



# VHD5 Amplifiers

## User Guide

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• VHD5000 • VHD5000S • VHD5100

# 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 expectations.

# VHD5.0 Amplifiers · Important Safety Instructions



To indicate that caution is necessary when operating the device or control close to where the symbol is placed, or to indicate that the current situation needs operator awareness or operator action in order to avoid undesirable consequences.

This device is not suitable for use in places where children may be present.

## Important Safety Instructions

Before using your VHD5.0 Amplifiers, be sure to carefully read the applicable items of these operating instructions and the safety suggestions.

1. Read all product instructions.
2. Keep printed instructions, do not throw away.
3. Respect and reread all warnings.
4. Follow all instructions.
5. Do not use this unit near water, in unprotected outdoor areas or in rain or wet conditions.
6. Clean only with dry cloth.
7. Do not block any ventilation openings.
8. Install in accordance with KV2 Audio's recommended installation instructions.
9. Do not install near any heat sources such as heat radiators, heat registers, stoves or other apparatus that produce heat.
10. Do not defeat the safety purpose of the grounding type plug. A grounding type plug has two blades and a third grounding connector. The third connector is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
11. Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles. The AC mains plug or appliance coupler shall remain readily accessible for operation.
12. Only use accessories specified by KV2 Audio.
13. Install the product only with rigging specified by KV2 Audio, or sold with the loudspeaker.
14. Unplug this loudspeaker during lightning storms or when unused for long periods of time.
15. Refer all servicing to qualified service personnel. Servicing is required when the loudspeaker has been damaged in any way, such as when the power-supply cord or plug has been damaged; liquid has been spilled or objects have fallen into the loudspeaker; rain or moisture has entered the loudspeaker; the loudspeaker has been dropped; or when for undetermined reasons the loudspeaker does not operate normally.
16. Do not remove front or back panels. Removal of the panel will expose hazardous voltages. There are no user serviceable parts inside and removal may void the warranty.
17. An experienced user shall always supervise this professional audio equipment.

**CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE THE PANELS. NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED PERSONNEL.**

**WARNING:** To prevent fire or electric shock, do not expose this equipment to rain or moisture.

### SAFETY SUMMARY

To reduce the risk of electric shock, disconnect the loudspeaker from the AC mains before installing audio cable. Reconnect the power cord only after making all signal connections. Connect the loudspeaker to a twopole, three-wire grounding mains receptacle. 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 loudspeaker. Do not put objects containing liquid on or near the unit. To reduce the risk of overheating the loudspeaker, avoid exposing it to direct sunlight. Do not install the unit near heat-emitting appliances, such as a room heater or stove. This loudspeaker 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.

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**VHD5000 - part number KVV 987 334 (230V)**

**VHD5000S - part number KVV 987 356 (230V)**

**VHD5100 - part number KVV 987 438 (230V)**




## Introduction

The VHD5000 with adjacent VHD5000S and VHD5.0 Power Unit is a control and amplification system for processing and powering one VHD5.0 Mid-High enclosure and three VHD8.10 Low/Mid enclosures. It also houses all processing and control electronics for the associated downfill and subwoofer systems. The VHD5.0 Power Unit provides Electrical power distribution for amplifiers and control for the motorized VHD5 Flybar system. The VHD5 system may be extended by adding the VHD5100, two channel downfill / fill amplifier.

The VHD5000 contains separate Hi-frequency amplifiers, one for the single HF driver and a second amplifier for the double HF drivers and a Mid-frequency amplifier. The VHD5000S contains two Low/Mid amplifiers.

The VHD5000 unit features Class AB mosfet amplifier topology, with transformer-balanced outputs and high efficiency, high power bandwidth for the high frequencies, whilst the mid amplifier is a hybrid high efficiency, high power bandwidth amplifier. The VHD5000S unit features two low frequency, high efficiency, high current delivery amplifiers.

The VHD5100 unit features 2 channel three-way, active control and amplification systems. The Downfill channel is specially designed for the VHD5.1 downfill speaker and the Fill channel powers a single ESR215MkII speaker.

The VHD5 amplifiers feature automatic - switchable transformer power supplies for high efficiency power and better utilization of the available power network, to deliver maximum current for the amplifiers.

The VHD5 amplifier unit provides complete audio system control including equalisation, overdrive protection, thermal protection and user adjustable set-up parameters.

The Amplifier incorporates a graphic, 5.7" sunlight readable touch control panel for easy setup and synoptic overview over all systems, with Ethernet remote control possibility. The VHD5000 amplifier can be remotely controlled via standard Ethernet networks, or K-NET network, using a web interface. The VHD5000S amplifier is interconnected to the VHD5000 for remote control possibility and amplifier status overview.

System setup provides control of: input level (-32/+3dB), amplifier levels, Low (-6/+6dB, Hi -6/+4dB), 2 x subwoofer levels, (-6/+6dB) and downfill signal output levels, (-32/+6dB), individual mutes, long distance equalization, high frequency recovery frequency and level. Audio signal delays may be applied separately on the overall system, fill and subwoofers.

The VHD5000 amplifier provides information of speaker output status, (OK, disconnected, overloaded) and temperature status.

The VHD5000 is "Line Driver Ready" and has its own input impedance selector to accurately match-up the input impedance to the output of any mixer used. In most cases it would be advisable to use a VHD LD4 line driver in addition at the mixer outputs to ensure that the line to the amplifier is driven correctly and the signal integrity maintained.

The VHD5 amplifiers are actively cooled, air is drawn into the front of the amplifier by the two fans on the rear panel, this passes over the cooling fins of the heat sinks and exhausts through the rear.

## VHD 5000 VERY HIGH DEFINITION AMPLIFIER

VHD5000 - part number KVV 987 334 (230V)

### Application

Specifically designed as the amplification and control for the 1xMid/Hi VHD5.0 part loudspeaker systems with adjacent VHD5000S in a rack mount module

- Large scale Portable PA
- Fixed installations
- Large clubs

### Introduction

Active control and amplification unit specifically designed in conjunction with VHD5000S for powering the VHD5 loudspeaker system. The VHD5000 is equipped with many features for easy large scale speaker system use. It features all signal processing, crossover and speaker system protection. All signal processing is executed with KV2 Audio Super Audio Analog circuitry and utilize KV2's industry leading 20MHz sampling for on board time alignment and phase correction for maximum audio quality. The VHD5000 is equipped with multiple delay lines, wideband delay line for VHD5 system delay, fill output delay and two low frequency delay lines for subwoofers.

The Main input, fill output and subwoofer outputs are equipped with phase reverse and set level features.

The VHD5000 input is "Line Driver Ready", it has an input signal impedance selector switch, (10kOhm and 120Ohm) to match up low impedance signal source when driving long signal cables. In most cases it would be advisable to use a VHD LD4 Line Driver in addition at the mixer outputs, to ensure that the line to the amplifier is driven correctly and the signal integrity maintained.

The VHD5000 also features long distance eq, high frequency recovery and a signal generator. The amplifier is equipped with multiple network possibilities for easy remote control operation from networked amplifiers or website applications.

