch subwoofers like the VTX B28. The minimum recommended ratios provide sufficient headroom for both subwoofers and full-range cabinets to reach maximum SPL (limiting) at the same time, while maintaining a minimum of 10 dB SUB to full-range low frequency contour. Other ratios can be used depending on the desired tonal balance target, SPL, and application.



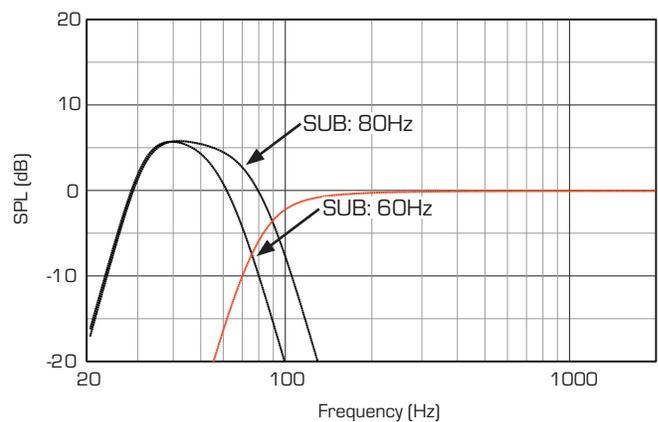
10.1 SUB LF PRESET OPTIONS

The A6 80 Hz preset extends the frequency response of the system down to 80 Hz and should be used with 80 Hz subwoofer presets. When A6 arrays are combined with other VTX A-Series products like the A8 and A12, all arrays should be operated in the same 80 Hz LF mode for proper summation across arrays and subwoofers.

