crown by HARMAN

V-RACK

4x3500 Operation Manual



Obtaining Other Language Versions: To obtain information in another language about the use of this product, please contact your local Crown Distributor. If you need assistance locating your local distributor, please contact Crown at 574-294-8000.

This manual does not include all of the details of design, production, or variations of the equipment; nor does it cover every possible situation which may arise during installation, operation or maintenance.

The information provided in this manual was deemed accurate as of the publication date; however, updates to this information may have occurred. To obtain the latest version of this manual, please visit the Crown website at www.crownaudio.com.

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Some models may be exported under the name Amcron®.

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HARMAN

142483-1 - 5/11

Important Safety Instructions

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with a dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.



12. 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.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. Use the mains plug to disconnect the apparatus from the mains.
16. WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPARATUS TO RAIN OR MOISTURE.



17. DO NOT EXPOSE THIS EQUIPMENT TO DRIPPING OR SPLASHING AND ENSURE THAT NO OBJECTS FILLED WITH LIQUIDS, SUCH AS VASES, ARE PLACED ON THE EQUIPMENT.
18. THE MAINS PLUG OF THE POWER SUPPLY CORD SHALL REMAIN READILY OPERABLE.



TO PREVENT ELECTRIC SHOCK, DO NOT REMOVE TOP OR BOTTOM COVERS. NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



TO COMPLETELY DISCONNECT THIS EQUIPMENT FROM THE AC MAINS, DISCONNECT THE POWER SUPPLY CORD PLUG FROM THE AC RECEPTACLE. THE MAINS PLUG OF THE POWER SUPPLY CORD SHALL REMAIN READILY OPERABLE.

WATCH FOR THESE SYMBOLS:



The lightning bolt triangle is used to alert the user to the risk of electric shock.



The exclamation point triangle is used to alert the user to important operating or maintenance instructions.

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN



IMPORTANT



VRacks require Class 2 output wiring.

MAGNETIC FIELD

CAUTION! Do not locate sensitive high-gain equipment such as preamplifiers or tape decks directly above or below the unit. Because this amplifier has a high power density, it has a strong magnetic field which can induce hum into unshielded devices that are located nearby. The field is strongest just above and below the unit.

If an equipment rack is used, we recommend locating the amplifier(s) in the bottom of the rack and the preamplifier or other sensitive equipment at the top.

FCC COMPLIANCE NOTICE

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

CAUTION: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

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Welcome

Welcome

The VRack is comprised of a rugged touring rack fitted with three Crown IT4X3500HD DriveCore Series amplifiers, a power input panel, and a custom engineered input panel. The input panel is mounted at the top rear and supplies CobraNet(TM) network connections as well as AES3, VDrive and analog XLR connections. The output connections utilize the two NL4 and one NL8 output connector per amplifier. The front-mounted power panel includes a 5-pin Hubbell Twist-Lock connector and a 5-pin CEE-Form connector.

Because the VRack is supplied with all components installed and internally connected, there is no need for laborious rack building; no chance that a component might be improperly connected; this results in a dramatically lower chance of connection failure.

The VRack is best thought of not as just an amp rack, but as a building block for your system. Every time you add 1 VRack into a system, you are adding 1 block that powers your system to optimal performance, and seamlessly integrates into your system via analog or digital connections.

Each IT4X3500HD has 4 channels, each one capable of 1900 watts into 8 ohms and 2400 watts into 4 ohms. The input panel is engineered by Crown to give the VRack user optimum flexibility when deploying a VRack system for powering VerTec fullsize (VT4889), midsize (VT4888), compact (VT4887A), or subcompact (VT4886) models and their companion subwoofers (VT4880, VT4880A, VT4881A, VT4882, VT4883) as well as the JBL VTX Series and STX Series Loudspeakers.

The input panel buffers AES signals internally, reducing or eliminating the need for additional digital AES3 distribution amplifiers. Through VDrive (pg.27), the user is able to run Ethernet control and AES digital audio over a single Cat5 which jumps from rack to rack.

VRack is manufactured and tested to a single meticulous standard, and then shipped around the world. This means that any time you supply or cross-rent a VRack it is the same as every other VRack in the world.

Features

- 3 IT4X3500HD DriveCore Series amplifiers
- Fully assembled package from one source
- Worldwide power distribution with both L21-30 and 32A CEE-Form connections
- Flexible input panel with Analog, AES, and VDrive
- Fail-over AES and network connection
- VDrive AES digital distribution over CAT5
- Built-in network control
- Built-in captive suspension
- Shock-mounted rack
- Removable dolly board
- Side-storing rack doors
- Entire package is UL/CSA/ETL
- HiQnet™ control – System Architect, JBL Performance Manager, Powered by Crown and HiQnet Motion Control

Rack Specific

Weight: 187 lbs (84.82 kg)

Dimensions:

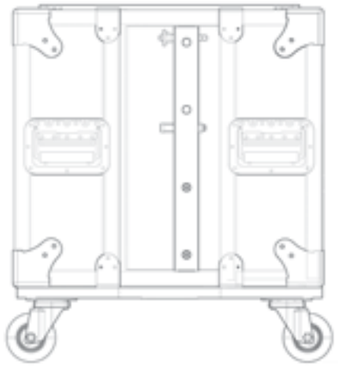
L x W x H with caster plate – 22 ½" X 23 ½" X 31 ¼" (57.2 cm X 59.7 cm X 79.4 cm)

L x W x H without caster plate – 22 ½" X 23 ½" X 25 7/8" (57.2 cm X 59.7 cm X 65.7 cm)

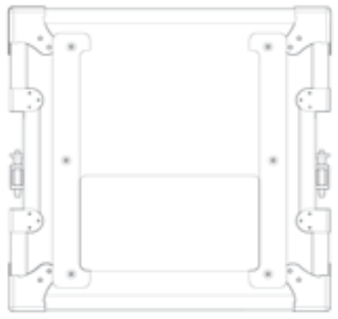
Front View (23-1/2" x 31-1/4")



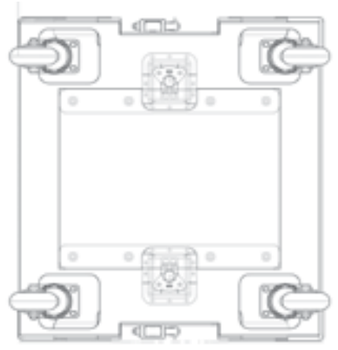
Side View (22-1/2" x 31-1/4")



Top View (23-1/2" x 22-1/2")



Bottom View (22-1/2" x 23-1/2")



Rack-Specific Info:

- Colson 3 ½" polyurethane casters rated at 250 lbs (113 kg) per caster
- Polycarbonate, UV stabilized, "virtually unbreakable" front see-through door with 30x the impact resistance of acrylic
- Shock mounting using 8 neoprene rubber isolators rated at 90 lbs (41 kg) vertical and 30 lbs (13.6 kg) horizontal with steel insert
- Captive pocket door system with a single-slam latch
- Removable caster plate with interlocking stacking system

Suspension

Safety Precautions: Before attempting to suspend your speakers or power amplifier rack, read and understand the following safety information.

Important Suspension Safety Warning!

The information is 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 Crown. 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 hardware is required for secure system suspension. Careful calculations should always be performed to ensure that all components are used within their rated workload before the array is suspended. Never exceed maximum recommended load ratings.

Before suspending any speaker system or power amplifier rack, always inspect all components (enclosure, suspension frames, pins, etc.) for cracks; deformation; corrosion; missing, loose or damaged parts that could reduce strength and safety of the array. Do not suspend the speaker or power amplifier rack until the proper corrective action has been taken. Use only load-rated hardware when suspending the VRack.

Are You New to Suspension?

If you are new to suspension, you should do the following:

- Read and study.
- Know the Rules for Safe Suspension.
- Attend a safe suspension seminar, such as that presented by professionals like Suspension Seminars™ or by Chain Motor Hoist manufacturers like Columbus McKinnon Corp. (manufacturers of the C/M Lodestar).
- Meet and establish a relationship with a licensed mechanical or structural engineer. Get in the habit of asking them questions instead of guessing about their answers. Learn from what they tell you.
- Meet and discuss this aspect of your business with your Insurance Agent.
- Research and understand the codes, practices, and requirements in the venues where you intend to operate your system.

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 suspension supply houses, industrial supply catalogs and specialized suspension distributors. Local hardware stores do not usually stock these products.

Attachment to Structures

A licensed Professional Engineer must approve placement and method of attachment to structures prior to 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, Seismic Code as applicable. Installation of 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.

Suspension Hardware Inspection & Maintenance

Suspension systems are comprised of mechanical devices and, as such, they require regular inspection and routine maintenance to ensure proper function ability. The Crown VRack must be inspected for fatigue 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 power amplifier rack enclosure. Accessory suspension hardware provided with or for the Crown VRack must be inspected for fatigue at least annually. The inspection shall include a visual material survey for signs of corrosion, bending or any other condition that may decrease strength of the fastener. For other fittings used, refer to the manufacturer's inspection and maintenance guidelines for process.

Crown is not responsible for the application of its products for any purpose or the misuse of this information for any purpose. Furthermore, Crown 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 flying loudspeaker and power amplifier systems should inspect all suspension parts and components.

