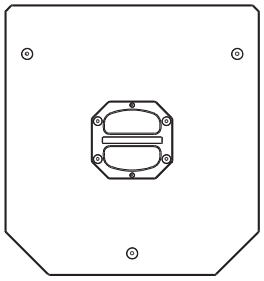
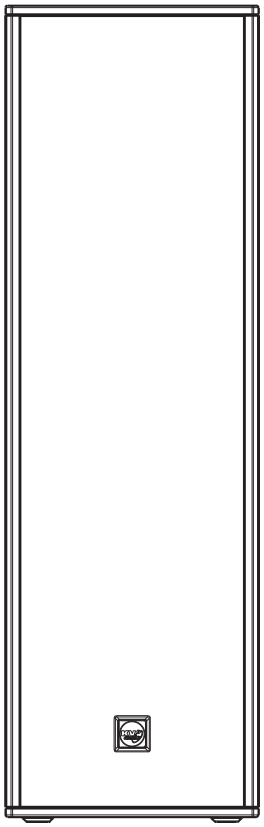
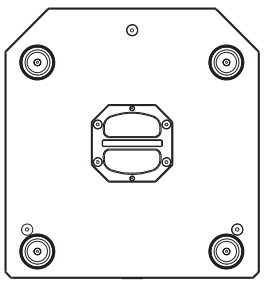
ESR Series User Guide

- ESR3000
- ESR215







The future of sound. Made perfectly clear.

At KV2 Audio our vision is to constantly develop technologies that eliminate distortion and loss of information providing a true dynamic representation of the source.

Our aim is to create audio products that absorb you, place you within the performance and deliver a listening experience beyond expectation.

Contents

ESR series

ESR3000

ESR215

ESR3000, ESR215

Thank you for purchasing this KV2 Audio, ESR series system, consisting of the ESR3000 stereo controller/amplifier unit, two ESR215 speakers and optional variants of subwoofers.

The ESR range has been developed for a particular niche in the market, where an all in one box is needed to give clear detailed reproduction over a wide area. The ESR215 and 212 are three way full range enclosures with wide dispersion characteristics. They can be used vertically for theatre, church or cultural centre type installations, or horizontally mounted to give excellent coverage over a tiered seating area for stadium or grandstand type applications.

Similar to our popular ES range, the ESR cabinets are fully active and driven by a proprietary amplifier, which delivers equalized, and time aligned accurate signal to each of the components. Two ESR215 cabinets can be driven by a single ESR3000 High Definition Amplifier, which houses all signal processing and amplification, as well as providing control for two different external subwoofer cabinet configurations if required.

In situations where extended bass response is not needed, but full range high definition audio reproduction with extremely good coverage is required, the ESR Range offers an ideal solution. Economies of scale are achieved by the requirement of only one ESR amplifier, to run a three way active stereo system where other systems would require processors and multiple amplifiers to achieve a similar configuration.

This manual contains important information on operating the ESR system correctly and safely. Please take some time and read this manual to familiarize yourself with the advanced features of this system.

The ESR3000 Amplifier is a three-way, active control and amplification system, specifically designed for the KV2 Audio ESR series loudspeaker systems. It houses all signal processing and amplification, as well as providing control for external subwoofer cabinet configurations, and to operate additional subwoofer cabinets if needed. External subwoofers are powered by the external subwoofer amplifier (VHD3200).

The amplifier compliment and configuration inside the ESR3000 Amplifier is as follows:

High Frequency - 100-watt, Class AB, Push pull, Low intermodulation design.

Mid Frequency - 200-watt, Class AB, Push pull, Low intermodulation design.

Low Frequency - 1000-watt, High-efficiency, Current-enhancing switch mode technology with Linear Active Filter.

In most cases it would be advisable to use a KV2 Audio Line driver (LD4) in addition at the mixer end, to ensure that the line to the amplifier is driven correctly and the signal integrity maintained.
Although this system is simple to operate, improper use can be dangerous. This is a very high-powered device that can put out high voltages and sizeable currents. Always use safe operating techniques with the SL series system.

FOR YOUR SAFETY, READ THE IMPORTANT PRECAUTIONS SECTION AS WELL AS THE INPUT, OUTPUT AND POWER CONNECTION SECTIONS OF THIS MANUAL.

Warranty
Your ESR System is Warrantied against defects in material and workmanship. Please refer to your supplier for more warranty details.

Service
WARNING! Electronic components, risk of SHOCK!

In the unlikely event that your product requires service, it must be returned to an authorized KV2 Audio distributor, service centre or shipped directly to the factory.
All warranty and service repairs must be undertaken by qualified technical personnel.
If the unit/s need to be shipped back to the factory, we advise using the original packing to reduce the risk of damage in transit.
Please contact your nearest KV2 Audio centre for service details. Distributors list can be found at ***www.kv2audio.com***.

ESR3000 Amplifier Rack mounted

ESR3000 - 250V part num. *KVV 987 277*
ESR3000 - 230V part num. *KVV 987 276*
ESR3000 - 115V part num. *KVV 987 275*

Features

- The ESR3000 Amplifier is a stereo, three-way, active control and amplification system specifically designed for the KV2 Audio ESR Series - **ESR215 The Ultimate Full Range System**

- Houses all signal processing and amplification as well as providing control for external subwoofer cabinet configurations.

- External subwoofer is powered by the external subwoofer amplifier (VHD3200).

- The amplifier compliment inside the ESR3000 Amplier is as follows:

- High Frequency - 100-watt, Class AB, push pull, low intermodulation design

- Mid Frequency - 200-watt, Class AB, push pull, low intermodulation design

- Bass - 1000-watt, high-efficiency, current-enhancing switch mode technology with Linear Active Filter

ESR3000 is dedicated for use only with ESR215 speakers

ESR215 - The Ultimate, Full Range, Large Scale System

part num. *KVV 987 245*

For extended bass systems the ESR3000 is equipped with internal crossovers.
You can use one, or a combination of many active KV2 Audio Bass Modules (EX Series), or you can use any passive bass speakers with proprietary amplifier (VHD3200 with VHD / ES / ESD subwoofers)

VHD3200 - Sub Woofer Amplifier

VHD3200-250V *KVV 987 176*
VHD3200-230V *KVV 987 083*
VHD3200-115V *KVV 987 084*

Unpacking

Unpack the ESR3000 Amplifier and check for any damage. If you find any damage, notify your supplier immediately. Only the consignee may institute a claim with the carrier for damage incurred during shipping. Be sure to save the carton and all packing materials for the carrier's inspection.