Example 1: A6 80 | SUB: 80

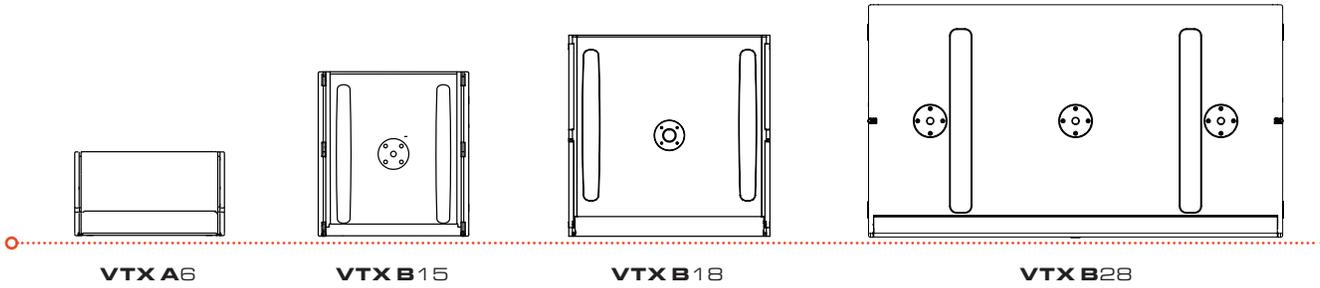


Example 2: SUB Preset Options: 60 or 80

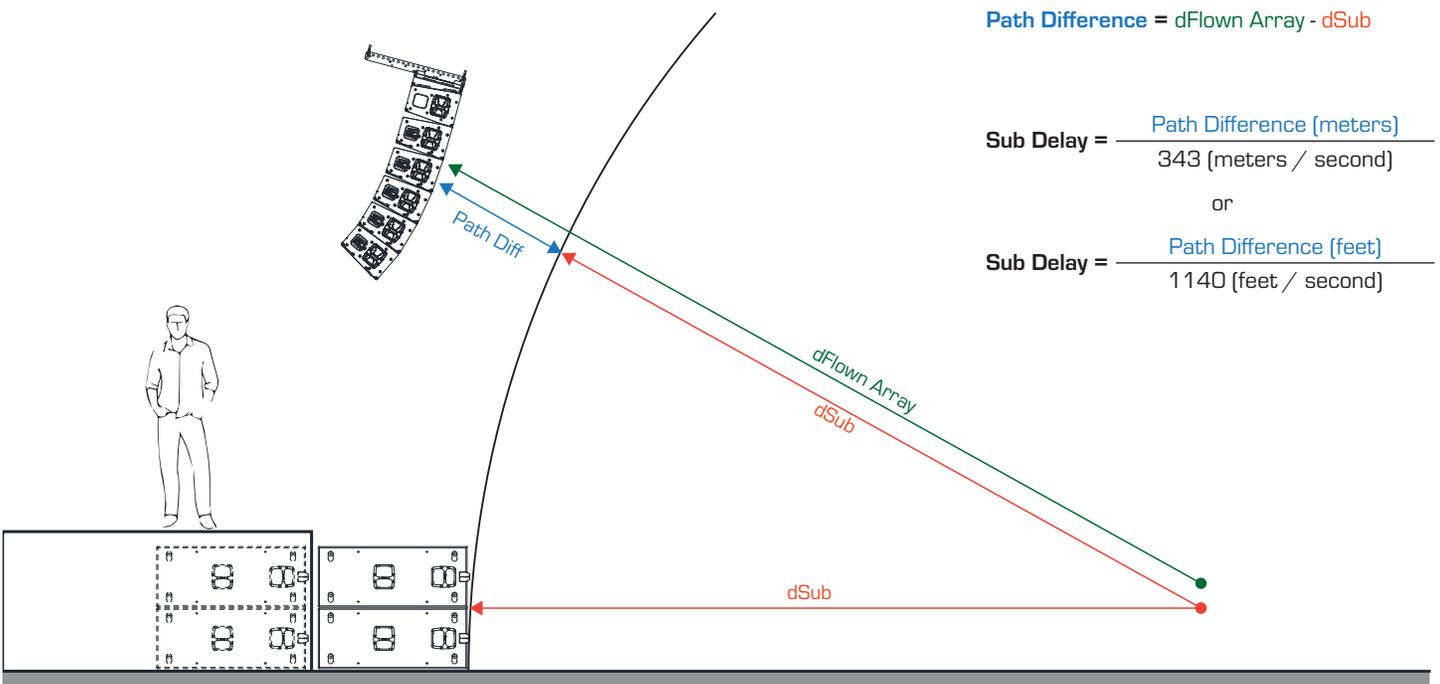


10.2 TIME ALIGNMENT

The A6 presets provide proper system summation with companion VTX subwoofers (all models) in physically coupled configurations (stacked or suspended), and when used with corresponding subwoofer presets. This pre-alignment is done at the factory, allowing any VTX subwoofer to be used with other VTX products without needing specific subwoofer presets for each system and configuration.

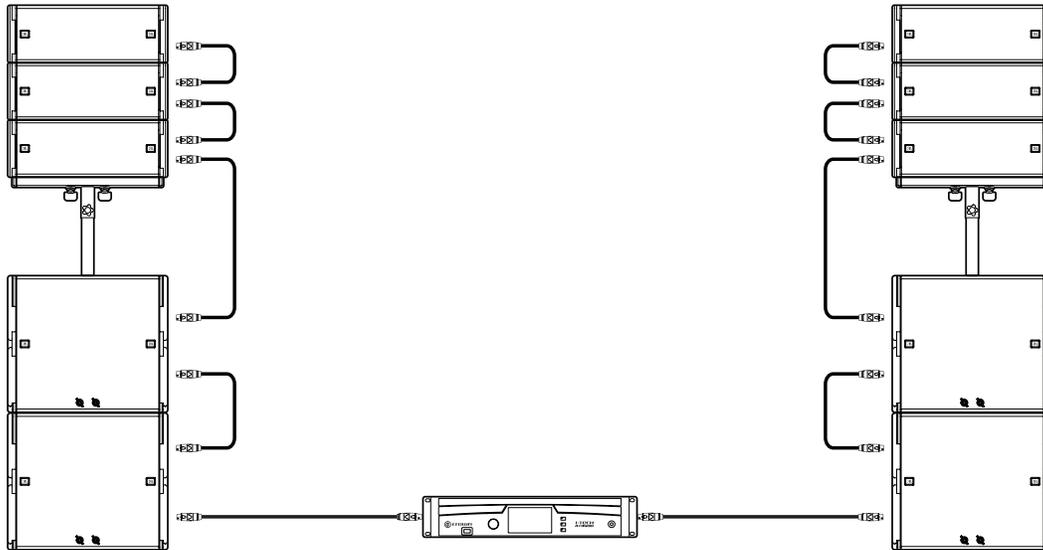


Additional time alignment delay should be added as needed to account for physical path length differences between suspended A6 arrays and ground-stacked VTX subwoofers. If no acoustic measurement system is available, delay values can be calculated based on the geometric path difference between a reference 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. When the latency of a system is unknown, this method is not effective and should not be used. This can occur when the signal paths of different parts of the system vary in latency.