Industry Resources

Allen Products
562-424-1100
1635 E. Burnett Street
Signal Hill, CA 90755
www.adapttechgroup.com

M.A.N. Flying Systems
20 Sidar Road Brook Road
Industrial Estate
Rayleight, Essex SS6 7XF U.K.
www.manfly.co.uk

McMaster Carr
Various locations throughout the U.S.A.
For a location near you, visit them online:
www.mcmastercarr.com

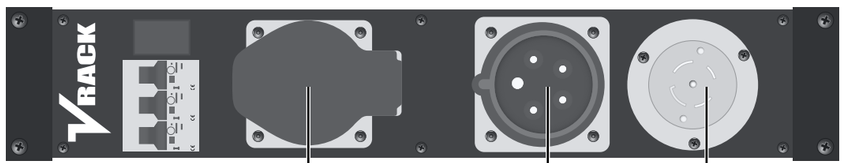
Safe Suspension

The Crown VRack is equipped with integral suspension hardware and should only be suspended using the supplied equipment. The system is designed to facilitate the suspension of the VRacks by a qualified person familiar with suspension hardware and industry practices. Improper installation may result in damage, injury or death.

Working Load Limit

The working load limit (WLL) for any group of VRack products is noted on the appropriate VRack Array Frame. If interested in suspending your VRacks, contact your local Crown representative for information on ordering VRack Suspension Frame.

VRack Connectors



Type of Connectors to Use with VRack

L21-30

Mcaster-Carr
Female: 7184K35
Male: 7184K34

Hubbel Catalog
Female: HBL2813
Male: HBL2811

IEC 309 Pin + Sleeve

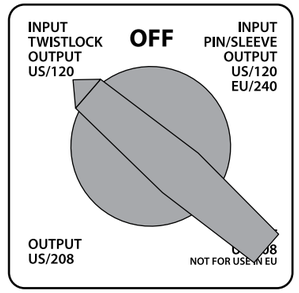
Walther-Electric
Female: 330
Male: 230

Cooper Crouse-Hinds
Female: CH532C6W
Male: CH532P6W

VRack Power Distribution Overview

The VRack Power Distribution panel offers worldwide use capabilities as well as multiple AC operations when used with 120VAC input. This power distribution system allows 120VAC input to 120VAC output, 120VAC input to 208VAC output when used with 3 phase power, 220VAC – 240VAC input to 220VAC – 240VAC output. It also features a 32A per circuit, 3-pole, single-throw breaker as well as an LCD readout that indicates AC Voltage. Built-in +5V and +12V outputs power the VRack's built-in network switch and rear rack lighting features. Combine this worldwide capable power distro with the I-Tech HD's Universal, Power-Factor-Corrected Power Supply and the VRack can be used anywhere in the world.

Hubbell L21-30 U.S. Operation



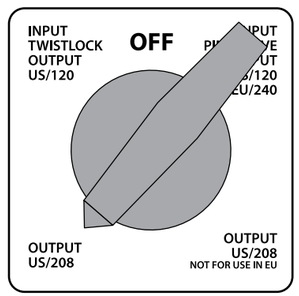
Hubbell L21-30 12 120VAC Operation

Switch position "Input Twistlock, Output US/120" provides the user with 120V operation to the I-Tech HD amplifiers in the rack. From an external power distribution system, send 3 phase 120VAC power to the X, Y, and Z pin of the Hubbell connector and the VRack will operate in 120V mode. Each I-Tech HD amplifier will see a dedicated X, Y, or Z phase to the line input, neutral, and Ground connection.

Amp 1 = X, Neutral, and GND

Amp 2 = Y, Neutral, and GND

Amp 3 = Z, Neutral, and GND



Hubbell L21-30 208VAC Operation

Switch Position "Input Twistlock, Output US/208" provides the user with 208VAC operation to the I-Tech HD amplifiers in the rack. From an external power distribution system, send 3 phase 120VAC power to the X, Y, and Z pin of the Hubbell connector and the VRack will operate in 208V mode. Each I-Tech HD amplifier will see a dedicated line-to-line and ground connection resulting in the VRack operating in 208VAC mode.

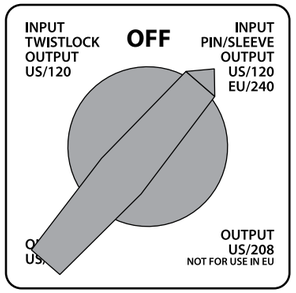
Amp 1 = X, Y, and GND

Amp 2 = Y, Z, and GND

Amp 3 = X, Z, and GND

Cee-Form U.S. Operation

Cee-Form 120VAC Operation



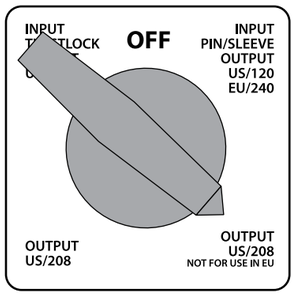
Switch Position "Input Pin/Sleeve, Output US/120 EU/240" provides 120VAC operation from the Cee-Form pin and sleeve connector. From an external power distribution system, send 3 phase 120VAC power to the X, Y, and Z pin of the Cee-Form connector and the VRack will operate in 120VAC operation mode. Each I-Tech HD amplifier will see a dedicated line-to-neutral connection as well as a ground. Once the Cee-Form connector is landed to the VRack, one can link to the next VRack using a Cee-Form jumper cable. *(***To link VRacks using this method at 110VAC-120VAC, the end user must ensure they have proper AC current available. Also, please refer to the I-Tech HD Thermal and Current Draw specifications to ensure you are not overloading the AC lines, resulting in breakers opening. It is recommended if you wish to link VRacks, they be operated at 220VAC-240VAC.)*

Amp 1 = X, Neutral, and GND

Amp 2 = Y, Neutral, and GND

Amp 3 = Z, Neutral, and GND

Cee-Form 208VAC Operation



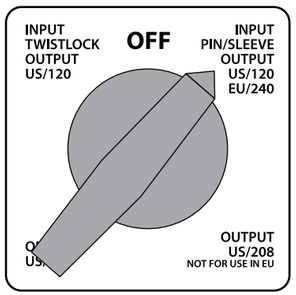
Switch Position "Input Pin/Sleeve, Output US/208" provides 208VAC Operation from the Cee-Form pin and sleeve connector. From an external power distribution system, send 3 phase 120VAC power to the X, Y, and Z pin of the Cee-Form connector and the VRack will operate in 208VAC operation mode. Each I-Tech HD amplifier will see a dedicated line-to-line connection as well as ground. In "Input Pin/Sleeve, Output US/208" mode, the end user is able to link 2 VRacks together. Amp 1 = X, Y, and GND

Amp 2 = Y, Z, and GND

Amp 3 = X, Z, and GND

Cee-Form Non-U.S. Operation

Cee-Form 220VAC-240VAC Operation



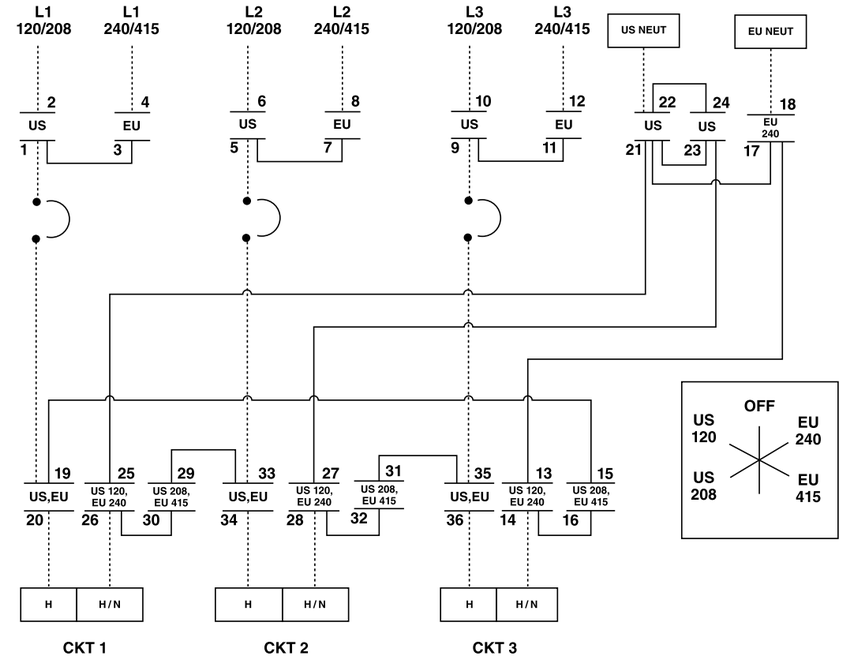
Switch Position "Input Pin/Sleeve, Output US/120 EU/240" provides 220VAC-240VAC operation from the Cee-Form pin and sleeve connector. From an external power distribution system, send 3 phase 220VAC-240VAC power to the X, Y, and Z pin of the Cee-Form connector and the VRack will operate in 220VAC-240VAC operation mode. Each I-Tech HD amplifier will see a dedicated line-to-neutral connection as well as a ground. Once the Cee-Form connector is landed to the VRack, one can link to the next VRack using a Cee-Form jumper cable. *(***To link VRacks using this method at 220VAC-240VAC, the end user must ensure they have proper AC current available. Also, please refer to the I-Tech HD Thermal and Current Draw specifications to ensure you are not overloading the AC lines, resulting in breakers opening. It is recommended if you wish to link VRacks, they be operated at 220VAC-240VAC.)*

Amp 1 = X, Neutral, and GND

Amp 2 = Y, Neutral, and GND

Amp 3 = Z, Neutral, and GND

Power Supply Schematic



I-Tech HD Amplifier Specifications

I-Tech HD Amplifier Specifications

The Crown® I-Tech 4X3500HD DriveCore Series offers amazing power, light weight and ease of use for tour sound applications. Unlike other amplifiers, it includes onboard high-definition DSP, a 4.3" LCD TFT Capacitive Touchscreen, and a built-in network connection.