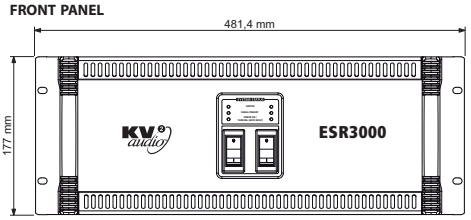
Should you ever need to ship the unit, only use the original factory packaging. If the shipping carton is unavailable, contact your supplier to obtain a replacement.

The ESR3000 Amplifier carton should contain:
- ESR3000 Amplifier control unit
- This user guide
- Two PowerCon detachable power cables

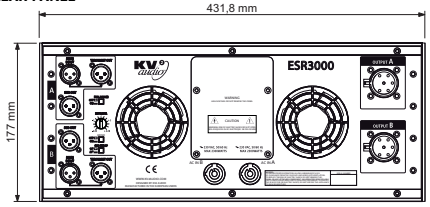
Amplifier rack mounting

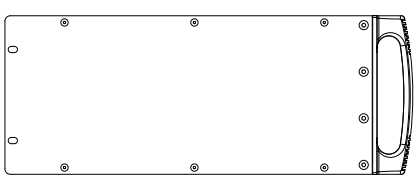
The ESR3000 Amplifier will mount in standard 19" rack systems. Integral rear mounting rack ears are also provided for additional support, do not rely on fixing and mounting the amplifier using just the front panel as support. Use eight screws and washers to mount the amplifier to the equipment rack rails. We recommend using a shock mounted rack for touring use to prolong the life of your amplifier.

FRONT PANEL



REAR PANEL





Cooling

The ESR3000 Amplifier has a comprehensive cooling system featuring chassis sealed PCB board mounting and shock mounted, speed controlled fans. This means that the cooling system never drives air across PCB boards, connectors or components, ensuring prolonged electronic component lifespan and minimizing maintenance cycles.

Air is drawn into the front of the amplifer by the two fans on the rear panel, this passes over the cooling fans of the heat sinks and exhausts through the rear. If the heat sink gets too hot, its sensing circuit will open the output relay, disconnecting the load.

It is important to have an adequate air supply at the front of the amplifier, and enough space around the rear of the amplifier to allow the cooling air to escape. If the unit is rack mounted, do not use doors or covers on the rear of the rack, the exhaust air must flow without restriction. If you are using racks with closed backs, use fans on the rear rack panel to ensure an ample air supply.
NOTE: The filters at the top and bottom of the front panel must be kept clean and free of dust and dirt to allow full operation-CHECK PERIODICALLY

AC Requirements

Two PowerCon cables are provided to connect the ESR3000 Amplifier to a suitable AC power supplies. Each cable powers each separate amplifier channel for sufficient current delivery.

The PowerCon is a connector without breaking capacity, i.e. the PowerCon should not be connected or disconnected under load or while it is live. Always isolate your AC supply before disconnecting the PowerCon connector.

The ESR3000 amplifier operates in either 115V, 230V or 250V modes. Although pre-configured at the factory, the unit's operating voltage mode can be changed in the field. Amplifier power plug must remain readily operable.

Your amplifier will be supplied preset to the voltage used in your area. The table below provides typical current draw figures for the ESR3000 Amplifier.

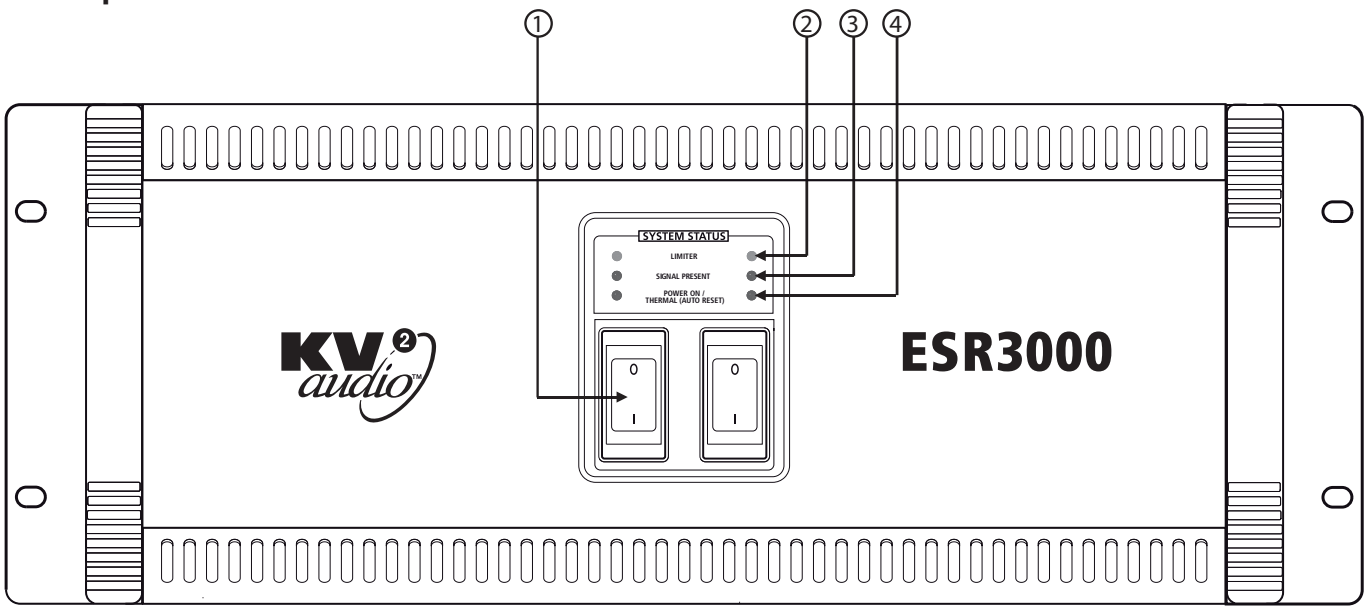
The receptacle must be connected to a fuse or circuit breaker. Connection to any other type of receptacle poses a shock hazard and may violate local electrical codes.