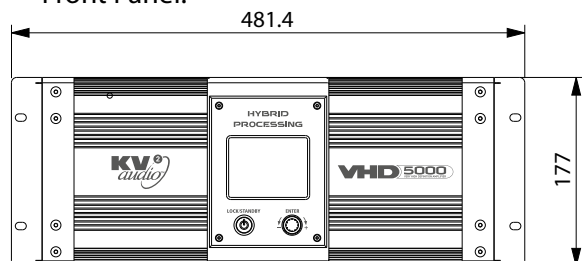
#### The amplifier compliment inside the VHD5000 is as follows:

High Frequency 1 - 300-watt, Class AB Push-Pull low IM Mosfet design with transformer balanced output.

High Frequency 2 - 600-watt, High Efficiency, High power bandwidth, low intermodulation design.

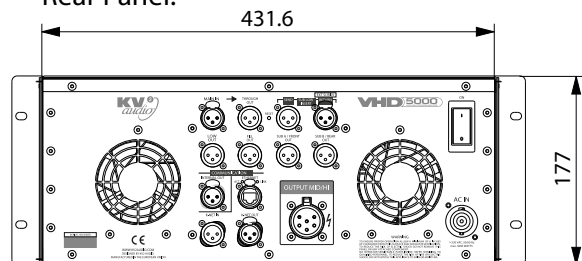
Mid Frequency - 1500-watt, High Efficiency, High Power Bandwidth, low intermodulation design.

Front Panel:

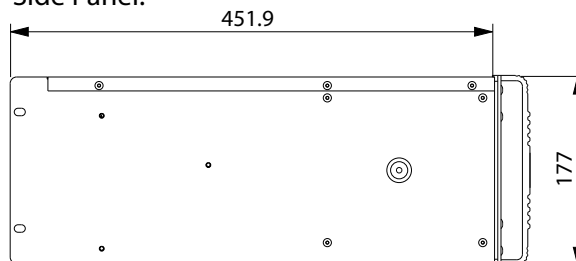


**FOR YOUR SAFETY, READ THE IMPORTANT PRECAUTIONS SECTION AS WELL AS THE INPUT, OUTPUT AND POWER CONNECTION SECTIONS OF THIS MANUAL.**

Rear Panel:



Side Panel:





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## Rack Mounting

VHD5000 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 amplifiers using just the front panel as support. Use eight screws and washers to mount the amplifier to the equipment rack rails (four for the front and four for the rear).

We recommend using a shock mounted rack for touring use to prolong the life of your VHD5000 amplifiers.

## Cooling

The VHD5000 amplifier is cooled with two shock mounted fans, that moves air from the front panel through dust filters across the heatsinks and exhausts through the rear.

Although this unit 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.

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.

## AC Requirements

Two PowerCon 32A cables are provided to connect the VHD5000 to a suitable AC power supply.

The PowerCon 32A is a connector without breaking capacity, i.e. the PowerCon should not be connected or disconnected under load or while it is live.

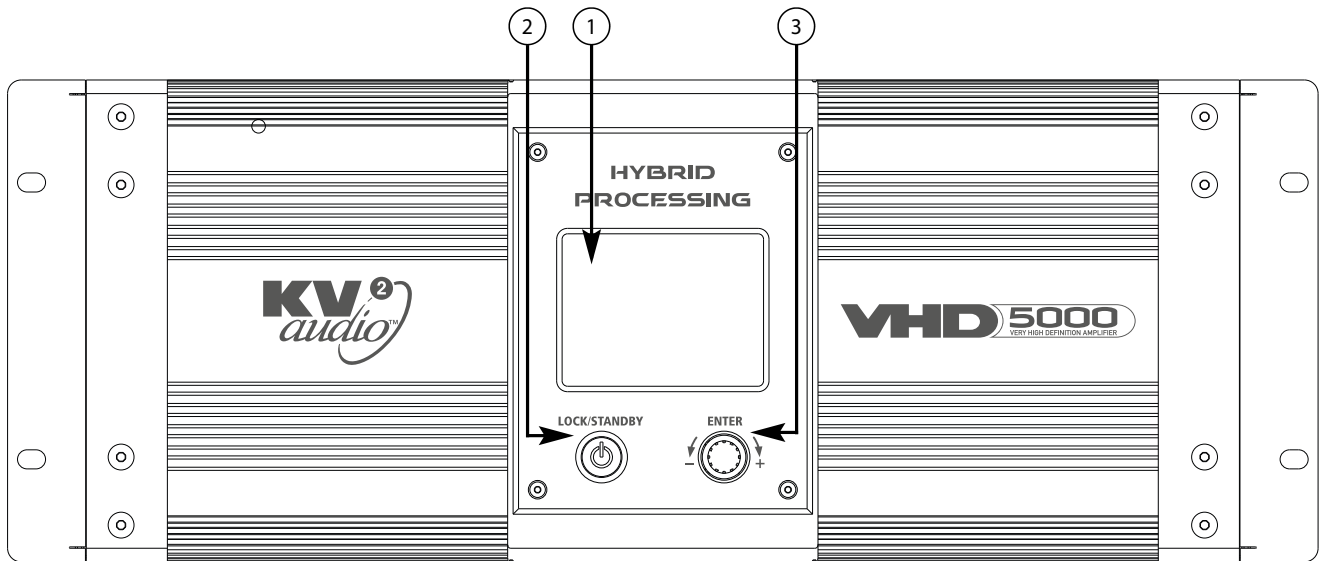
Always isolate your AC supply before disconnecting the PowerCon connector. The VHD5000 amplifiers features switchable power supply which automatically adapts for the input voltage in range from 195 to 260V AC.

AC Input	Current draw with amplifier running at Average Power (Each Channel)	Current draw with amplifier running at Peak Power (Each Channel)
200V	15A	25A
230V	13A	24A
250V	12A	23A

Remember that if you are connecting both AC cables for the VHD5000 to the same AC power source then you will need to have double the per channel current available.

VHD5000 · Getting started

## Front Panel



### 1) Sun readable touch screen display

Serves for user friendly setup of all functions of the VHD5000 and adjacent VHD5000S and VHD5 Power Unit with flybar. You can easily set levels, time delays, filters, network setups and memories. The same settings can be set using network control. Please refer to the VHD5000 software User Guide for more information.