Modern power amplifiers are sophisticated pieces of engineering capable of producing extremely high power levels. They must be treated with respect and correctly installed if they are to provide the many years of reliable service for which they were designed.

In addition, I-TechHD Series amplifiers include a number of features which require some explanation before they can be used to their maximum advantage. Please take the time to study this manual so that you can obtain the best possible service from your amplifier.

For more information please refer to I-Tech 4X3500 HD manual.

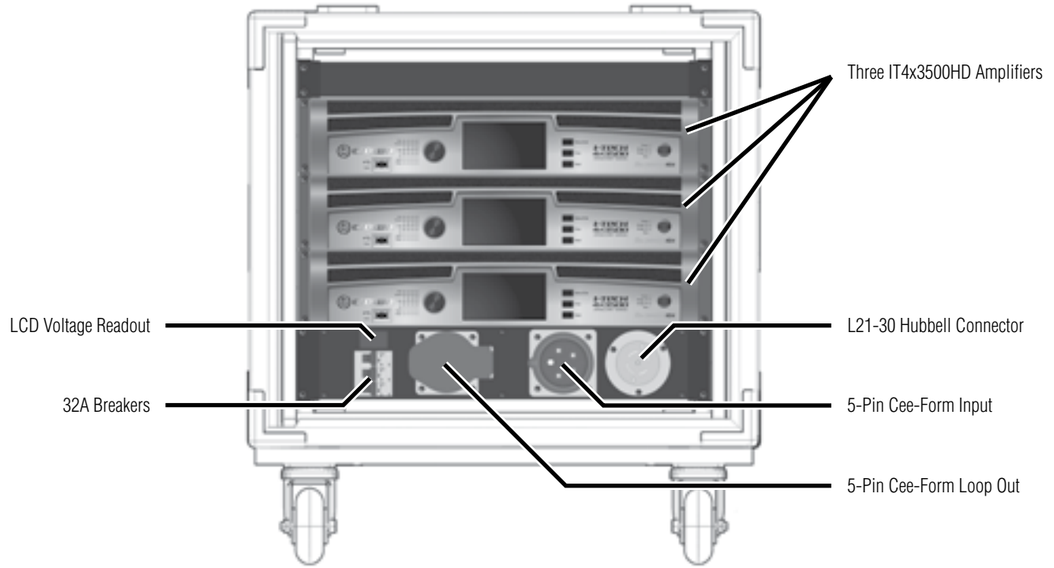
Features:

- Global Power Supply with PFC (Power Factor Correction) works anywhere in the world
- High power density, up to 12,000 watts in a 2U chassis
- Output voltage of 185Vpk provides clean transient peaks
- 6th-generation patented Class I (BCA®) circuitry couples power efficiently to the load and provides low AC current draw
- Onboard high-definition Analog Devices Sharc DSP with 24-bit, 192 kHz SHARC A/D and D/A converters; advanced IIR filters and linear phase FIR filters
- Pushbutton presets simplify setup; custom presets for various loudspeakers can be downloaded or created
- AES3 digital audio input with VDrive
- EtherCon® Ethernet connector for HiQnet™ control or CobraNet™ digital audio transport – this "Single Plug" connection allows HiQnet™ protocol and CobraNet™ digital audio through the same CAT 5 cable
- LCD Control Screen is used to adjust the amplifier's attenuation and muting, configure the amp, set up and view error monitoring, and recall DSP presets to reconfigure the amp for various applications
- Comprehensive array of indicators provide accurate diagnostics: Power, Data, along with Ready, Signal, Clip, Thermal and Fault for each channel
- AC mains indicator in power switch glows green when AC power is present
- Front-panel USB connector accepts a USB drive to transfer presets from the drive to the amplifier DSP, and vice versa
- Lightweight due to aluminum chassis, special internal construction and switching power supply
- Thermal management controller and two discrete thermal zones with variable-speed fans, forced-air cooling
- Advanced protection circuitry guards against: shorted outputs, DC, mismatched loads, general overheating, under/over voltage, high-frequency overloads and internal faults
- Five-Year, No-Fault, Fully Transferable Warranty completely protects your investment and guarantees its specifications

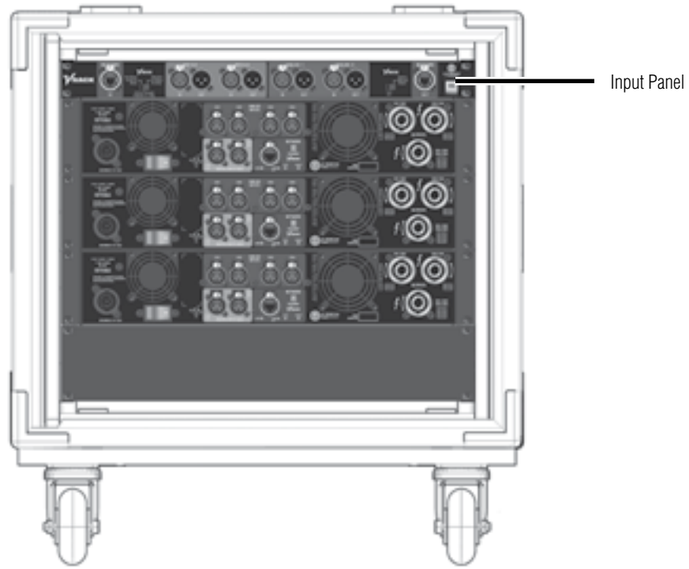




Front Panel Features



Back Panel Features



Setup

Choose Input Wire and Connectors

Crown recommends using pre-built or professionally wired, balanced line (two-conductor plus shield), 22-24 gauge cables with 3-pin XLR connectors. Unbalanced line may also be used but may result in noise over long cable runs.

Figure 1 shows connector pin assignments for balanced analog wiring or AES/EBU digital wiring. **(The use of standard analog cable with AES/EBU will result in diminished performance)** For best results, 110 ohm shielded twisted-pair cable for AES/EBU signals is highly recommended. Figure 2 shows connector pin assignments for unbalanced analog wiring.

NOTE: Custom wiring should only be performed by qualified personnel.

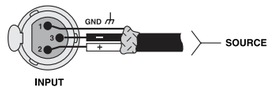


Figure 1
Balanced Analog Input Connector Wiring or AES/EBU Digital Connector Wiring

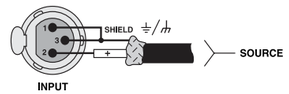


Figure 2
Unbalanced Analog Input Connector Wiring

Choose Output Wire and Connectors

Crown recommends using pre-built or professionally wired, high-quality, two-, four- or eight-conductor, heavy gauge speaker wire and connectors. Use Class 2 output wiring. You may use a 4- or 8-pole Speakon® connector. To prevent the possibility of short circuits, wrap or otherwise insulate exposed loudspeaker cable connectors.

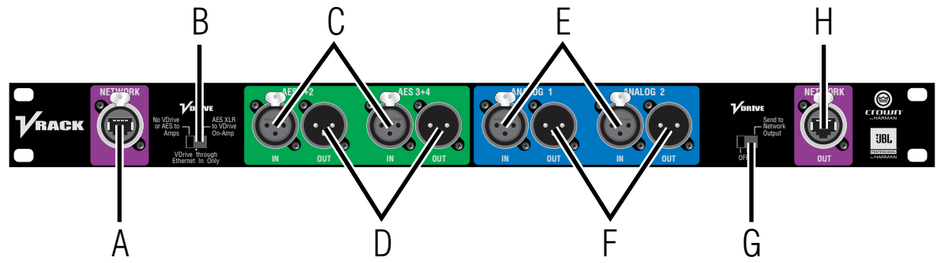
CAUTION – SHOCK HAZARD: Potentially lethal voltages exist at the output connectors when the amplifier is turned on and is passing a signal.

Using the guidelines below, select the appropriate size of wire based on the distance from amplifier to speaker.

Distance	Wire Size
up to 25 ft. (up to 7.62 m)	16 AWG
26-40 ft. (7.62-12.2 m)	14 AWG
41-60 ft. (12.2-18.3 m)	12 AWG
61-100 ft. (18.3-30.5 m)	10 AWG
101-150 ft. (30.5-45.7 m)	8 AWG
151-250 ft. (45.7-76.2 m)	6 AWG

CAUTION: Never use shielded cable for output wiring.