Do not allow water or any foreign object to get inside the amlifier. Do not put objects containing liquid on or near tne unit. To reduce the risk of overheating the amplifier, avoid exposing it to direct sunlight. Do not install the unit near heat-emitting appliances, such as a room heater or stove. this amplifier contains potentially hazardous voltages. Do not attempt to disassemble the unit. The unit contains no user serviceable parts, repairs should be performed only by factory trained service personnel.

AC Input	Current draw with amplifier running at Average Power (Each Channel)	Current draw with amplifier running at Peak Power (Each Channel)
250V	3.2A	5A
230V	3.5A	5.4A
115V	7A	11A

Current draw of ESR3000 Amplifier

Front panel



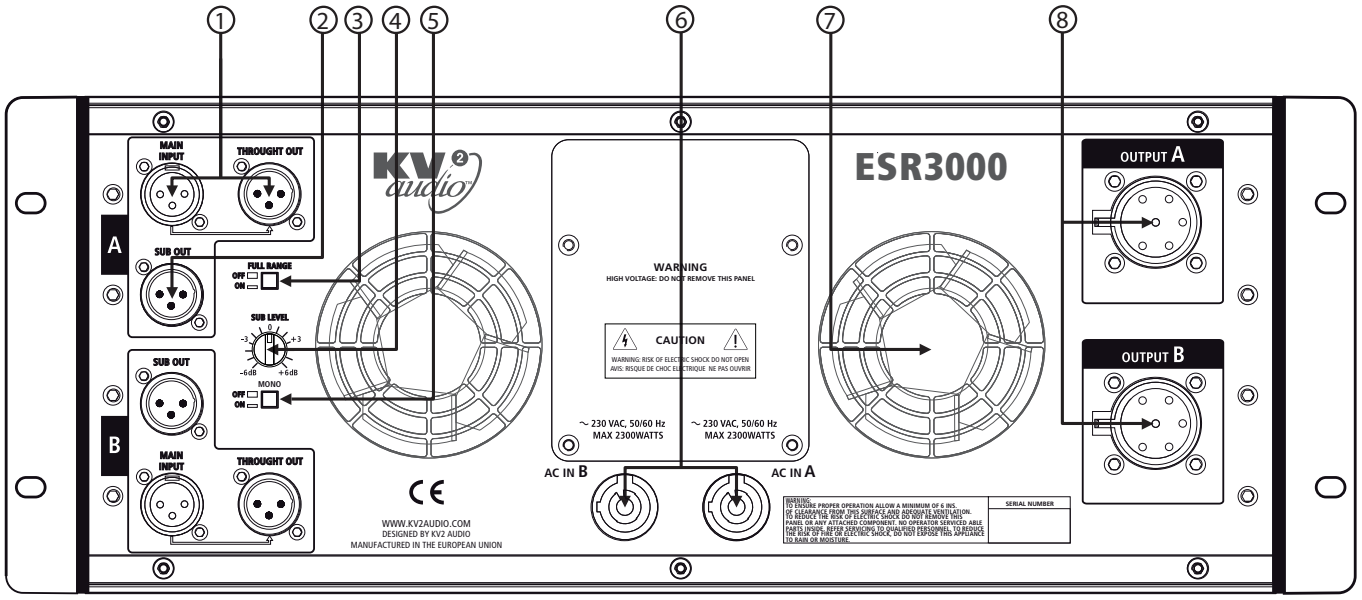
1) AC Mains Switch
The ESR3000 Amplifier has a combination AC Main switch/circuit breaker on the front panel. If the switch shuts off during normal use, push it back to the ON position once. If it will not stay on you should take the unit to qualified service personnel to have it serviced.

2) LIMITER
Yellow LED, indicates that the audio limiter has been activated. This RMS limiter protects speakers against overload.

3) SIGNAL PRESENT
Green LED indicates when audio signal is present at the amplifier input.

3) POWER ON/ THERMAL (AUTO RESET)
Green LED indicates that the AC power is on. When red, it indicates that the thermal limit of the ESR3000 Amplifier has been exceeded and the unit has shut down.

Rear panel



1) MAIN INPUT / TROUGHT OUT
This is the main system input balanced XLR connector with associated Through Signal Output connector for sending unprocessed signal to other devices in a system.

2) SUB OUT
Balanced XLR output connector, used to connect additional subwoofer. Output is active even when FULL RANGE switch is ON.

3) FULL RANGE
Switch, selects the amplifier crossover setup, when ON full range signal is reproduced by ESR215 cabinets, when OFF signal is by frequency band in conjunction with the subwoofer output setup.

4) SUB LEVEL
This is the level control for the External Sub output in the range -6 to +6 dB.