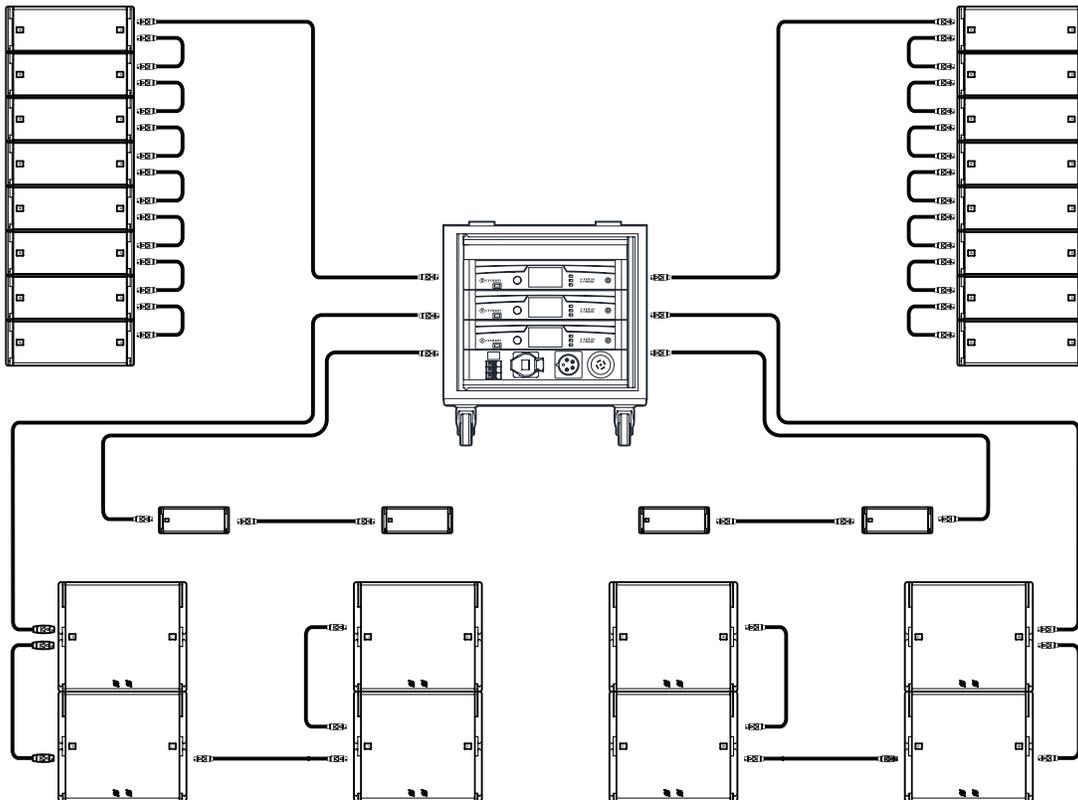


11 - CONFIGURATION EXAMPLES

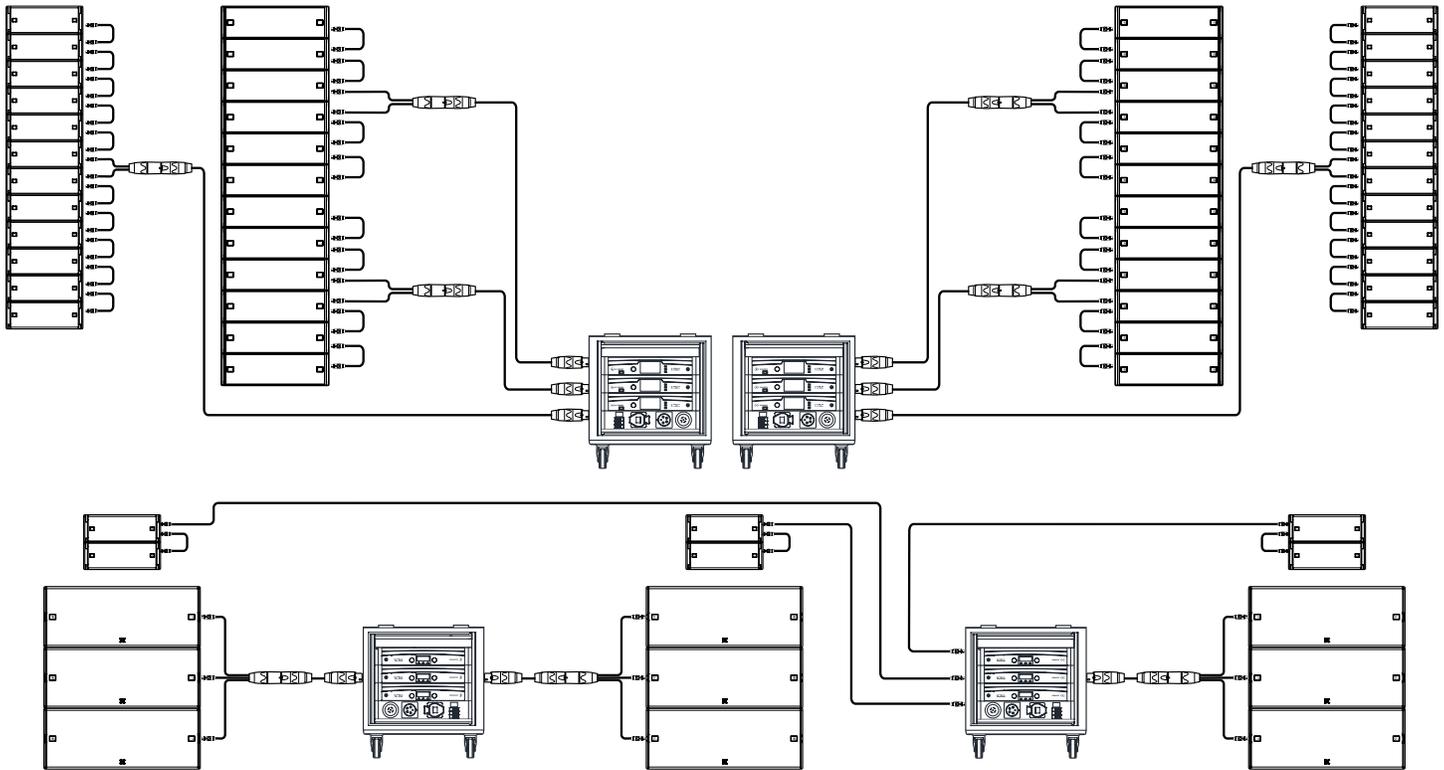
11.1 SMALL A6 SYSTEM



11.2 MEDIUM A6 SYSTEM



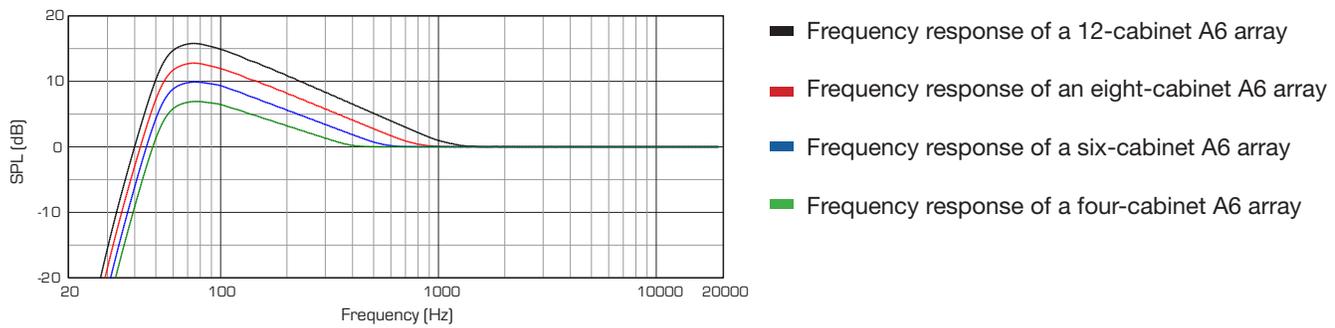
11.3 A8 AND A6 SYSTEM



12 - FREQUENCY RESPONSE

The frequency response of a line array is determined by many factors, including the array size (number of cabinets), array curvature (cabinet-to-cabinet angles), and the listening distance. JBL factory presets are designed to create a well-balanced tonal starting point for a given set of array conditions. For example, the standard VTX A6 array presets are designed to work optimally with arrays of around eight cabinets and equal impact spacing for a flat listening plane. An array with these parameters generates a flat HF frequency response with a gradual increase in LF energy. The frequency at which the response starts rising depends on the array parameters mentioned above. A relatively short array will start rising lower in frequency, while a longer array starts rising at a higher frequency. Below are frequency response examples of A6 arrays using the standard VTX A6 80 preset and no additional equalization/correction (flat).