Input Panel



A. Network Link input. Also distributes VDrive Digital Audio.

B. VDrive Input Switch:

AES XLR to VDrive On-Ramp - When the switch is in this position, the AES3 signal that is connected to AES 1+2 or AES 3+4 XLR is buffered then sent to the amplifiers via VDrive and also buffered and sent to the Network Link Out.

VDrive through Ethernet only - When the switch is in this position, the VDrive signal present on the Network Link Input is buffered and sent to the amplifiers via VDrive and also buffered and sent to the Network Link Out.

No VDrive or AES to Amps - When the switch is in this position, no AES3 signal is distributed from the input panel to the amplifiers. This mode should be used when patching AES3 signal directly to the amplifiers when the input panel is bypassed.

C. AES3 Inputs - Sends AES3 signal to the amplifiers. When VDrive switch is set to "AES XLR to VDrive On-Ramp" this input AES3 signal is sent to the 3 amplifiers with the VRack and sent to Network out VDrive.

D. AES3 Link Outputs - When power is applied to the rack, the AES3 signal is taken from the input, buffered, then sent to this link output connection. If the rack is not powered on, AES3 signal is still sent from the input connection but it is not buffered.

E. Analog Inputs - Analog 1 of this input panel is sent to each IT4x3500HD's analog 1 input. Analog 2 of this input panel is sent to each IT4x3500HD's Analog 3 input. This is set up this way so that when the rack is configured to bi-amp mode, the amplifiers see Analog 1 and 3 inputs.

F. Analog outputs - These outputs are in parallel with the analog inputs. There are no active or passive circuitry between the input and output connections.

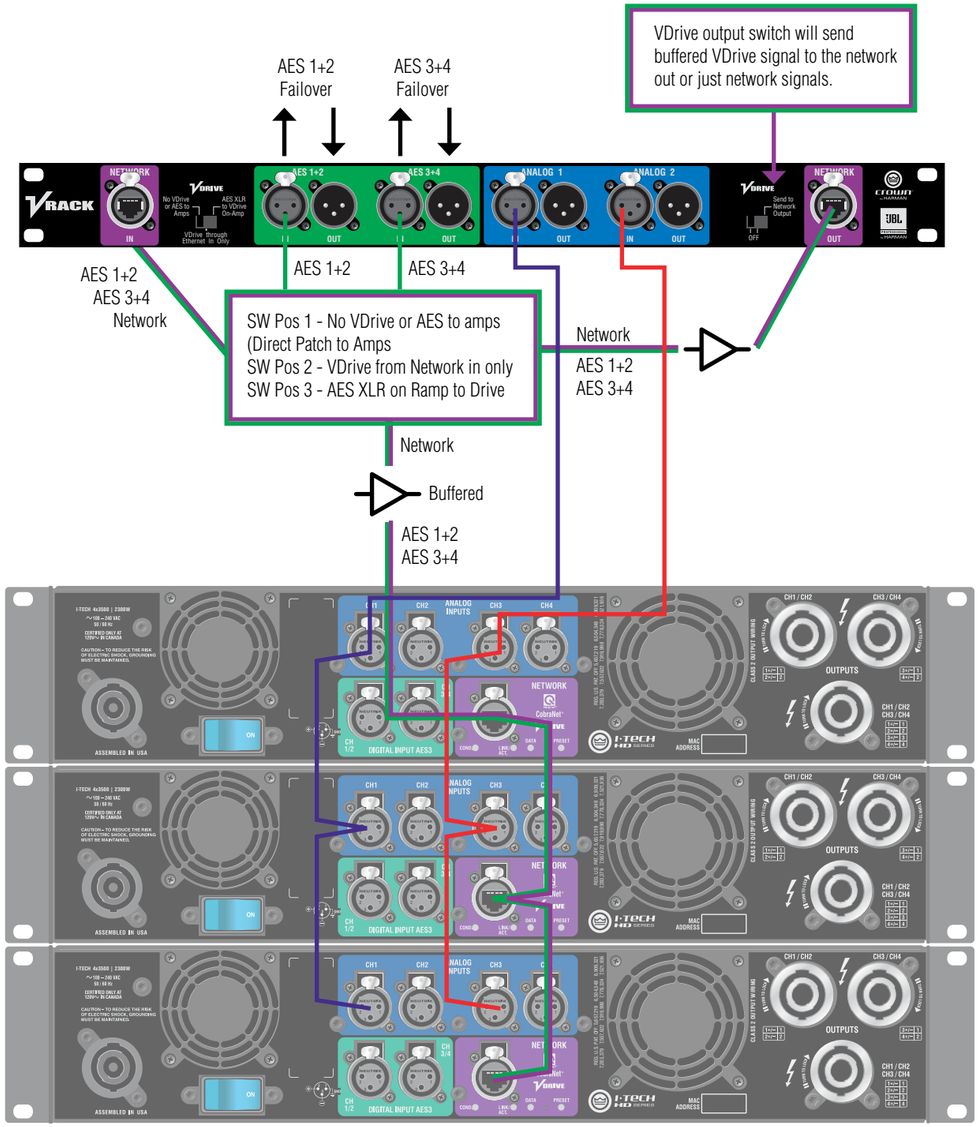
G. VDrive Output Switch - This switch selects whether or not the buffered AES3 Signal based on the VDrive input switch selection is sent out the Network Link Output. When in "OFF" Mode, network communication is still maintained regardless of the switch position.

H. Network Link Output - Also distributes VDrive digital audio if the VDrive Output switch is enabled.

***NOTE – All AES 3 signals are sent from the input panel to the Amplifiers via VDrive. Therefore, any time you use the VRack's input panel for AES3 distribution to the amplifiers, the IT4x3500HD amplifier must be set to VDrive AES mode. (See Page 16 for more information)

Input Wiring Schematic

Rack Input Wiring Schematic



***Please note, the AES3 signal is distributed via VDrive from the input panel to the amplifiers. Therefore, any time AES3 is patched directly to the input panel, VDrive must be enabled via the software or front panel display of the amplifier for the AES3 signal to be seen by the amplifier. (see page 21 for more details)

Input Wiring Modes

Analog Mono 1
Analog Mono 2
Analog Stereo
AES Mono 1
AES Mono 2
AES Mono 3
AES Mono 4
AES Stereo 1&2
AES Stereo 3&4
AES Mono 1+2
AES Mono 3+4

AES Mono 2



AES Mono 3



Input Wiring Modes

Analog Mono 1
Analog Mono 2
Analog Stereo
AES Mono 1
AES Mono 2
AES Mono 3
AES Mono 4
AES Stereo 1&2
AES Stereo 3&4
AES Mono 1+2
AES Mono 3+4

AES Mono 4



Analog Mono 1
Analog Mono 2
Analog Stereo
AES Mono 1
AES Mono 2
AES Mono 3
AES Mono 4
AES Stereo 1&2
AES Stereo 3&4
AES Mono 1+2
AES Mono 3+4

AES Stereo 1&2



Input Wiring Modes

Analog Mono 1
Analog Mono 2
Analog Stereo
AES Mono 1
AES Mono 2
AES Mono 3
AES Mono 4
AES Stereo 1&2
AES Stereo 3&4
AES Mono 1+2
AES Mono 3+4

AES Stereo 3&4



Analog Mono 1
Analog Mono 2
Analog Stereo
AES Mono 1
AES Mono 2
AES Mono 3
AES Mono 4
AES Stereo 1&2
AES Stereo 3&4
AES Mono 1+2
AES Mono 3+4

AES Mono 1+2



Input Wiring Modes

Analog Mono 1
Analog Mono 2
Analog Stereo
AES Mono 1
AES Mono 2
AES Mono 3
AES Mono 4
AES Stereo 1&2
AES Stereo 3&4
AES Mono 1+2
AES Mono 3+4

AES Mono 3+4



VDrive

VDrive Wiring Schematic

RJ45 Pin #	Wire Color (T568A)	Wire Diagram (T568A)	10Base-T Signal 100Base-TX Signal	1000Base-T Signal
1	White/Green		Transmit +	BI_DA+
2	Green		Transmit -	BI_DA-
3	White/Orange		Receive +	BI_DB+
4	Blue		AES 1/2 +	BI_DC+
5	White/Blue		AES 1/2 -	BI_DC-
6	Orange		Receive -	BI_DB-
7	White/Brown		AES 3/4 +	BI_DD+
8	Brown		AES 3/4 -	BI_DD-

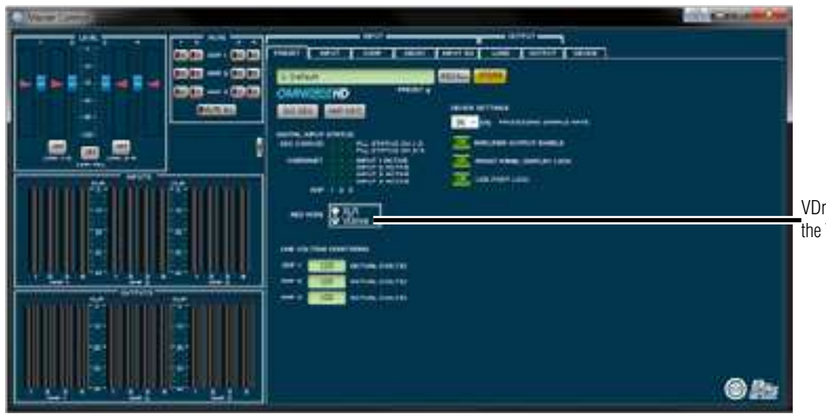
VDrive is a digital AES3 transport mechanism that combines a standard 10/100MB network connection with AES3 signals. VDrive employs the unused pins of a 10/100MB network to transport AES3 digital audio signals. As indicated in the chart above, one is able to transmit 4 channels of digital audio using a standard CAT5 cable.