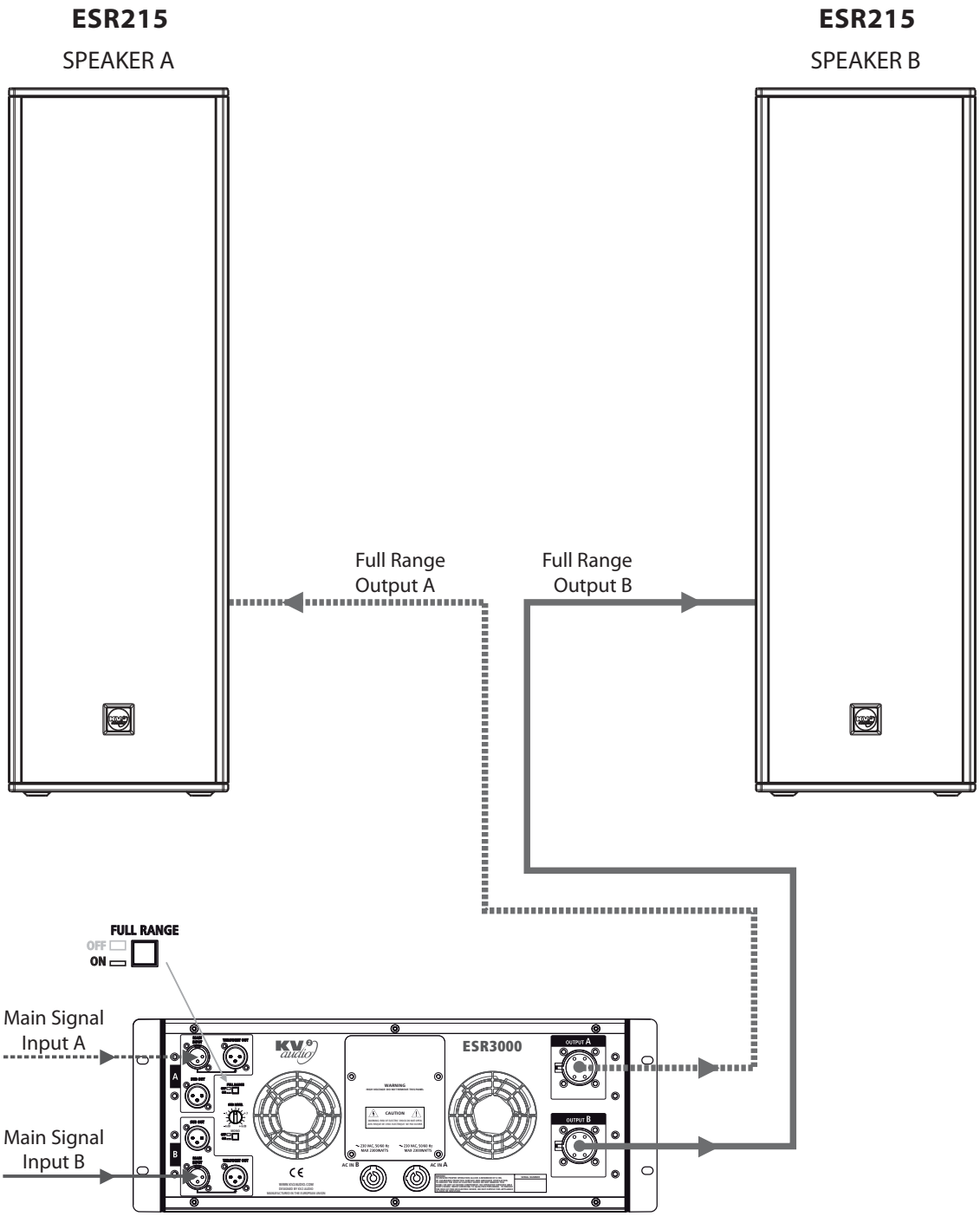
5) MONO
Switch, sets SUB OUT outputs summing SUB OUT outputs channel A and B together.

6) PowerCon Power Connectors
The ESR3000 Amplifier uses two connectors per two channel. Each connector supplies one channel. They accept standard PowerCon terminated AC Mains cables.

7) Fans
The cooling fans operate continuously while the amplifier is on. An internal temperature sensor increases the speed of the fans during high temperature conditions. Air enters through the front grille and exits through the rear. Be sure to allow adequate air flow to the front of the rack in which the ESR3000 Amplifier is mounted.

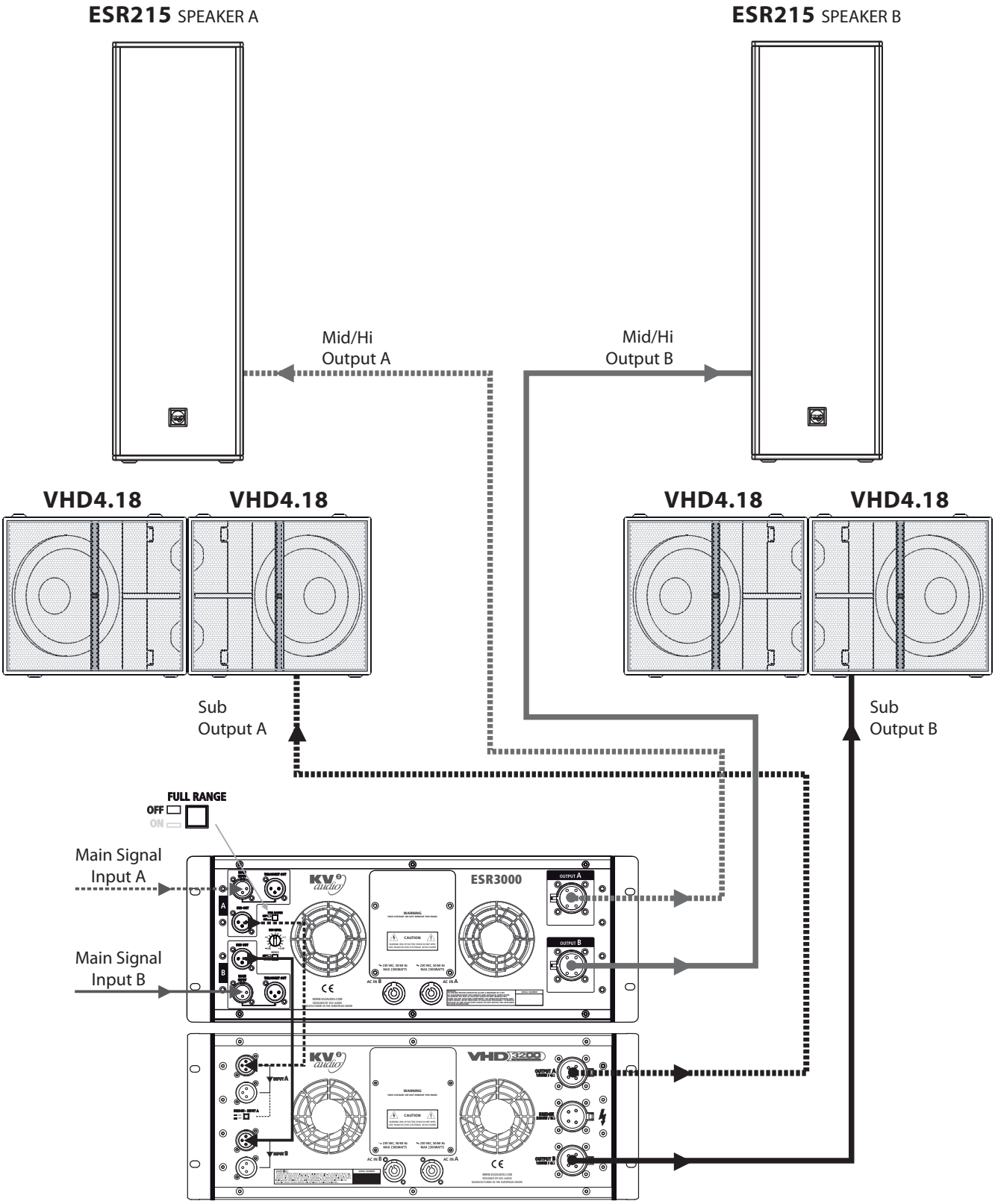
8) Speaker EP6 Connectors
Accepts a standard EP6 terminated loudspeaker cable for connecting up to a single ESR215 cabinet. We recommend using 2.5mm/core cables.