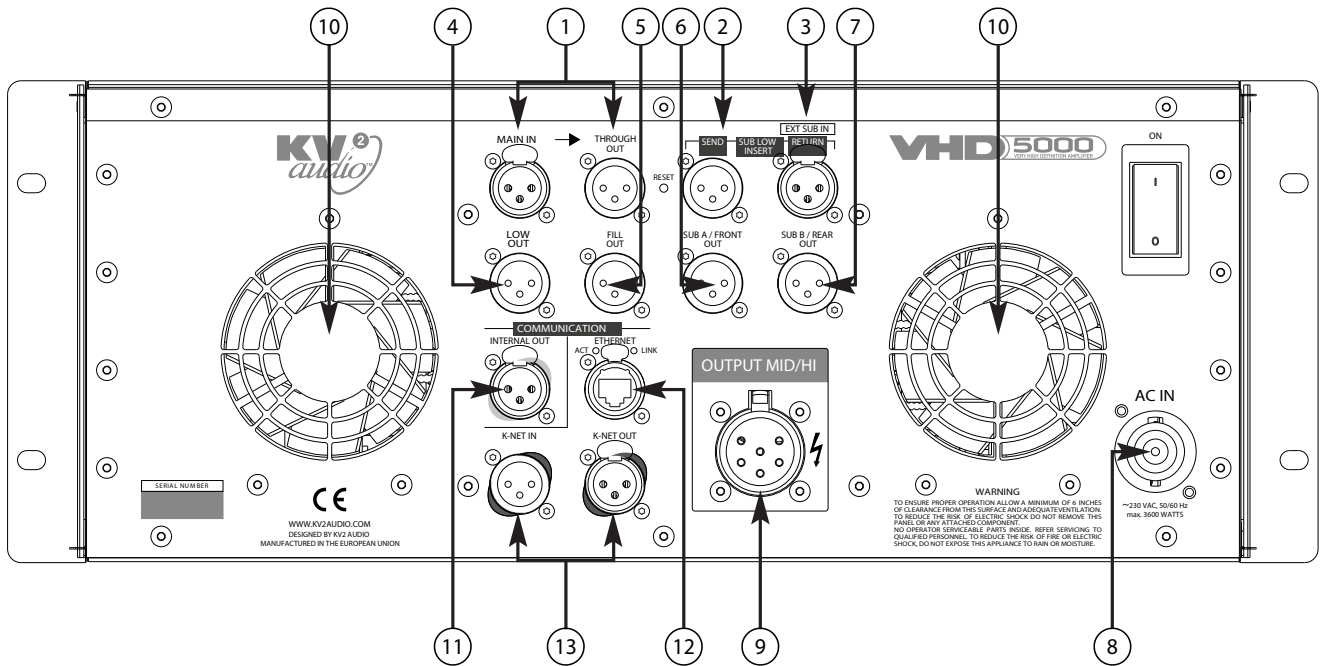
### 2) Lock / Standby

This illuminated pushbutton serves for setup lock or for standby mode when long pressed. This pushbutton is green in normal power-on state and illuminates red when standby mode is activated.

### 3) + / - Enter

The Rotation encoder with Enter push button. The encoder serves as the main way for increasing (clockwise), or decreasing (counterclockwise) values and menu positions. The encoder also serves as the ENTER button, allowing the operator to enter/leave the sub-menu within the main menus.

## Rear Panel



## SIGNAL INPUTS, OUTPUTS

### 1) Main Input / Through Signal Out

This is the main system input connector with associated 'Through Signal Output' connector for sending unprocessed signal to other devices, such as fills or other VHD5000s. The input impedance is switchable between 10kΩ and 120Ω on the display panel or remote control, the 120Ω should be selected when the VHD5000 is driven from a line driver. Where the VHD5000 is driven from a standard mixing console output, then the 10kΩ setting should be used.

### 2) Sub Low Insert Send

Sub Insert send is used when the insert function is active, when Insert is not activated, no signal is present at this output. Insert function serves for sub and low bands only and does not affect the audio quality of mid and hi band using other devices. This insert is typically used for master equalization and resonance reduction.

### 3) Sub Low Insert Return / Ext. Sub In

This Insert Return is combined with Ext. Sub Input. When Insert is activated, this input serves as a low/mid Insert input. When the External Sub Input is activated this input serves as External Sub Input. Refer to block diagram for more information.

### 4) Low Out

Serves as a low-mid signal output for the adjacent VHD5000S amplifier.

### 5) Fill Out

This serves as a fill signal output, with the possibility of tunable HPF and delay.

### 6) Sub A / Front Out

Subwoofer A signal output provides processed outputs for feeding various subwoofers. When the cardioid mode is set, it then serves as an output for the front subwoofer.

### 7) Sub B / Rear Out

Subwoofer B signal output provides processed outputs for feeding various subwoofers. When the cardioid mode is set, then it serves as an output for the rear subwoofer.



## **POWER INPUT, OUTPUTS**

### **8) PowerCon Power Connector**

Accepts a standard PowerCon 32A terminated AC cable.

### **9) Output Mid/Hi**

VHD5.0 AP6 Connector, accepts a standard AP6 terminated loudspeaker cable for connecting up to a single VHD5.0 cabinet. We recommend using 2.5 mm/core cables.

### **10) Fans**

The cooling fans operate continuously while the VHD5000 is on. An internal temperature sensor increases the speed of the fans during high temperature conditions. Air enters through the front panel dust filters and exits through the rear. Be sure to allow adequate air flow to the front of the rack in which the VHD5000 is mounted.

## **COMMUNICATION**

### **11) Internal Out**

Serves as a internal communication signal output for the adjacent VHD5000S amplifier and Power rack unit. Serves for remote control of adjacent devices.