VDrive is distributed from the VRack4X3500HD input panel to the individual IT4x3500HD amplifiers via VDrive. The AES3 signal that utilizes the input panel's AES XLR connectors as an input is buffered and then sent to the amplifiers via VDrive. If you are using the VDrive input on the input panel, the AES signal over the Ethernet connection is buffered and then sent to the individual IT4X3500HD amplifiers via VDrive. The VDrive output is also buffered.

If you are using the AES3 XLR or VDrive inputs on the VRack4X3500HD input panel, it is very important you save your preset or device files with the VDrive enabled.

To enable VDrive, open the VRack device panel. This selection is located in two places. You only need to select it in one place.

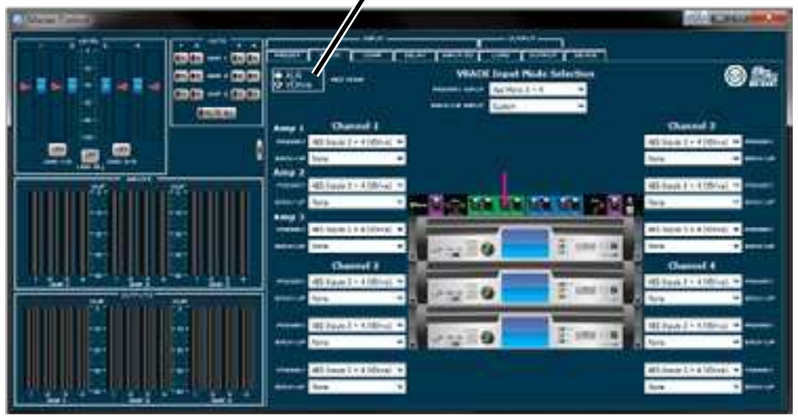
1. Under the 'Presets' Tab, it is located under the Digital Input Status section



VDrive must be selected if using the VRack4x3500HD input panel

To enable VDrive, open the VRack device panel. This selection is located in two places. You only need to select it in one place.

2. Under the 'Input' Tab, it is located in the upper left section of this tab.



VDrive must be selected if using the VRack4x3500HD input panel

Output Wiring Modes

JBL and Crown have established this set of recommended circuiting configurations for all VerTec/iTechHD systems worldwide. Please follow these good/better/best guidelines in order to ensure optimum system performance.

High Performance

A High Performance (HP) system has the following characteristics:

- 1:1 Ratio of Tops to Subs
- NO sub or LF section loads below 4ohms
- 2 cabinets per circuit for optimal array shading and tapering resolution
- Best possible power match to iTechHD amplifiers, with most systemwide headroom for loud concerts and highly dynamic content.

Nominal

A Nominal (Nom) system has the following characteristics:

- 3:2 Ratio of Tops to Subs
- Some driver loads at 2.7ohms
- 3 cabinets per circuit for good match between power handling and array shading and tapering resolution
- Appropriate power match for iTechHD amplifiers, good balance between systemwide headroom and increased array coverage

Economy Power

An Economy Power (Econ) system has the following characteristics:

- 2:1 Ratio of Tops to Subs, or no subs
- Some driver loads at 2ohms
- Using 3-Way+3-Way mode which powers lows at 2ohms on a circuit of 2 x VT4889 or VT4888
- Economy mode is appropriate for speech or music reinforcement with limited SPL requirements.

Output Wiring Modes

3-Way Mode



	HP	Nom	Econ	Max
VT4889	1	2	3	3
VT4888	1	2	3	3
VTX V25	1	2	3	3

(Per Amplifier)

Output Wiring Modes

2-Way Mode



	HP	Nom	Econ	Max
VT4887A	2	3	4	4
VT4887	2	3	4	4

(Per Amplifier)

Output Wiring Modes

1-Way Mode



	HP	Nom	Econ	Max
VT4886	2	3	4	6

(Per Amplifier)

Output Wiring Modes

Sub Mode



	HP	Nom	Econ	Max
VT4880A	1	1	1	1
VT4880	1	1	2	2
VTX S28	1	1	1	1
VTX G28	1	1	1	1
VT4881A	2	2	3	3
VT4882	1	1	2	2
VT4883	1	1	2	2

(Per Amplifier)

Output Wiring Modes

3-Way + Sub Mode



3-Way Outputs

	HP	Nom	Econ	Max
VT4889	1	2	3	3
VT4888	1	2	3	3
VTX V25	1	2	3	3

(Per Amplifier)

Sub Outputs

	HP	Nom	Econ	Max
VT4880A	1	1	1	1
VT4880	1	1	2	2
VTX S28	1	1	1	1
VTX G28	1	1	1	1
VT4881A	2	2	3	3
VT4882	1	1	2	2
VT4883	1	1	2	2

(Per Amplifier)

Output Wiring Modes

3-Way + 2-Way Mode



3-Way Outputs

	HP	Nom	Econ	Max
VT4889	1	2	3	3
VT4888	1	2	3	3
VTX V25	1	2	3	3

(Per Amplifier)

2-Way Outputs

	HP	Nom	Econ	Max
VT4887A	2	3	4	4
VT4887	2	3	4	4

(Per Amplifier)

Output Wiring Modes

3-Way + 1-Way Mode



3-Way Outputs

	HP	Nom	Econ	Max
VT4889	1	2	3	3
VT4888	1	2	3	3
VTX V25	1	2	3	3

(Per Amplifier)

1-Way Outputs

	HP	Nom	Econ	Max
VT4886	2	3	4	6

(Per Amplifier)

Output Wiring Modes

2-Way + Sub Mode



2-Way Outputs

	HP	Nom	Econ	Max
VT4887A	2	3	4	4
VT4887	2	3	4	4

(Per Amplifier)

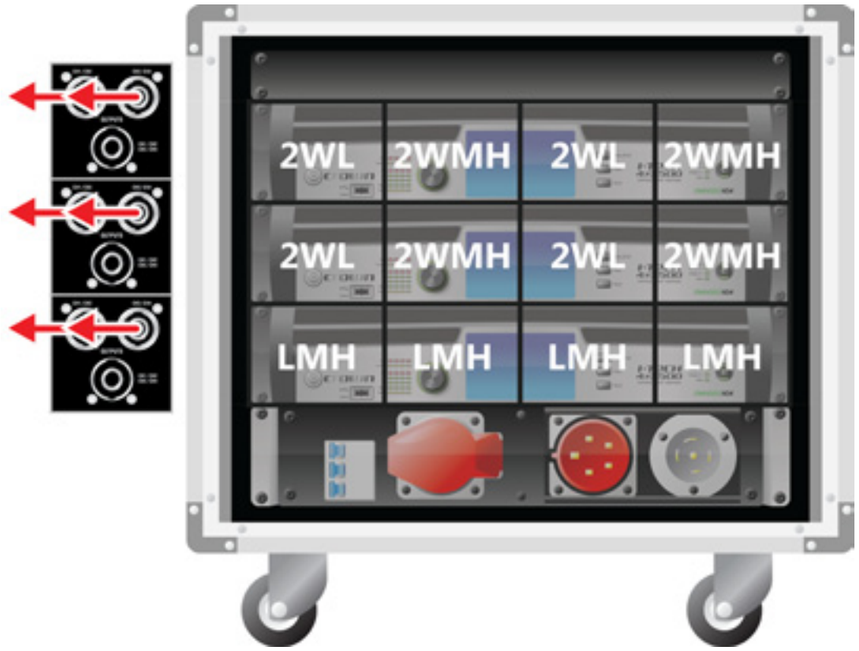
Sub Outputs

	HP	Nom	Econ	Max
VT4880A	1	1	1	1
VT4880	1	1	2	2
VTX S28	1	1	1	1
VTX G28	1	1	1	1
VT4881A	2	2	3	3
VT4882	1	1	2	2
VT4883	1	1	2	2

(Per Amplifier)

Output Wiring Modes

2-Way + 1-Way Mode



2-Way Outputs

	HP	Nom	Econ	Max
VT4887A	2	3	4	4
VT4887	2	3	4	4

(Per Amplifier)

1-Way Outputs

	HP	Nom	Econ	Max
VT4886	2	3	4	6

(Per Amplifier)

Output Wiring Modes

1-Way + Sub Mode



1-Way Outputs

	HP	Nom	Econ	Max
VT4886	2	3	4	6

(Per Amplifier)