Full range setup



Set ESR3000 Amplifier to FULL RANGE ON mode. ESR215 cabinets plays full range signal.

External subwoofer setup



Set ESR3000 Amplifier to FULL RANGE OFF mode. Signal is crossed over at Hi/Mid for ESR215 cabinets and SUB for external subwoofer.
SUB SET UP LEVEL setting depends on which subwoofer unit is used.

Output Channels	
Number of Channels	*2 (stereo)*
Total Output Power	*2x 1300W*

High Frequency Amplifier Specification	
Type	*Class AB - Push Pull - Low IM Design* *Transformer balanced output*
Rated Continuous Power	*100W*
Distortion	*<0.02%*
Operating Bandwidth	*2,5kHz ÷ 40kHz*

Mid Frequency Amplifier Specification	
Type	*Class AB - Push Pull - Low IM Design* *Transformer balanced output*
Rated Continuous Power	*200W*
Distortion	*<0.02%*
Operating Bandwidth	*400Hz ÷ 2,5kHz*

Low Frequency Amplifier Specification	
Type	*High efficiency, Current-enhancing switch mode*
Rated Continuous Power	*1000W*
Distortion	*<0.02%*
Operating Bandwidth	*20Hz ÷ 400Hz*

Signal Input	
Input Sensitivity	*1V RMS*
Input Impedance	*20kΩ (balanced)*

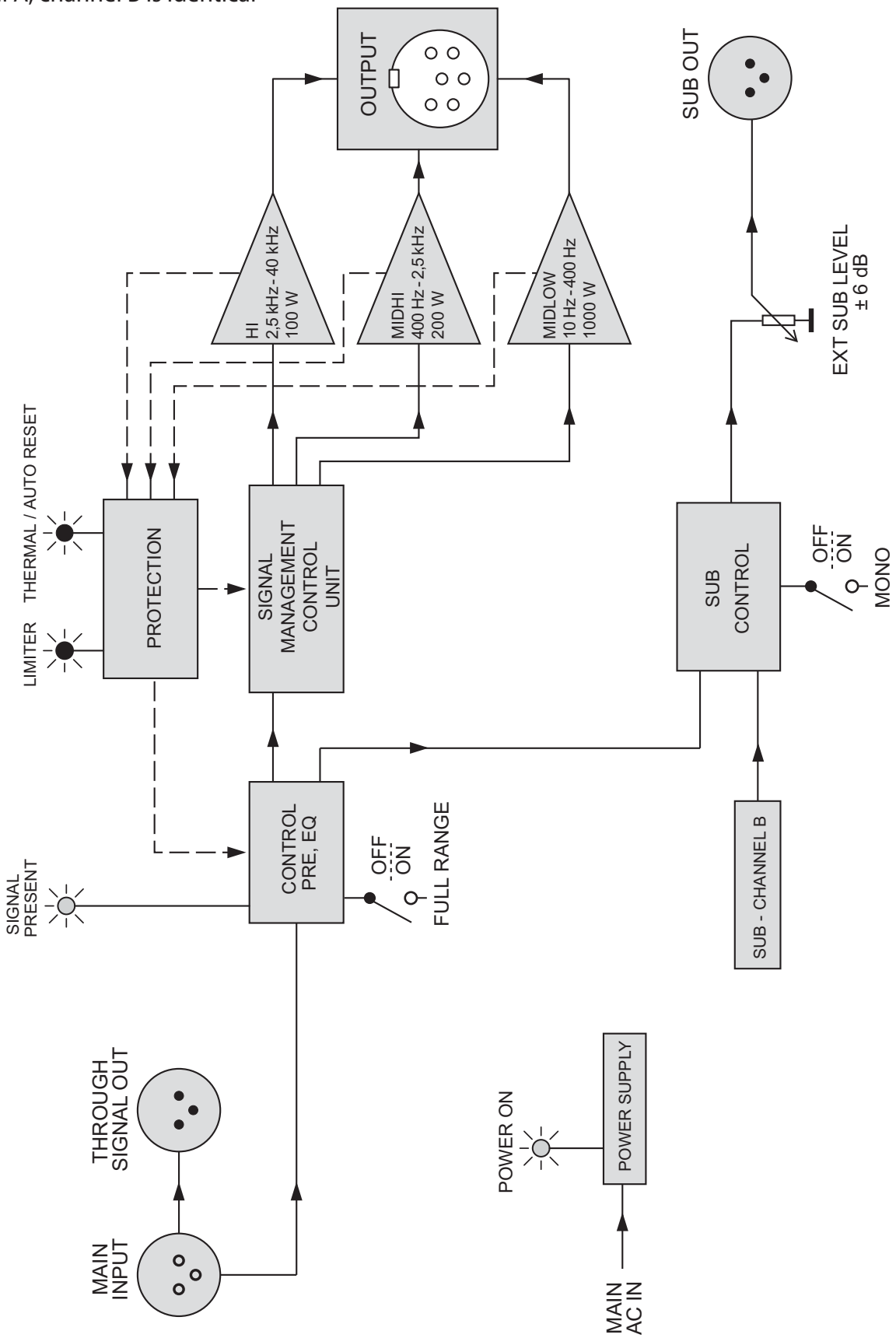
Speaker Output	
Speaker Output	*2x EP6*

Power	
Power Connector	*2x Neutrik PowerCon®*
Operating Voltage	*115V / 230V / 250V*
Operating Voltage Range	*100÷120V@60Hz | 205÷240V@50Hz | 225÷260V@50Hz*
Recommended Amperage	*2x10A 115V | 2x5A 230V | 2x5A 250V*