Example : A6 Frequency response vs number of cabinets



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 shifts lower the frequency at which LF response starts rising— similar to the behavior when array length is shortened.

13. SYSTEM TESTING

Speakers need to be periodically checked and maintained to assure long-term performance and reliability. While the VTX A6 is designed for the 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 A6 system.

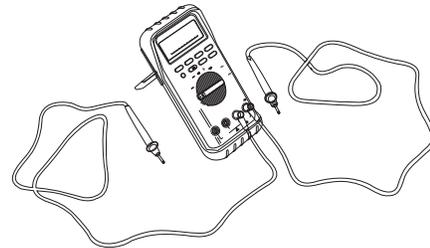
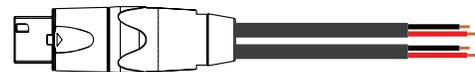
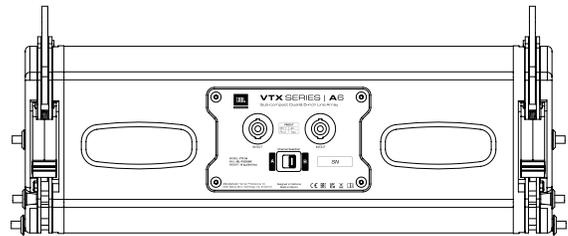
13.1 USING A DMM (DIGITAL MULTIMETER)

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 cabinets and not groups.

With the A6 speaker unconnected to any amplifier, set a DMM to the resistance (Ω) setting, place the probes across the Pin1 +/- leads, and set the NL switch to the "A" position. Record the value indicated on the DMM for the lead 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 LF and HF sections, so any major deviations from the values listed below should be further examined by removing the input panel and testing the individual components.

VTX A6		
	DCR	Tolerance
Good A6	7.1 Ω	+/- 0.5 Ω
One woofer open	13.5 Ω	+/- 0.5 Ω
Two woofers open	23.5 Ω	+/- 0.5 Ω

VTX B15		
	DCR	Tolerance
Good B15	5.0 Ω	+/- 0.2 Ω
Driver shorted	0.2 Ω	-



NOTES:

- The DCR values listed above assume room temperature transducers. If measurements are taken right after use, when the transducers are warm, the values will vary. For best results, test the speakers cold.
- The DCR value of a transducer gives an accurate representation of its electrical state, but mechanical defects are not characterized by this test. Refer to the **VTX A6 Service Manual** for instructions on performing a rub-and-buzz test with a sine wave generator.

13.2 USING PERFORMANCE MANAGER

When in the field, the **Test System Mode** in the Performance Manager software can be used to test an A6 system. This test method is quick and especially useful for determining whether all speaker cables, including cabinet-to-cabinet NL jumpers, are properly functioning.