Sub Outputs

	HP	Nom	Econ	Max
VT4880A	1	1	1	1
VT4880	1	1	2	2
VTX S28	1	1	1	1
VTX G28	1	1	1	1
VT4881A	2	2	3	3
VT4882	1	1	2	2
VT4883	1	1	2	2

(Per Amplifier)

Output Wiring Modes

Sub + 2-Way Mode



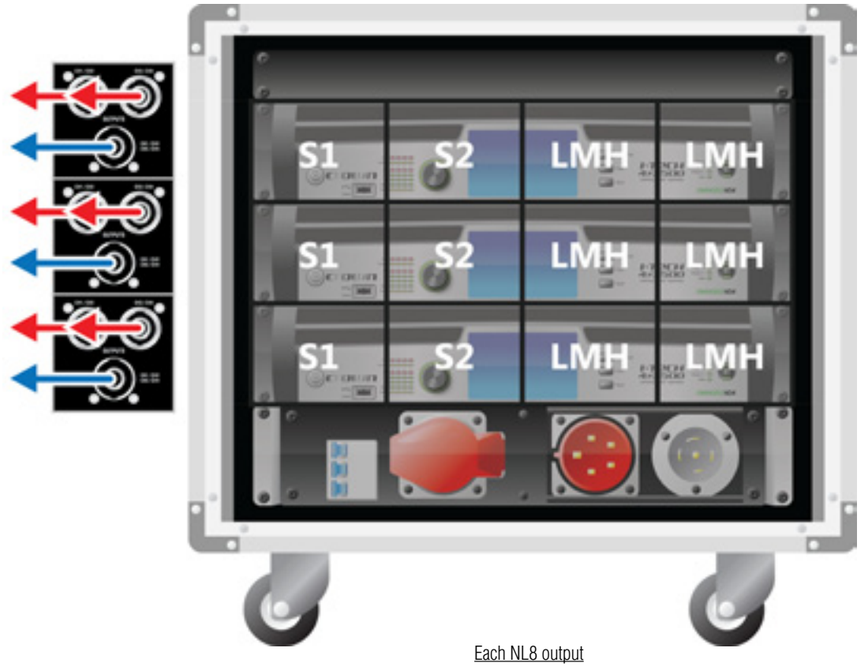
Each NL8 output

	HP	Nom	Econ	Max
VT4887A	2	3	4	4
VT4887	2	3	4	4
VT4880A	1	1	1	1
VT4880	1	1	2	2
VTX S28	1	1	1	1
VTX G28	1	1	1	1
VT4881A	2	2	3	3
VT4882	1	1	2	2
VT4883	1	1	2	2

(Per Amplifier)

Output Wiring Modes

Sub + 1-Way Mode



Each NL8 output

	HP	Nom	Econ	Max
VT4886 ('A' Switch)	2	3	4	4
VT4886 ('B' Switch)	2	3	4	4
VT4880A	1	1	1	1
VT4880	1	1	2	2
VTX S28	1	1	1	1
VTX G28	1	1	1	1
VT4881A	2	2	3	3
VT4882	1	1	2	2
VT4883	1	1	2	2

(Per Amplifier)

HiQnet™ Software

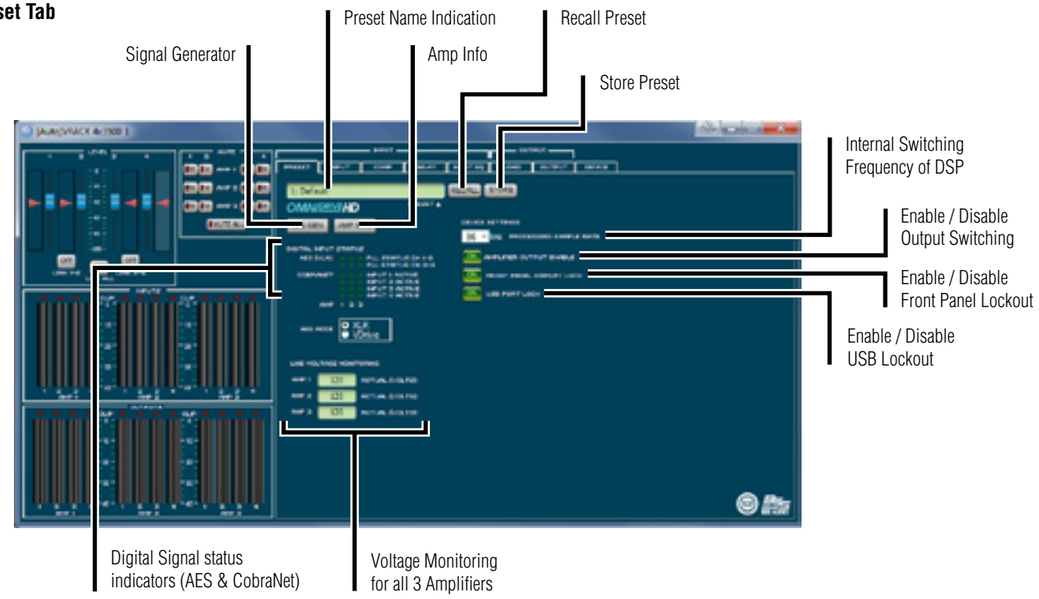
The Crown VRack has a unique advantage when used with Harman's HiQnet System Architect software. The software is able to literally 'see' that your iTech4x3500HD amplifiers are in a rack, and specifically they're in a VRack. You get specific advantages in speeding up deployment, programming, tuning, and monitoring of a VRack powered system.

In addition, the user can combine the presets in all 3 VRack ampmlifiers into a single 'VRack Preset'. This is done by loading the individual preset into each amplifier, and then using the VRack control panels' 'Preset' tab to save each individual preset into the same preset memory location on each amp. Now with a single click, an 'entire rack' setting can be recalled. For most sound companies this means that with an initial investment of some time in the shop, single-click 'entire rack' settings can be configured for most of the PA in inventory, eliminating the need to program and recall individual presets in the field.

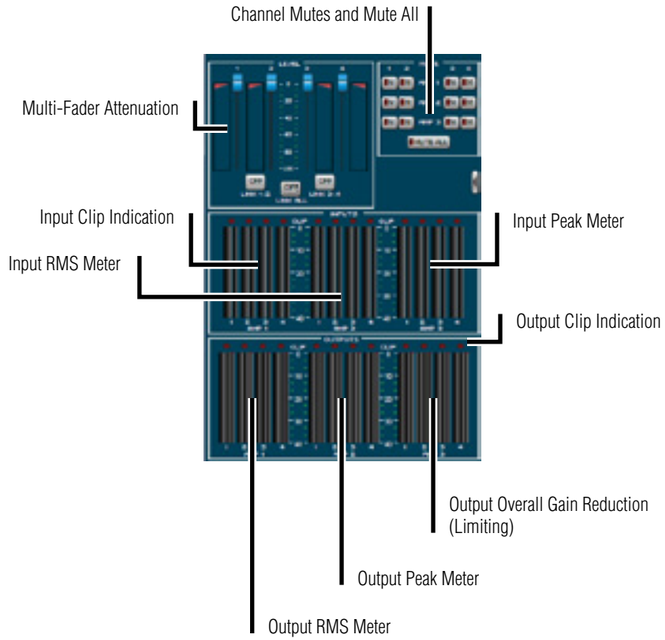
See page 42 for details.

HiQnet™ Software

Preset Tab



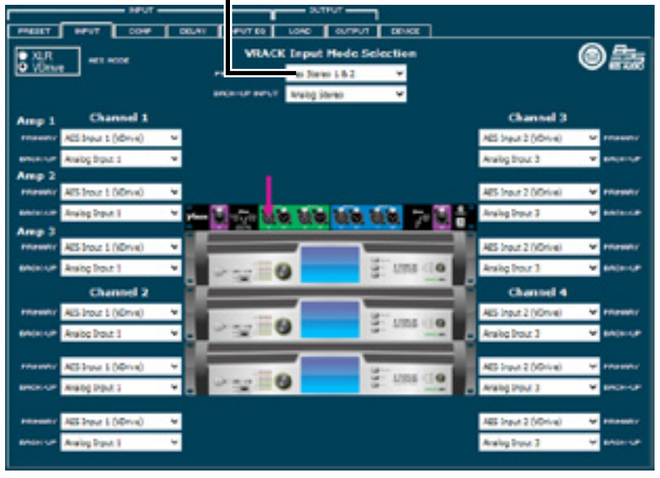
Monitoring, Mutes, and Attenuation



HiQnet™ Software

Input Tab

Select the desired input mode you would like from the drop down menu. After selecting the desired input mode, a visual representation of how to connect the VRack input panel will be shown.