Physical Dimensions	
Height	*177.8mm (7.0"), 4RU*
Width	*483mm (19.0")*
Depth	*495mm (19.5")*
Weight	*36kg (79.37lbs)*

ESR3000 block diagram

Channel A, channel B is identical



ESR 215
FULL RANGE MODULE

ESR215 - The Ultimate, Full Range, Large Scale System
part num. *KVV 987 245*

Description

The ESR215 is a dedicated Full Range System.
Incorporating Patent Pending-Proprietory components, specifically matched to bespoke electronics. Exceptionally flat frequency response and Very High Defnition sound system. Emphasizes every detail and nuance of a performance and transfers the atmosphere to each and every audience member.

ESR215 Applications

- Very high quality fixed installations
- Professional portable PA Systems for large format AV, speech and multimedia playback
- Live music applications
- Professional DJ loudspeaker systems
- Classical music amplification and reproduction
- Audiophile, very high quality system
- High quality studio monitoring

ESR Full Range Sound System Benefits

Total flexibility
ESR Series does not require a large number of speakers. Provides a full range, very high quality sound from single, small, location. For extended bass use from a wide range of subwoofers. Subwoofers can be placed in a large place range, because of 70Hz crossover point between ESR module and subwoofer.

Superb sound
Greater dynamic range than any current active design. Features Very High Definition technology with Super Analog amplifier.

Easy set-up
Plug-and-play connection to ESR2800 amp/processor module.
Cabinet features top handles, seven suspension points and "integral feet" for easy positioning on stage.

Requires ESR3000 unit for control electronics and amplification.

ESR3000-250V	*KVV 987 277*
ESR3000-230V	*KVV 987 276*
ESR3000-115V	*KVV 987 275*

Features

- High-output, full-range 3-way loudspeaker system
- 132dB sustained output
- Wide dispersion at high frequencies, controlled at low-mids to reduce indoor reflections
- Mid/High horn design provides optimized transducer loading and controlled dispersion
- Patent-Pending 3" diaphragm nitride-titanium compression driver with complex geometry phase plug for higher output and lower distortion performance and neodymium
- Eight-inch midrange driver with 3" (76mm) neodymium magnetic motor structure for increased control and output and decreased distortion and weight
- Proprietary midrange heat dissipation system controls voice coil temperature, ensures high dynamics and extends transducer lifespan
- Front-loaded, 15-inch mid-bass driver with 3.00" (76mm) voice coil assembly and ferrite magnetic motor structure
- Professional, exterior-grade Baltic birch construction with wear-resistant polymer coating Proprietary corner and side handle designs for simplified handling and carrying
- Acetal copolymer high impact, low friction feet are asymmetrically located on three sides allowing vertical or horizontal system set up, lock-in and easy cabinet movement
- Six internal corner and one back brace with M10 suspension points and top and bottom handles with M10 suspension points.
A total of 17 suspension points are available for custom installation applications
- Requires ESR3000 unit for control electronics and amplification

The **ESR215** is a 3-way high output, active-driven, full range Loudspeaker module. It is designed as part of a sound reinforcement speaker system that includes the ESR3000 system control and amplification system.

The ESR215 Loudspeaker system benefits from being designed exclusively to operate above 35 Hz. By optimizing the ideal operating band pass of each system component, the ESR215 can achieve extremely high output levels consistently and safely.

Active-driven by the ESR3000 unit

Power, electronic crossovers, phase alignment, equalization, time correction and speaker protection are provided within the ESR3000 unit.
This "one plug in, one-plug-out" system ensures fast, easy set up and complete control. It gives you the benefits of active sound reinforcement technology, yet locates the electronics in an easy-access rackmount module.

Together, the ESR215 and ESR3000 unit deliver the highest dynamic range of any system currently available, providing new levels of clarity, depth and resolution.

Advanced compression driver

KV2 Audio's transducer partner, 18 Sound in Cavriago, Italy, manufactures and co-develops all ESR215 components. The compression driver is a 3-inch nitride-titanium diaphragm design, featuring a complex geometry phase plug that dramatically lowers distortion, eliminates ring modes and provides clearer, ripple free performance.

Wide dispersion horn

The ESR215 features a mid/high integrated horn design with a number of unique features. The horn design is based on constant directivity geometry with an emphasis on maintaining low transducer compression ratios, high output and wide dispersion (110˚ x 40˚). The midrange speaker with precisely designed heat sink midrange "chamber". The combination provides optimal cone loading and heat dissipation. Further loading and dispersion is controlled through precision phase plug.

Heat-resistant midrange

Midrange frequencies between 400Hz and 2.5kHz are reproduced by a eight-inch midrange speaker that provides 108 dB of sensitivity (1 watt / 1 meter) when coupled with the integrated horn. The magnetic motor assembly features a high temperature 3" (76mm) diameter voice coil assembly and extensive use of neodymium. Because of the limited linear movement of most midrange transducers - usually 2-3mm - ventilation of the voice coil assembly and magnetic structure is poor and failure rate from heat fatigue is high. The ESR215 midrange dissipates heat passively through the use of a massive heat sink midrange chamber. When combined with the ESR3000 unit control electronics, the system provides high output levels safely and consistently over infinite periods of time and dramatically reducing heat associated transducer problems such as power compression and decreased dynamics.