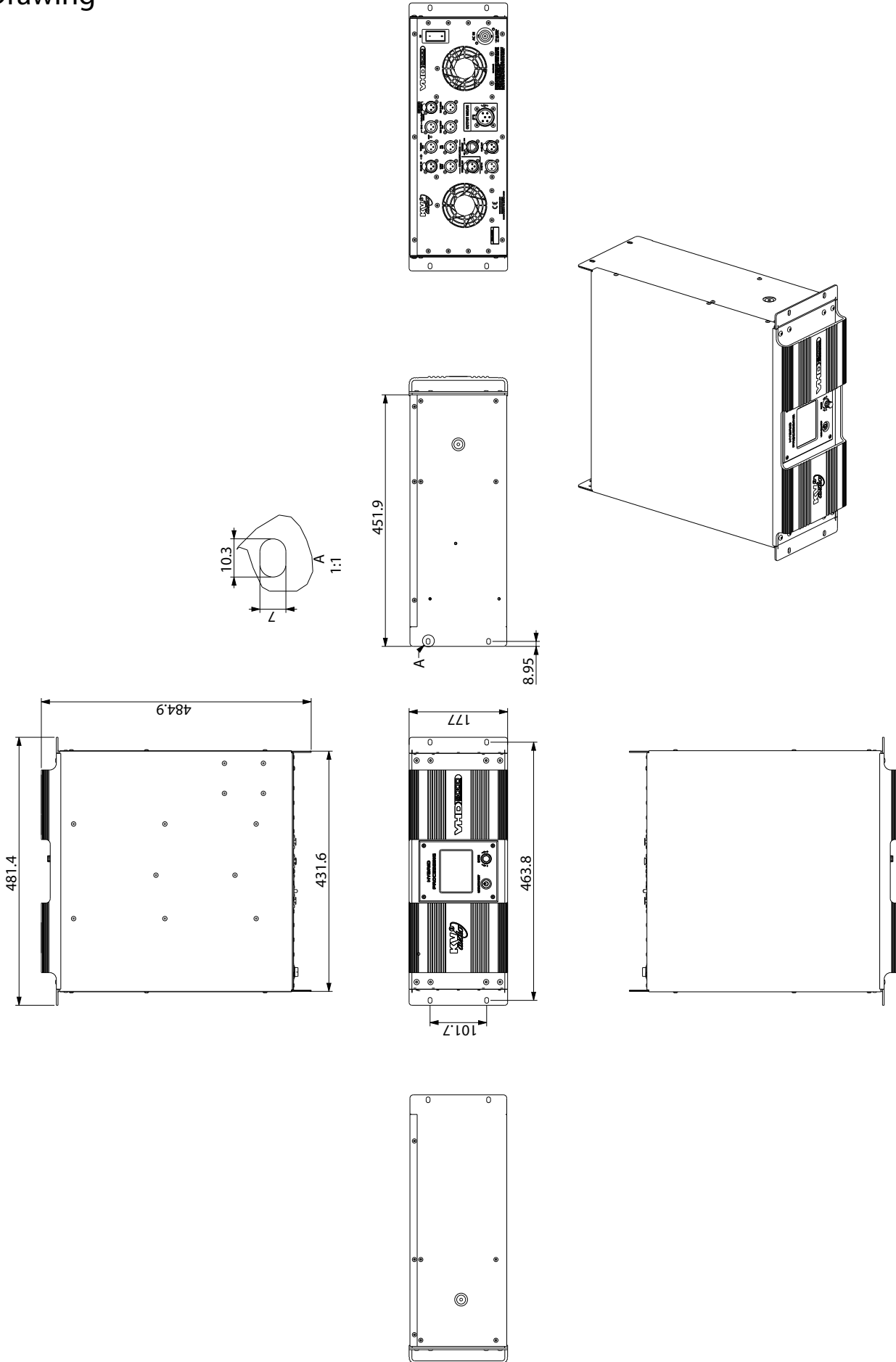
### **12) Ethernet**

Serves as a external communication port supporting Ethernet standard, accepts RJ45, T-658B wiring.

### **13) K-NET IN / K-NET OUT**

Serves as a external communication port, serial RS485 based network with termination.