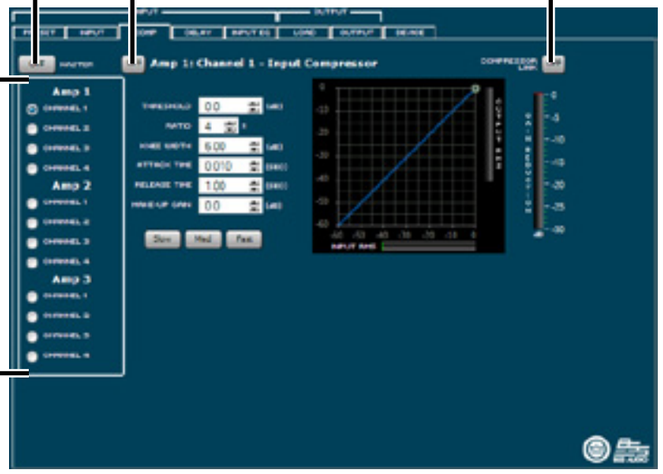
Compressor Tab

Master Input Compressor Control

Compressor Enable / Disable

Compressor Link

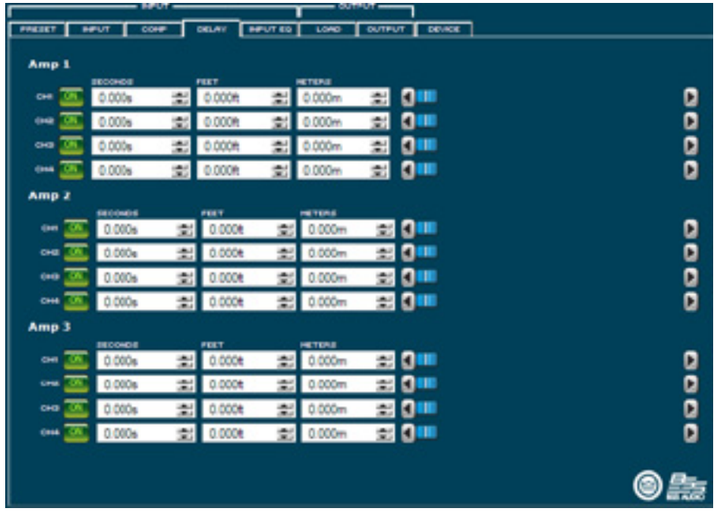
Channel-Dependent Compressor Selector



HiQnet™ Software

Delay Tab

Channel-Specific Input Delay in Feet, Meters, and Seconds



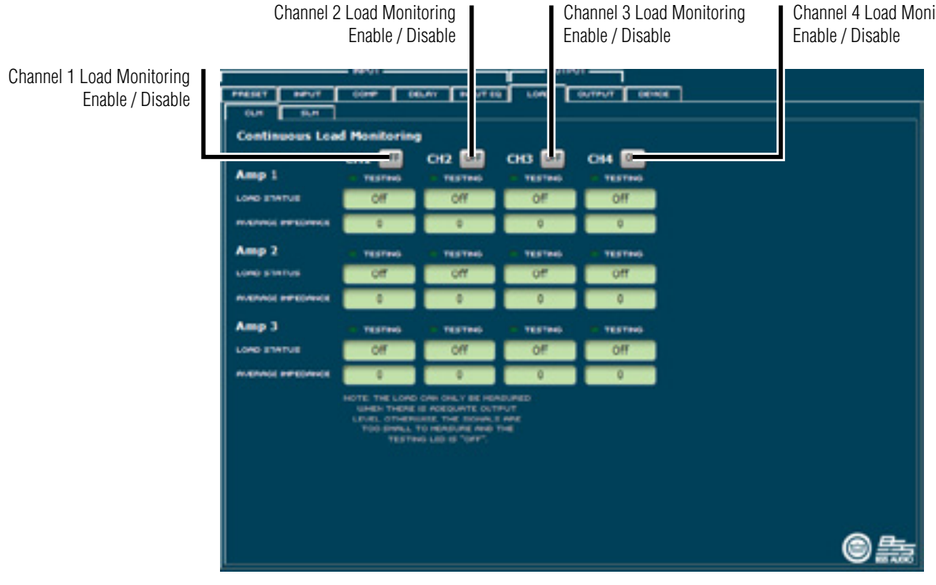
Input EQ Tab

VRack Input EQ (affects all amps in the rack)
Types available: Parametric, LP shelf, HP shelf, LP/HP Butterworth, LP/HP EQ, All pass



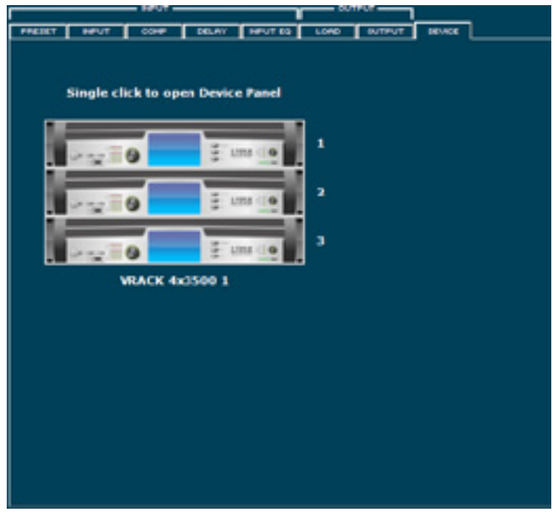
HiQnet™ Software

Load Output Tab



Device Tab

Single click on the device to select amplifier-specific settings not included in the VRack device panel. By selecting one of the amplifiers, the standardl-Tech HD device panel will appear.



HiQnet™ Software

Designing and Recalling Presets

The VRack Preset Tab recalls the same preset numbers on all amplifiers; therefore, it is recommended you save system-specific presets by preset numbers.

Below is an example of how to set up a 3-Way VTX V25 preset.

Step 1: Select output mode for the application. This example is 3-way, done using OEM JBL Pro factory presets. (Available in c:\…\My Documents\HPro… or online at www.jblpro.com)

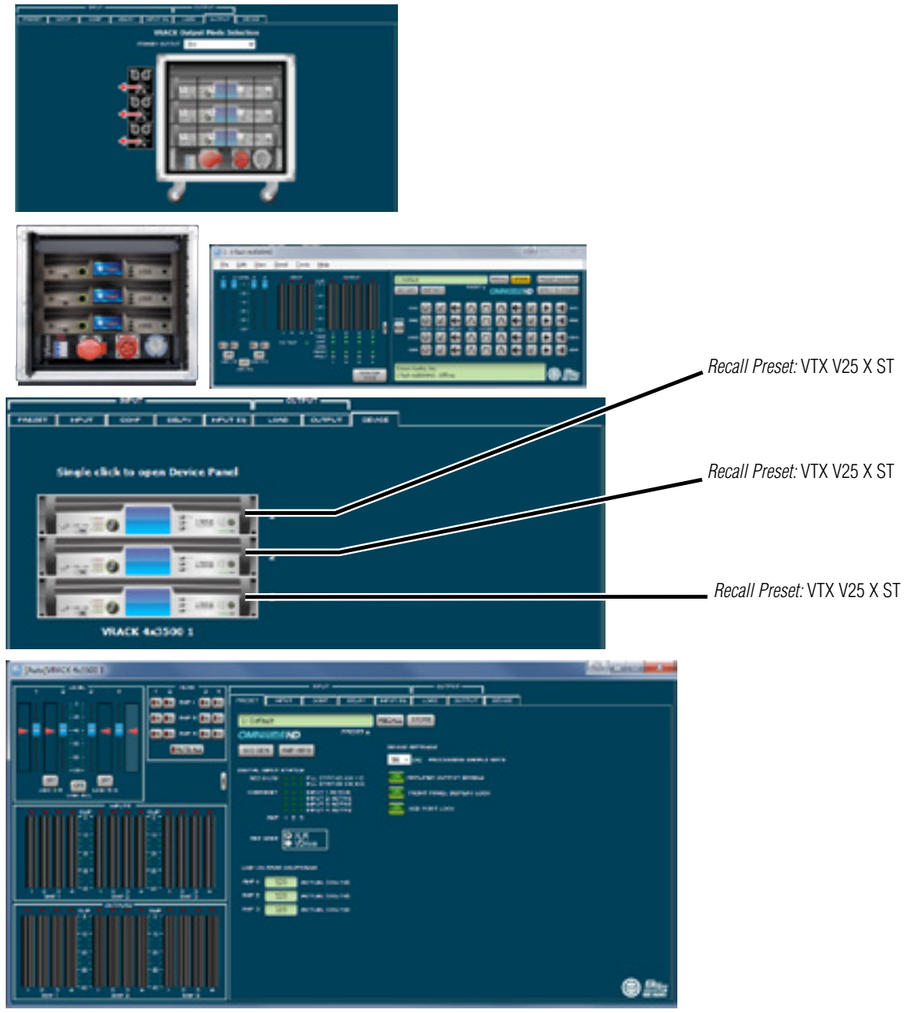
Step 2: Open the device panel for the amplifier and load bandpass presets based on above Output Operation Mode.

Step 3: Open the device panel for the amplifier and load bandpass presets based on above Output Operation Mode.

Step 4: Store presets as VTX V25 X ST VRACK, in an empty memory location in all 3 amplifiers.

Step 5: Repeat as needed for 60 and 80 crossovers.

Step 6: Recalling preset will reconfigure VRack amplifiers for desired operation.