Neodymium bass transducer

The ESR215 features a fifteen-inch ferrite bass speaker with front loaded bass reflex design. Great advantage of the ferrite structure is long-term stability of parametres and relative resistances to high temperatures.
The fifteen-inch mid bass driver for the ESR215 was designed by 18 Sound.

The ESR215 bass transducer reproduces frequencies from 35Hz to 500Hz. The bass transducer is very precise and fast with high sensitivity. The high efficiency ferrite motor provides an extraordinary amount of force that delivers complete control of the cone mass and a high overall weight loss.

Easy to set up

The ESR215 is an aesthetically pleasing - looking enclosure featuring a number of ergonomically designed components that make speaker easy to set up and use.

ESR215 features the two top handles for pick up and reposition with additional M10 suspensions point.

There are six industrial grade, internal braces placed at each corner and one internal brace on the back. Corner braces are held in places by two M10 bolts, the back brace is held by two M6 and one M10, providing a wide range of installation and suspension flexibility.

ESR215 rear panel (cable connection to ESR3000 unit Amplifier/Controller)

System Acoustic Perfomance	
Max SPL Long-term	132dB
Max SPL Peak	135dB
-3dB Response	35Hz ÷ 22kHz
-10dB Response	28Hz ÷ 28kHz
Crossover Point	400Hz, 2.5kHz

High Frequency Section	
Acoustic Design	Horn Loaded
High Horn Coverage Horizontal / Vertical	110° x 40°
Rotatable Horn	NO
Sensitivity	110dB
High Frequency Amplifier Requirement	100W from ESR3000 Amplifier
Throat Exit Diameter / Diaphragm Size	1.4" / 3"
Diaphragm Material	Nitirde Titanium
Magnet Type	Neodymium

Mid Range Section	
Acoustic Design	Horn Loaded
Mid Horn Coverage Horizontal / Vertical	110° x 40°
Rotatable Horn	NO
Sensitivity	108dB
Midrange Amplifier Requirement	200W from ESR3000 Amplifier
Woofer Size / Voice Coil Diameter / Design	8" / 3" / Trans Coil
Diaphragm Material	Epoxy Reinforced Cellulose
Magnet Type	Neodymium

Low Frequency Section	
Acoustic Design	Front Loaded, Bass Reflex
Sensitivity	102dB
Subwoofer Amplifier Requirement	1000W from ESR3000 Amplifier
Number of Drivers	2
Woofer Size / Voice Coil Diameter / Design	15" / 3" / Inside Outside
Diaphragm Material	Epoxy Reinforced Cellulose
Magnet Type	Ferrite

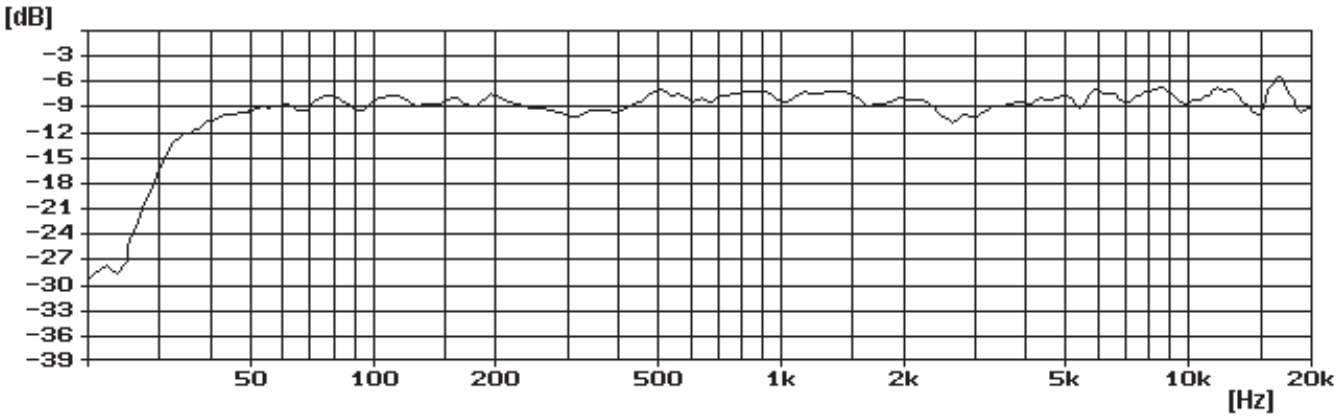
Speaker Input	
Speaker Input	Amphenol AP-6 Male