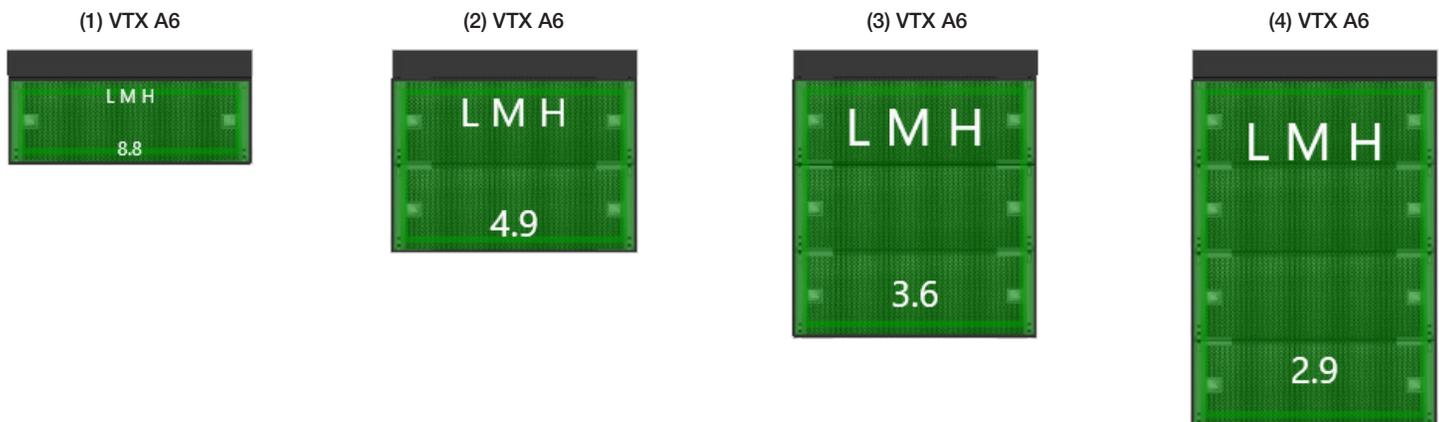
To perform the test, Performance Manager uses the I-Tech HD's built-in noise generator, in conjunction with the amplifier's current draw and voltage sensing capabilities, to generate a nominal load impedance reading for each amplifier output channel. Since broadband pink noise is used as the test stimulus,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

STEPS:

- 1 Make sure Performance Manager is online and connected to the devices.
- 2 Navigate to the Test System Mode and make sure all speakers are muted.
- 3 Switch the Noise Generator to the ON position and change the level to a value between -30 dB and -10 dB. Values lower than -30 dB may be insufficient 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 A6 cabinets. The measurements below were taken at room temperature with a cable length of 25 m (82 ft). Acceptable tolerance is +/- 0.5 Ω .



Variances in temperature, cable length, wire gauge, and usage can make the measurements recorded by Performance Manager more susceptible to drift. However, variations in conditions 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 three-cabinet circuits for an array should measure similarly. If one is off by several ohms, there is likely something wrong with that specific circuit.

14 - SPECIFICATIONS

ACOUSTICAL

Frequency Range¹

(-10 dB) : 67 Hz-20 kHz

(±3 dB) : 80 Hz-19 kHz

Coverage Pattern (-6 dB)
Horizontal : 110 degrees nominal (500 Hz-16 kHz)

Vertical : Varies with array size and configuration

Maximum Peak Output² : 134 dB

System Power Rating³ : 350 Watts Continuous (IEC/100 hour)

System Type : Line Array, two-way passive

AMPLIFICATION

System Amplification : Crown iTech HD (all models)
Crown iTech 4x3500HD

Required Amplifier Channels : (1)

Number of Cabinets per Channel : (4)

System Nominal Impedance : 10 ohms

TRANSDUCERS

Low Frequency : (2) JBL 2186J, 6.5 in diameter, dual 2.5 in diameter voice coil, neodymium Differential Drive[®]
High Frequency : (1) JBL 2433H, 3 in diameter annular diaphragm, 3 in diameter voice coil, neodymium compression driver

PHYSICAL

Enclosure : 12 mm 9-ply exterior grade birch plywood, black DuraFlex™ finish, four integral recessed handholds

Environmental Specifications : IP55 (IEC 60529)⁴
MIL-STD-810
UV (ASTM G154)

Suspension : High-grade steel with anti-corrosion coating, captive suspension plates, quick release pins, auto-locking mechanism for setting angles

Inter-enclosure Angle (deg) : 0.5, 1, 1.5, 2, 3, 4, 6, 8, 10, 12, 15

Grille : Powder coated 1.5 mm (16-gauge) hex perforated steel with acoustically transparent black cloth backing