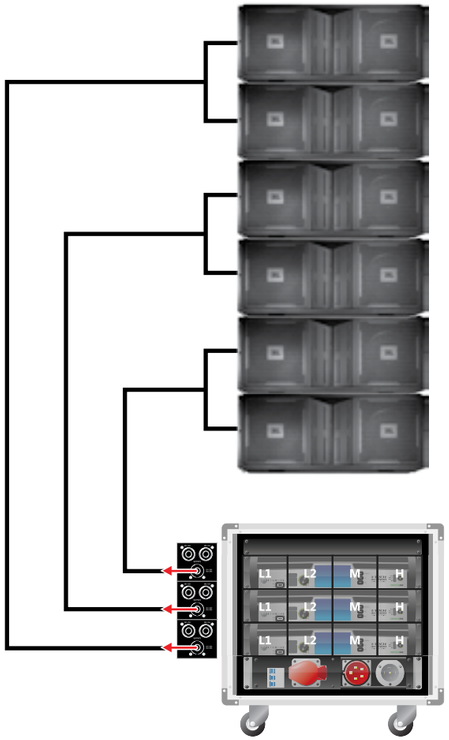
System Diagrams

3 Way
6 x VT4889

On Each Amplifier

No.	Section	Load
2	HF	8 ohm
2	MF	4 ohm
2 x 2	LF	2 x 4 ohm

VT 4889/4888



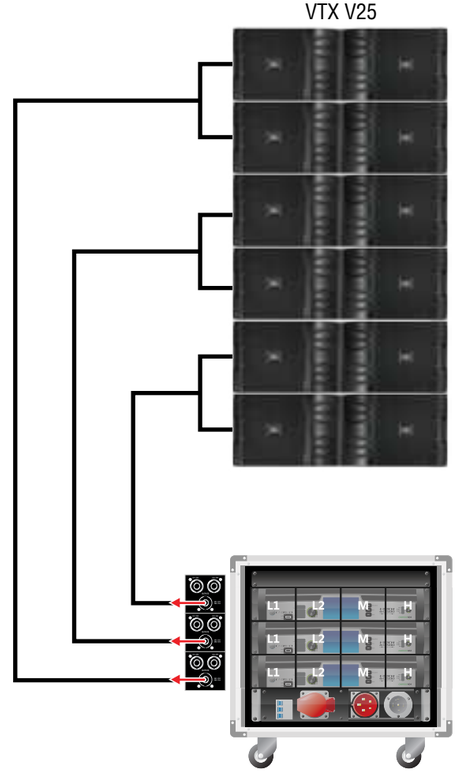
System Diagrams

3 Way
6 x VTX V 25

On Each Amplifier

No.	Section	Load
2	HF	8 ohm
2	MF	4 ohm
2 x 2	LF	2 x 4 ohm

VTX V25

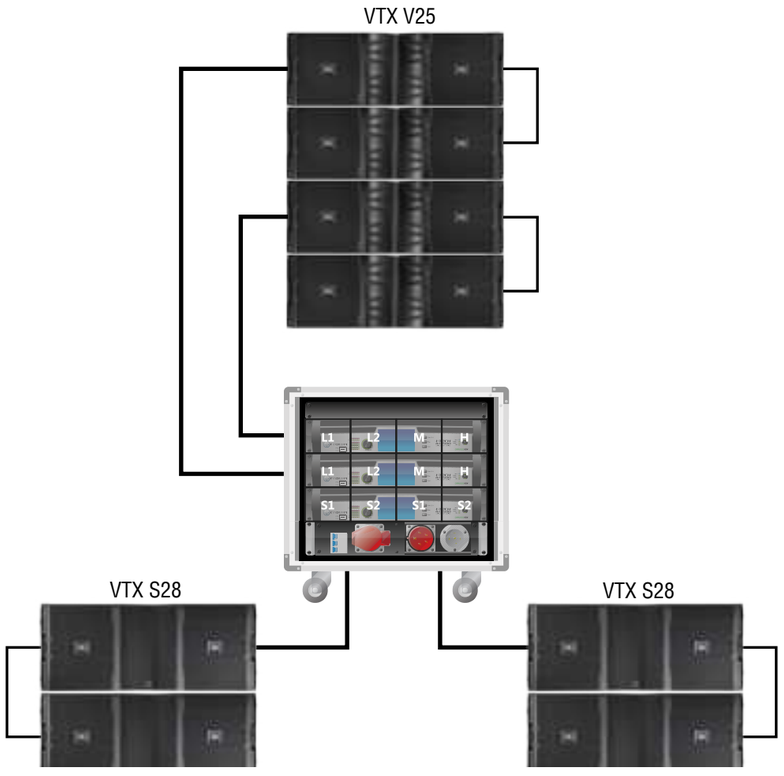


System Diagrams

3W
4 x VTX V25 + 4 x VTX S28

On Each Amplifier

No.	Section	Load	Channel
2	HF	4 ohm	CH. 4
2	MF	4 ohm	CH. 3
2 x 2	LF	4 ohm	CH. 2 & CH. 1
2	S1	4 ohm	CH. 1
2	S2	4 ohm	CH. 2

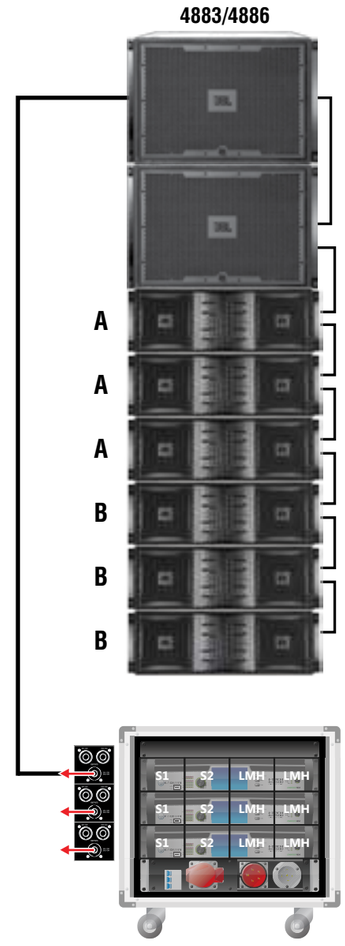


System Diagrams

Passive + Sub
6 x VT4886 + 2 x VT4883

On Each Amplifier

No.	Section	Load	Channels
3	LMH (A)	4 ohm	CH. 4
3	LMH (B)	4 ohm	CH. 3
2	S1	4 ohm	CH. 2
2	S2	4 ohm	CH. 1



Crown Audio Factory Service Information

Shipping Address: Crown Audio Factory Service, 1718 W. Mishawaka Rd., Elkhart, IN 46517-9439

PLEASE PRINT CLEARLY

SRA #:_____ (if sending product to Crown factory service)

Model:_____ Serial number:_____ Purchase date: _____

PRODUCT RETURN INFORMATION

Individual or business name: _____

Phone #: _____ Fax #:_____ E-mail:_____

Street address (please, no P.O. Boxes): _____

City: _____ State/Prov:_____ Postal code: _____ Country:_____

Nature of problem: _____

_____

_____

_____

_____

Other equipment in your system: _____

If warranty is expired, please provide method of payment. Proof of purchase may be required to validate warranty.

PAYMENT OPTIONS

☐ I have open account payment terms. Purchase order required. PO#: _____ ☐ COD

☐ Credit Card (Information below is required; however, if you do not want to provide this information at this time, we will contact you when your unit is repaired for the information.)

Credit card information:

Type of credit card: ☐ MasterCard ☐ Visa ☐ American Express ☐ Discover

Type of credit card account: ☐ Personal/Consumer ☐ Business/Corporate

Card # _____ Exp. date:_____ *Card ID #:_____

*Card ID # is located on the back of the card following the credit card #, in the signature area. On American Express, it may be located on the front of the card. This number is required to process the charge to your account. If you do not want to provide it at this time, we will call you to obtain this number when the repair of your unit is complete.

Name on credit card: _____

Billing address of credit card: _____

_____

_____

CUT ON THIS LINE

PRODUCT REGISTRATION

Crown Audio, Inc.
1718 W. Mishawaka Rd.
Elkhart, IN 46517-9439
Phone: 574-294-8000
Fax: 574-294-8329
www.crownaudio.com

Online registration is also available at http://crownweb.crownintl.com/webregistration.

**Warranty is only valid within the United States of America. For information on Warranty outside of the U.S.A, please contact your local distributor.*

When this form is used to register your product, it may be mailed or faxed.

Crown Audio, Inc.
1718 W. Mishawaka Rd.
Elkhart, IN 46517-9439

Fax: 574-294-8329

Please note that some information is required. Incomplete registrations will not be processed. * Indicates required information.

OWNER'S INFORMATION – PLEASE PRINT

* First name:_____ Middle initial:_____ * Last name:_____

Company: _____

* Mailing address:_____

* City: _____ * State:_____ * ZIP code:_____

* Country: _____ E-mail address:_____

* Phone # (include area code): _____ Fax #:_____

PRODUCT INFORMATION

* MODEL e.g., IT8000, CDi1000, PCC16	* SERIAL # e.g., 800000000	* PURCHASE DATE mo/day/yr
_____	_____	____/____/____
_____	_____	____/____/____
_____	_____	____/____/____
_____	_____	____/____/____

Product purchased from:*(Business/Individual)_____ Country:_____

Comments: _____

_____

_____


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