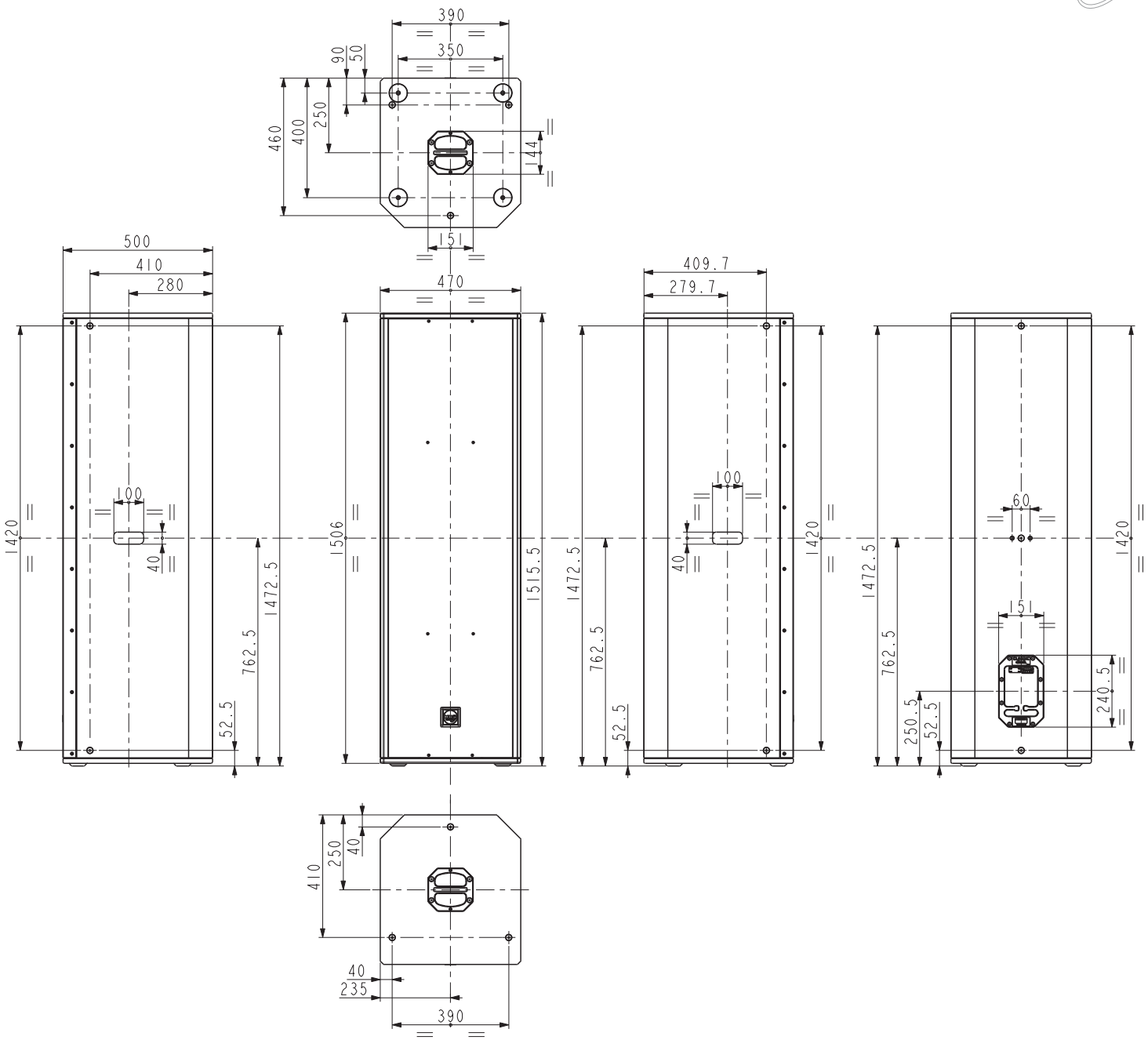
Speaker Output	
Speaker Output	-

Cabinet	
Cabinet Material	Baltic birch
Handles	4
Color	"Orange peeled" Matt Black or any RAL

Physical Dimensions	
Height	1515mm (59.65")
Width	470mm (18.5")
Depth	500mm (19.69")
Weight	71kg (156.53lbs)

Frequency response



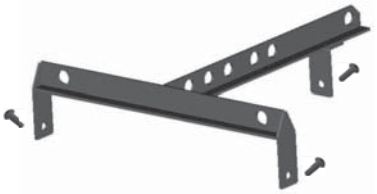
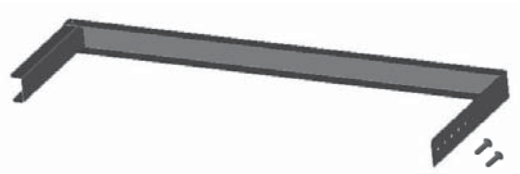


ESR215 Architects and Engineer's Specifications

The three-way, mid / high loudspeaker system shall incorporate two 15-inch mid-bass (MB) transducer a 8-inch mid range (MR) speaker and a 1.4-inch exit compression driver high frequency (HF) transducer. The LF drivers shall be mounted above and below mid / hi horn tuned for optimum mid-bass response and dispersion. The HF and MR transducers shall be loaded on a integrated, constant directivity, wide dispersion mid/high horn assembly.

The system has a nominal coverage pattern of 110° (horizontal) x 40° (vertical). The loudspeaker enclosure shall have a rectangular shape and shall incorporate, two top handles. Enclosure incorporates M10 suspension points, three M10 suspension points on the top, one in the handles, three M10 on the bottom and one M10 suspension point on the back. The speaker cabinet shall be finished with an ultra wear resistant black polymer coating and fitted with a weather resistant perforated steel grill. The system shall receive power from a separate ESR3000 Amplifer.

ESR3000 Amplifier - Controller module consisting of separate power amplifiers for high, midrange and midbass transducers as well as signal processing including electronic band pass crossover filters, phase alignment, time correction, equalization and speaker protection. The speaker system shall connect to the Amplifier/Controller Module via proprietary cables terminated in Amphenol AP-6 connectors. The three-way mid / high loudspeaker system shall be the KV2 Audio ESR215.

Vertical bracket for ESR215 part name: Vertical Bracket ESR215 part number: KVV 987 292 *- 3 pcs M10x35 included*	
Horizontal bracket for ESR215 part name: Horizontal Bracket ESR215 part number: KVV 987 305 *- 2 pcs M10x30 included*	
ES Mid/Hi speaker cable MH15, AP6 connectors - 1,5m part name: MH15 part number: KVV 987 147 *- 1,5m (5ft), Mid/Hi Module hook-up*	
ES Mid/Hi speaker cable MH60, AP6 connectors - 6m part name: MH60 part number: KVV 987 125 *- 6m (20ft), Mid/Hi Module hook-up*	
ES Mid/Hi speaker cable MH120, AP6 connectors - 12m part name: MH120 part number: KVV 987 126 *- 12m (40ft), Mid/Hi Module hook-up*	
ES Mid/Hi speaker cable MH180, AP6 connectors - 18m part name: MH180 part number: KVV 987 127 *- 18m (60ft), Mid/Hi Module hook-up*	
ES Cable kit part name: CABLE-KIT part number: KVV 987 047 *The ES Cable Pack consist of four high-quality Amphenol AP cable assemblies designed for use with ES Series.* *- 2 pcs LF15* *- 1pc LF40* *- 1pc MH60*	
Amphenol AP6 cable-mount female connector part name: AP-6-11 part number: KVV 987 050	
Amphenol AP6 cable-mount male connector part name: AP-6-12 part number: KVV 987 051	

The future of sound.
Made perfectly clear.

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