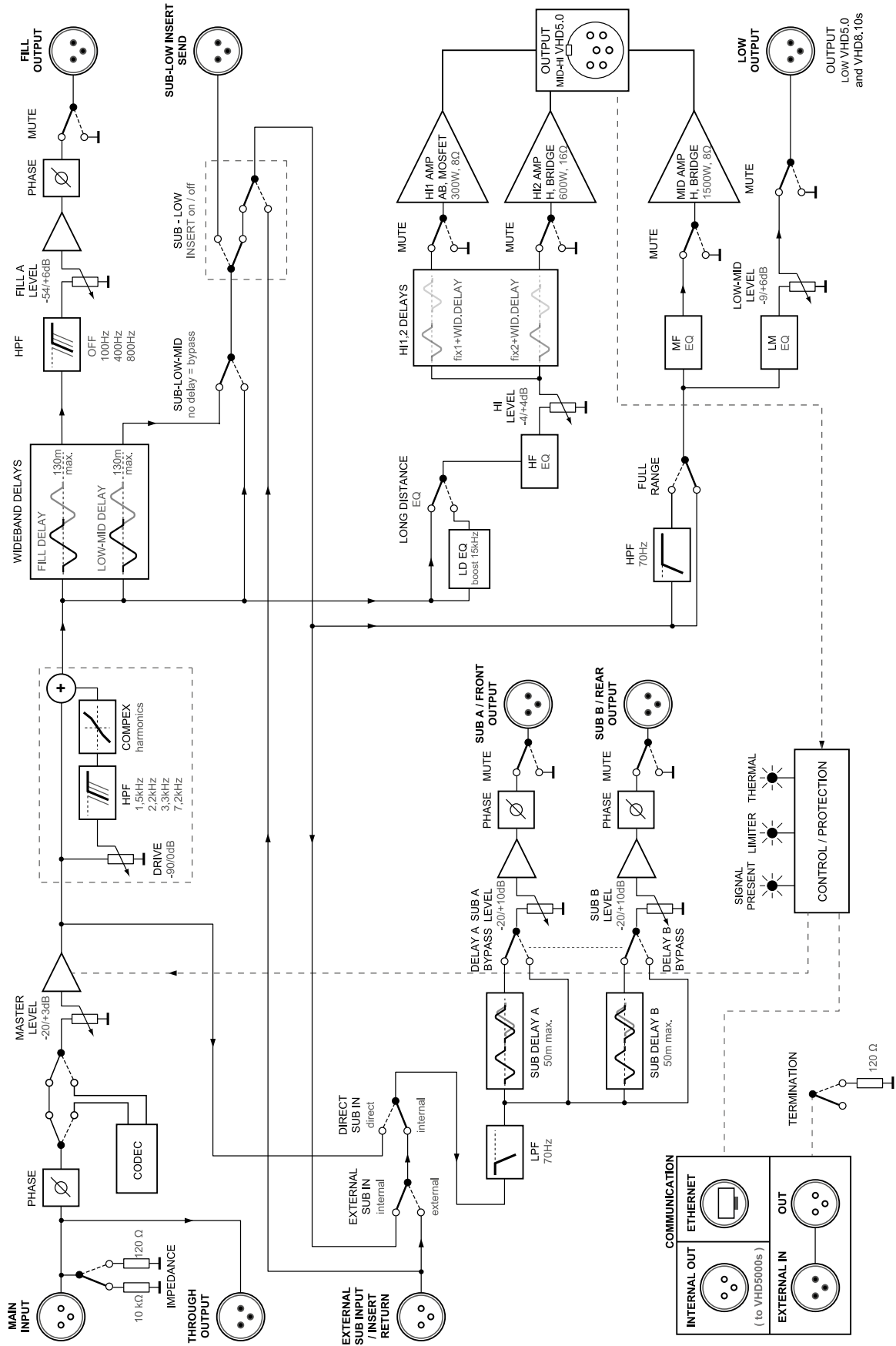
## Drawing



## Specifications

<b>Output Channels</b>	
Number of Channels	1 x VHD5.0
<b>High Frequency Amplifier 1 Specification</b>	
Type	Class AB Push-Pull low IM Mosfet design, transformer balanced output
Rated Continuous Power	300W
Distortion	< 0.02%
Operating Bandwidth	2kHz to 30kHz
<b>High Frequency Amplifier 2 Specification</b>	
Type	High Efficiency, High power bandwidth
Rated Continuous Power	600W
Distortion	< 0.05%
Operating Bandwidth	2kHz to 30kHz
<b>Mid Frequency Amplifier Specification</b>	
Type	High Efficiency, High power bandwidth
Rated Continuous Power	1500W
Distortion	< 0.05%
Operating Bandwidth	450Hz to 2kHz
<b>Signal Input</b>	
Input Channels	XLR
Input Sensitivity	1.5V RMS
Input Impedance	10kΩ to 120Ω "Line driver ready"
<b>Signal Output</b>	
Output channels	Through, Low, Sub A B, Fill, Insert
<b>Speaker Output</b>	
Speaker Output	AP6
<b>Features</b>	
Level Control	-32/ +6dB
Hi Level Control	-3/ +3dB
Mid-Bass Level Control	-6/ +6dB
Subwoofer Level Control	-6/ +10dB
System setup	3x
Indicators	5.7" sunlight readable color display
Remote control	K-NET, Ethernet
<b>Power</b>	
Power Connector	1x Neutrik PowerCon® 32A
Operating Voltage	230V
Operating Voltage Range	205 to 250V@50/60Hz
Recommended Amperage	20A 205V   16A 230V
Soft Start	YES
Protection	Thermal breaker
Cooling	Front-to-back, active
<b>Physical Dimensions</b>	
Height	177.8 mm (7.0"), 4RU
Width	481.4 mm (18.95")
Depth	495 mm (19.5")
Weight	36 kg (80lbs)

## Block Diagram



## VHD5000S

VERY HIGH DEFINITION AMPLIFIER

VHD5000S - part number KVV 987 356 (230V)

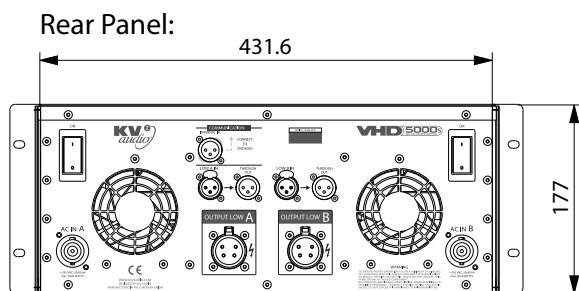
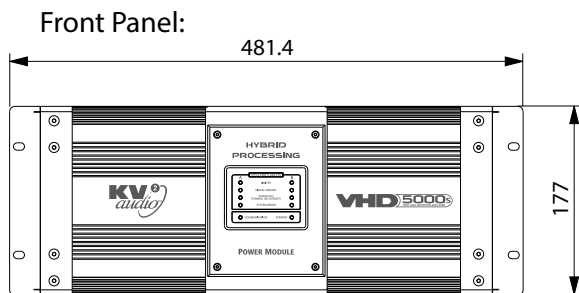
### Application

Specifically designed as the amplification and control unit for powering the 1xLow/Mid VHD5.0 part and 3xVHD8.10 loudspeakers in a rack mount module

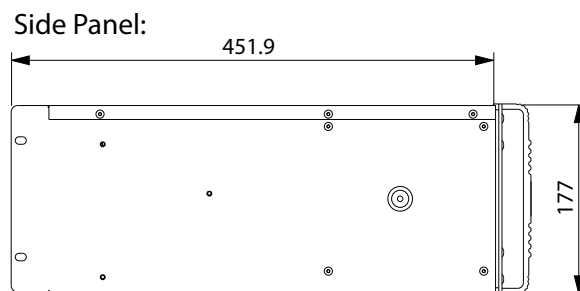
- Large scale Portable PA
- Fixed installations
- Large clubs

### Introduction

The VHD5000S is a rack mounted, high efficiency, low/mid amplifier, specifically designed in conjunction with the VHD5000 for powering the VHD5 low/mid loudspeaker system. The unit contains two separate 2500 watt amplifiers with individual power supplies, signal paths and inputs and outputs within a single four rack space chassis. The unit acts as a slave for the VHD5000, which provides audio and control signal.



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



VHD5000S · Introduction



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## Rack Mounting

VHD5000S 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 amplifiers using just the front panel as support. Use eight screws and washers to mount the amplifier to the equipment rack rails (four for the front and four for the rear).

We recommend using a shock mounted rack for touring use to prolong the life of your VHD5000S amplifiers.

## Cooling

The VHD5000S amplifier is cooled with two shock mounted fans, that moves air from front panel through dust filters across the heatsinks and exhausts through the rear.

Although this unit 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.

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.

## AC Requirements

Two PowerCon 32A cables are provided to connect the VHD5000S to a suitable AC power supply.

The PowerCon 32A is a connector without breaking capacity, i.e. the PowerCon should not be connected or disconnected under load or while it is live.

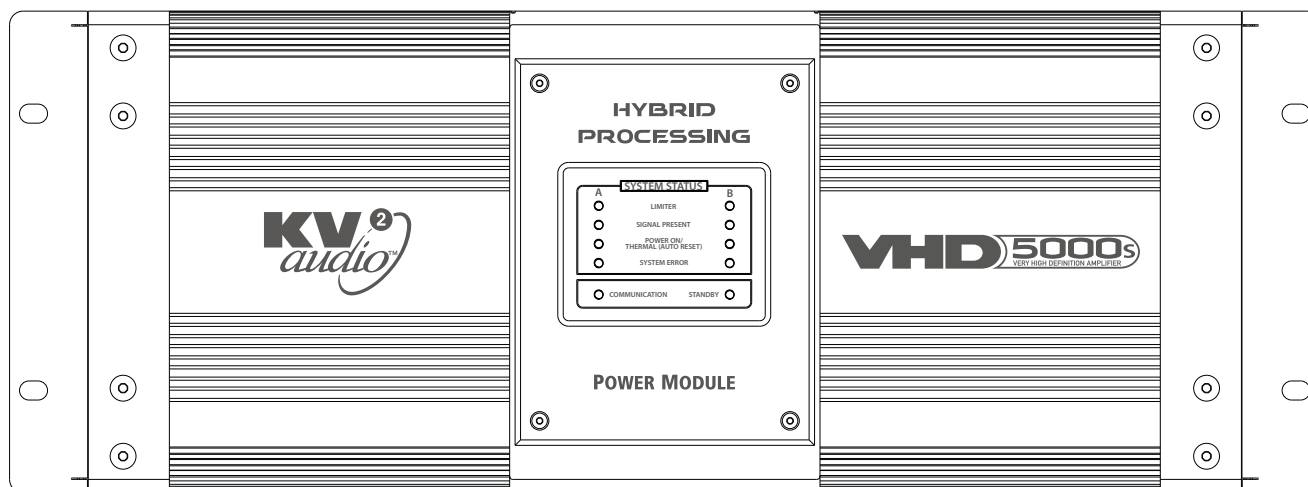
Always isolate your AC supply before disconnecting the PowerCon connector. The VHD5000S amplifiers features switchable power supply which automatically adapts for the input voltage in range from 195 to 260V AC.

AC Input	Current draw with amplifier running at Average Power (Each Channel)	Current draw with amplifier running at Peak Power (Each Channel)
200V	15A	25A
230V	13A	24A
250V	12A	23A

Remember that if you are connecting both AC cables for the VHD5000S to the same AC power source then you will need to have double the per channel current available.

VHD5000S · Getting started

## Front Panel



### 1) Limiter

These yellow LED's indicate when the audio limiter has been activated for that particular channel of the amplifier.