Connectors
Type : (2) Neutrik[®] speakON[®] STXX Series NL4

Pin Assignments : Selectable between Pin 1 ± and Pin 2 ±

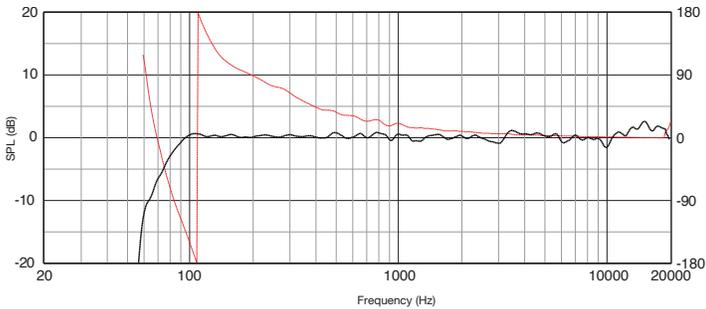
Dimensions (H x W x D) : 190 mm x 536 mm x 301 mm
7.5 in x 21.1 in x 11.8 in

Net Weight : 18.4 kg (40.3 lbs)

Shipping Weight : 20.3 kg (40.8 lbs)

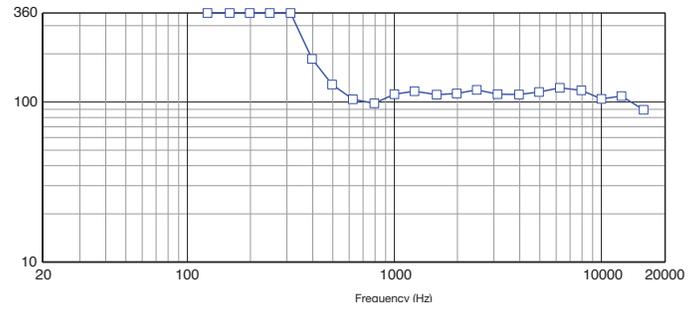
15 - ACOUSTIC MEASUREMENTS

FREQUENCY RESPONSE



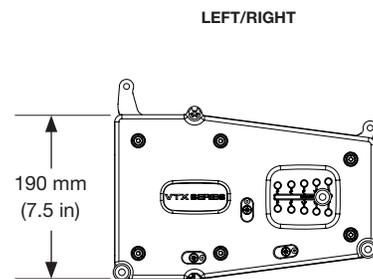
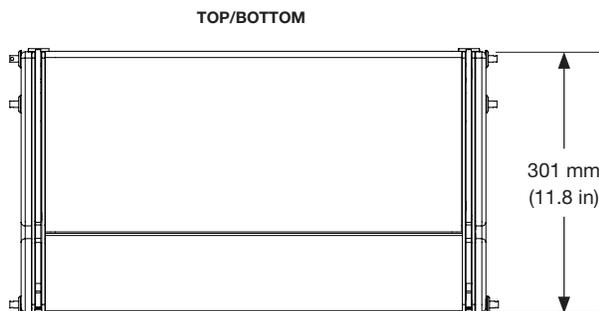
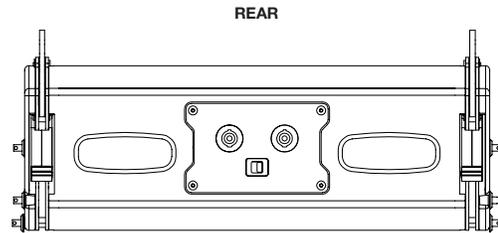
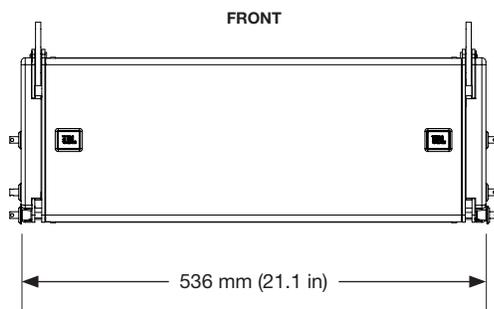
— VTX A6 FL 80 — VTX A6 FL 80 Phase

BEAMWIDTH



— Horizontal Beamwidth (-6 dB)

16 - DIMENSIONS



Footnotes:

- 1: Measured under full-space conditions using the VTX A6 FL 80 (fill) preset.
- 2: Peak, unweighted SPL, measured under full-space conditions at 1 meter using broadband pink noise with a 12 dB crest factor and using the VTX A6 80 array preset.
- 3: IEC Standard: IEC shaped noise with 6 dB crest factor based on nominal impedance and a duration of 100 hours. Continuous is defined as 2x RMS.
- 4: Front face at 0 degrees 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. Unused speakON connectors must be sealed using silicone to protect against water and moisture.

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.

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