### 2) Signal Present

These green LED's indicate when signal is present at the Input to that particular channel of the amplifier.

### 3) Power On / Thermal

These are dual colour LED's. When green they indicate that the Power Switch is On and that channel of the amplifier is powered up. When red they indicate that that channel has overheated and shut down. The unit will Auto Reset after it cools down to a safe operating temperature.

### 4) System error

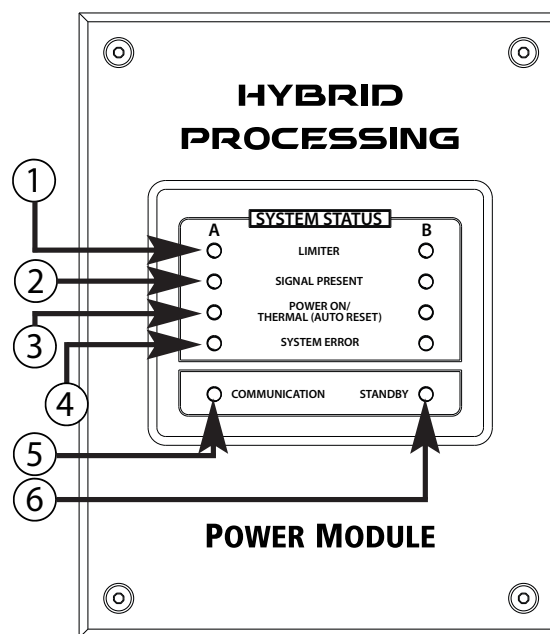
These red LED's indicate when the amplifier detects any trouble. More information can be found using display or remote control software.

### 5) Communication

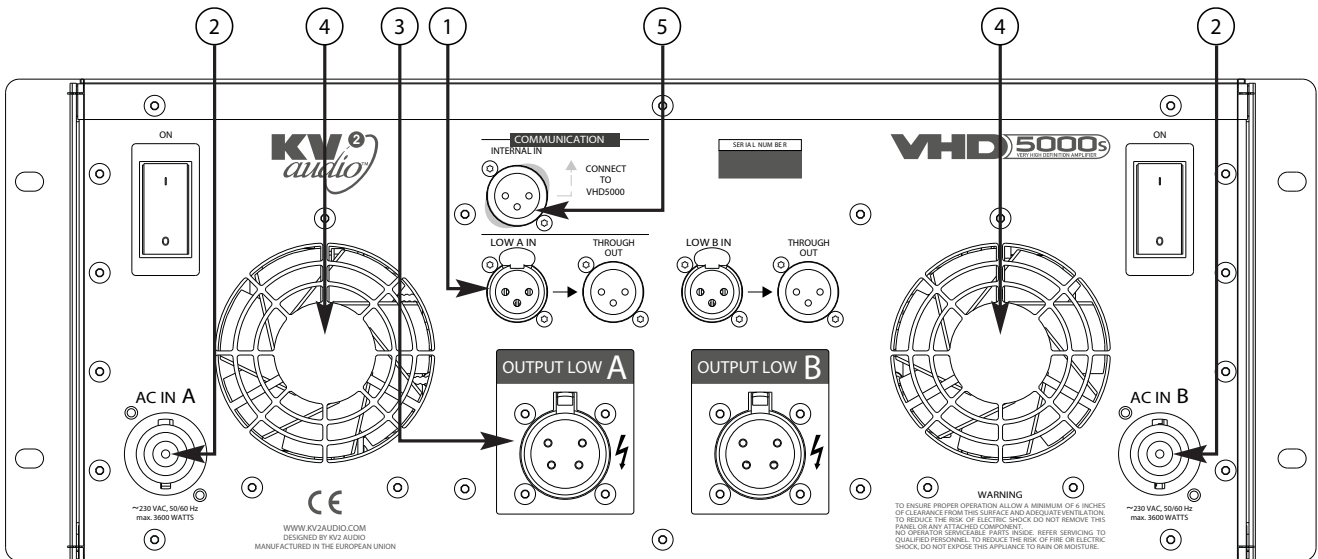
The green LED indicates successful communication with the adjacent VHD5000 amplifier.

### 6) Standby

The yellow LED indicates when the amplifier is switched into standby mode. Standby mode is activated via the VHD5000 amplifier.



## Rear Panel



## SIGNAL INPUTS, OUTPUTS

### 1) Low A In / Through Signal Out

This is the low frequency signal input connector with associated 'Through Signal Output' connector for sending unprocessed signal to other devices, such as another VHD5000s. Low B In / Through Signal Out is identical to channel A.

## POWER INPUT, OUTPUTS

### 2) PowerCon Power Connector

Accepts a standard PowerCon 32A terminated AC cable.

### 3) Output Low A

VHD8.10 AP4 Connector, accepts a standard AP4 terminated loudspeaker cable for connecting up to a single VHD5.0 with VHD8.10 cabinet or two VHD8.10 cabinets in parallel. We recommend using 2.5 mm/core cables. Output Low B is identical to channel B.

### 4) Fans

The cooling fans operate continuously while the VHD5000S is on. An internal temperature sensor increases the speed of the fans during high temperature conditions. Air enters through the front panel dust filters and exits through the rear. Be sure to allow adequate air flow to the front of the rack in which the VHD5000S is mounted.

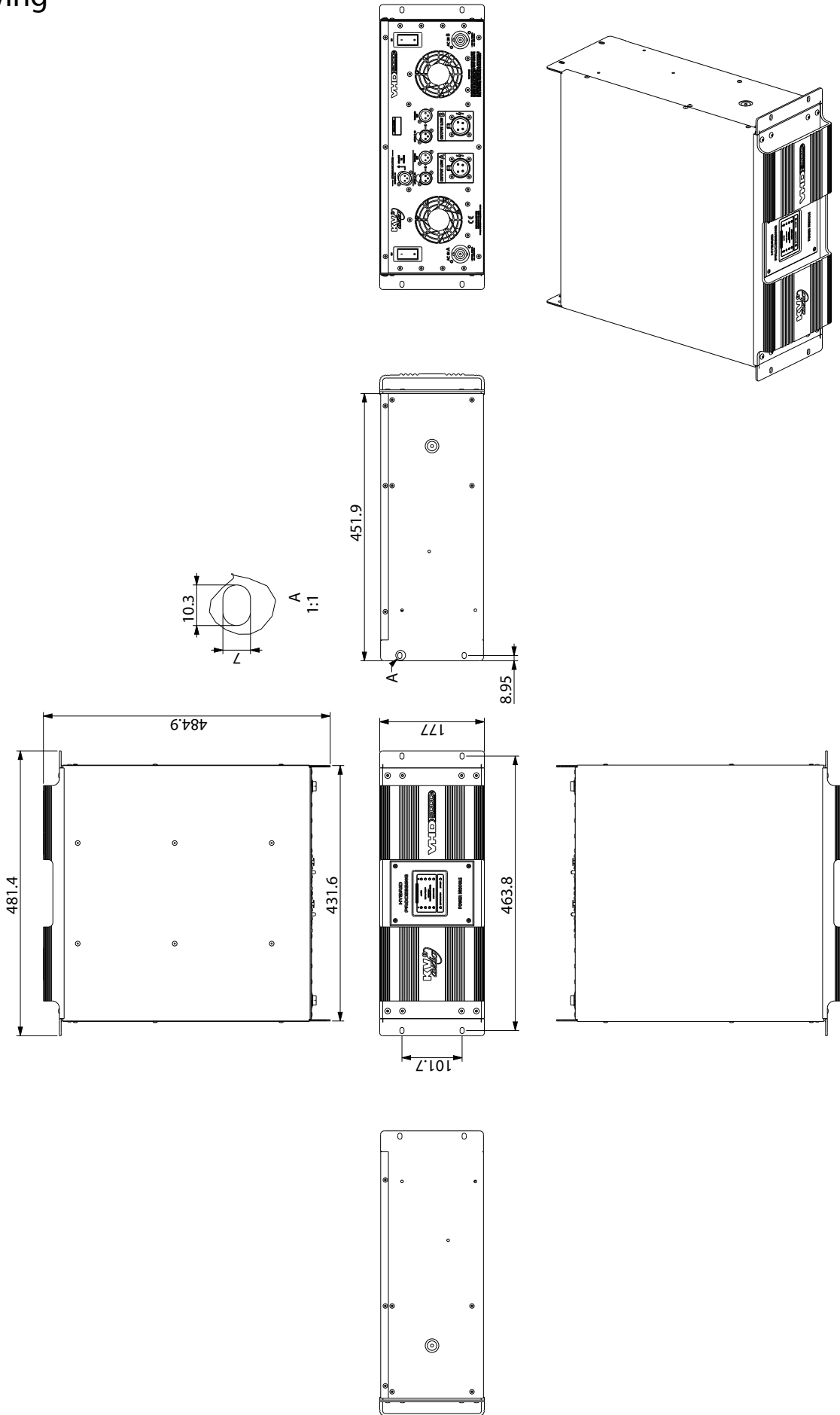
## COMMUNICATION

### 5) Internal Out

Serves as a internal communication signal output for the adjacent VHD5000S amplifier and Power rack unit. Serves for remote control of adjacent devices.



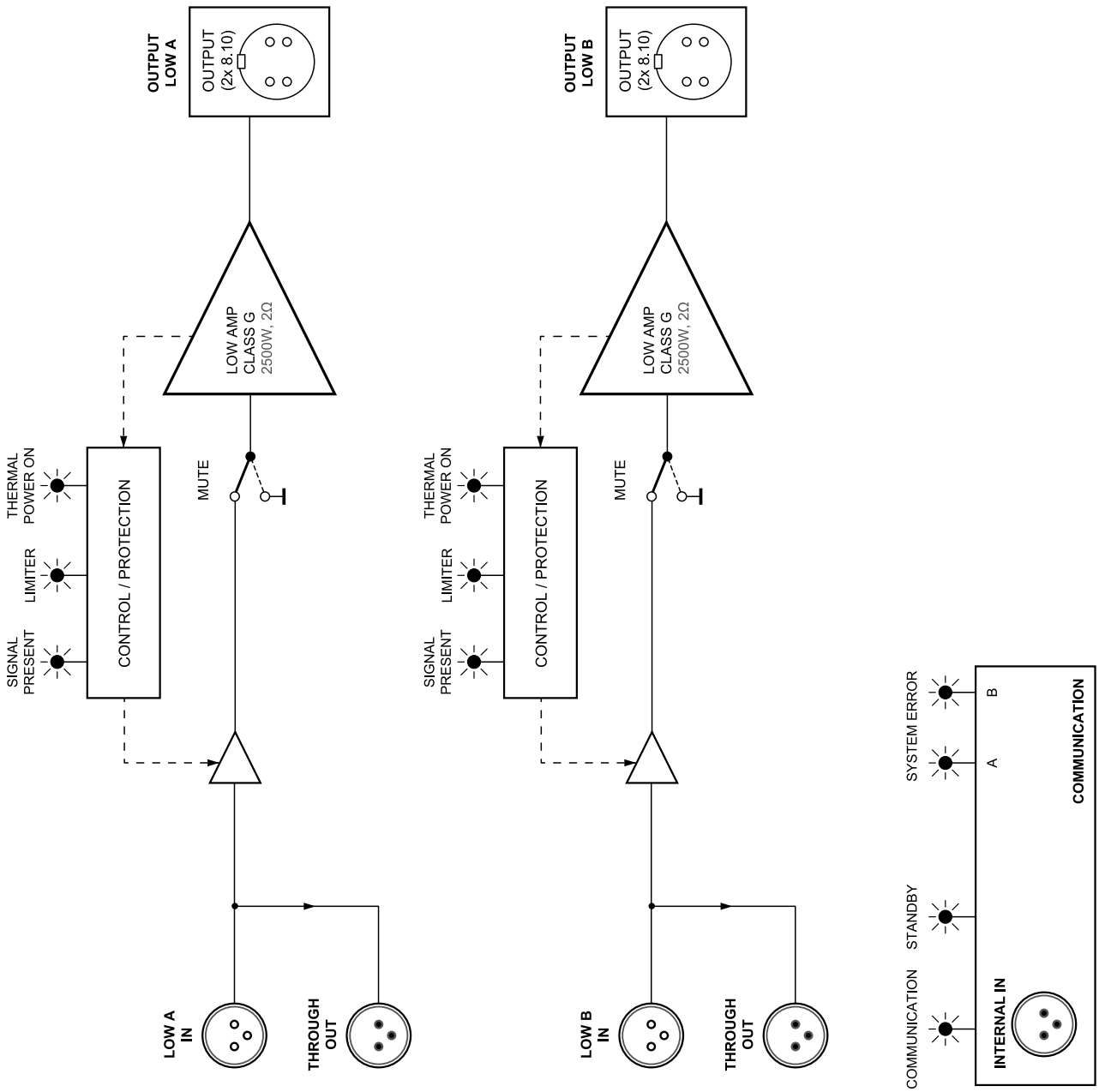
## Drawing



## Specifications

<b>Output Channels</b>	
Number of Channels	2
<b>Mid-Bass Frequency Amplifier Specification</b>	
Type	High efficiency, Low frequency, High current
Rated Continuous Power	2500W
Min. Load Impedance	2Ω
Distortion	<0.05%
Operating Bandwidth	20Hz to 450Hz
<b>Signal Input</b>	
Input Channels	XLR
Input Sensitivity	1.5V RMS
Input Impedance	10kΩ
<b>Signal Output</b>	
Output channels	Through Out
<b>Speaker Output</b>	
Speaker Output	2x AP4
<b>Features</b>	
Indicators	2x Power ON/Thermal, Signal/Limiter/Communication
Remote control	Internal RS485
<b>Power</b>	
Power Connector	2x Neutrik PowerCon® 32A
Operating Voltage	230V
Operating Voltage Range	205 to 250V@50/60Hz
Recommended Amperage	2x20A 205V   2x16A 230V
Soft Start	YES
Protection	Thermal breaker
Cooling	Front-to-back, active
<b>Physical Dimensions</b>	
Height	177.8 mm (7.0"), 4RU
Width	481.4 mm (18.95")
Depth	495 mm (19.5")
Weight	42 kg (92.6lbs)

## Block Diagram



VHD5000 S · Block Diagram

## VHD5100 VERY HIGH DEFINITION AMPLIFIER

VHD5100 - part number KVV 987 438 (230V)

### Application

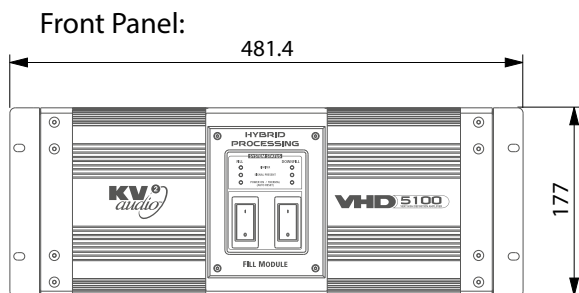
Specifically designed as the amplification and control unit for powering the 1x VHD5.1 Downfill and 1x ESR215MkII as a general use Fill module

- Large scale Portable PA
- Fixed installations
- Large clubs

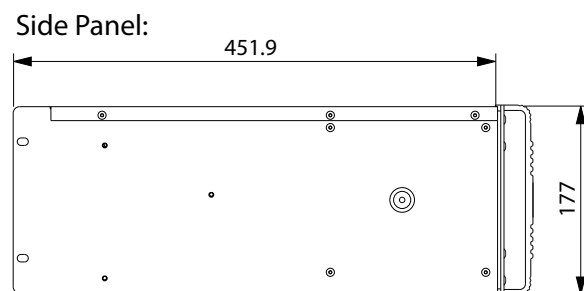
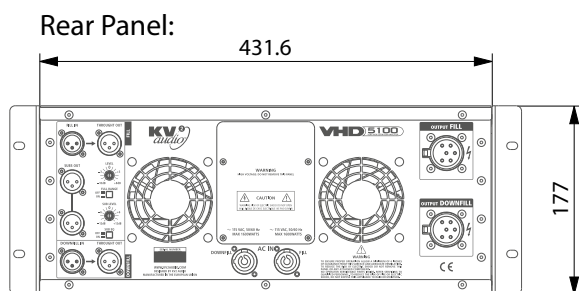
### Introduction

The VHD5100 is a two channel, three-way, active control and amplification system specially designed for the KV2 Audio VHD5.1 Downfill and ESR215MkII loudspeaker system. It houses all signal processing and amplification, as well as providing control and crossover function if needed utilizing a Fill channel external subwoofer.

Each channel incorporates three amplifiers consisting of 100-watt, Class AB, push pull, low intermodulation amplifier for high frequencies, 200-watt, Class AB, push pull, low intermodulation design for mids and a 1000-watt, high-efficiency, current-enhancing switch mode technology amplifiers for bass.



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





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**This device is not suitable for use in places where children may be present.**

## Rack Mounting

VHD5100 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 amplifiers using just the front panel as support. Use eight screws and washers to mount the amplifier to the equipment rack rails (four for the front and four for the rear).

We recommend using a shock mounted rack for touring use to prolong the life of your VHD5100 amplifiers.

## Cooling

The VHD5100 amplifier is cooled with two shock mounted fans, that moves air from front panel through dust filters across the heatsinks and exhausts through the rear.

Although this unit 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.

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.

## AC Requirements

Two PowerCon cables are provided to connect the VHD5100 Amplifier to a suitable AC power supplies. Each cable powers each separate amplifier channel for sufficient current delivery.

### **THE VHD5100 REQUIRES A GROUND CONNECTION. ALWAYS USE A GROUNDED OUTLET AND PLUG.**

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.

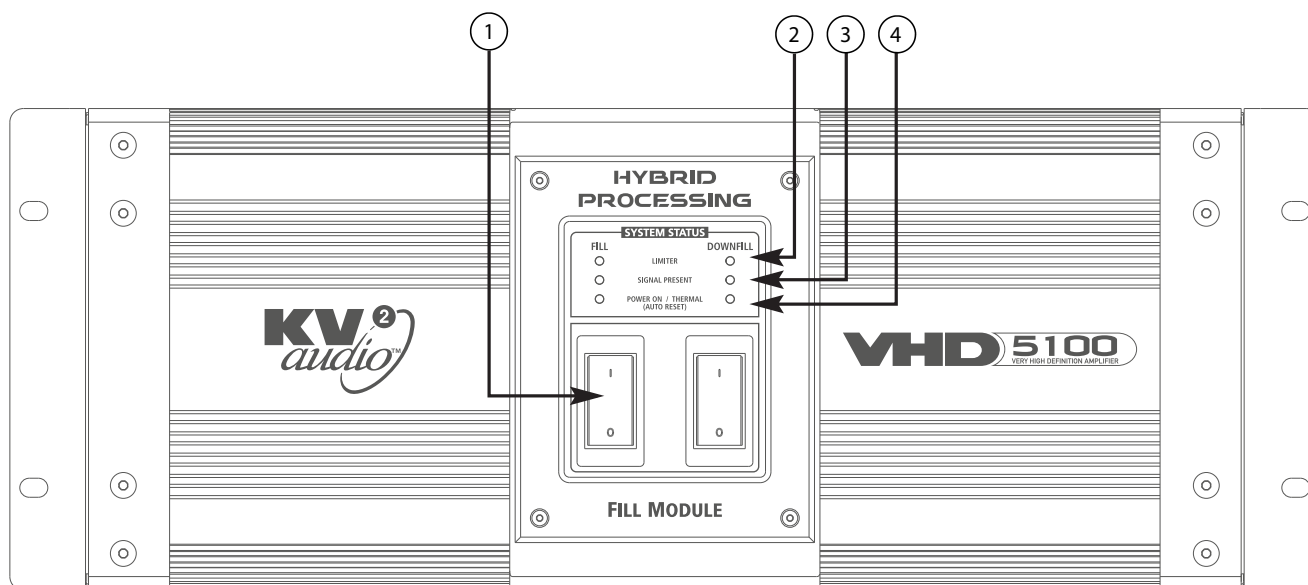
The VHD5100 amplifier operates in either 115V, 230V or 250V modes. Although pre-configured at the factory, the unit's operating voltage mode can be changed in the field. Amplifier power plug must remain readily operable.

Your amplifier will be supplied preset to the voltage used in your area. The table below provides typical current draw figures for the VHD5100 Amplifier.

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

Remember that if you are connecting both AC cables for the VHD5100 to the same AC power source then you will need to have double the per channel current available.

## Front Panel



### 1) AC Mains Switch

The VHD5100 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) Speaker Protection

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

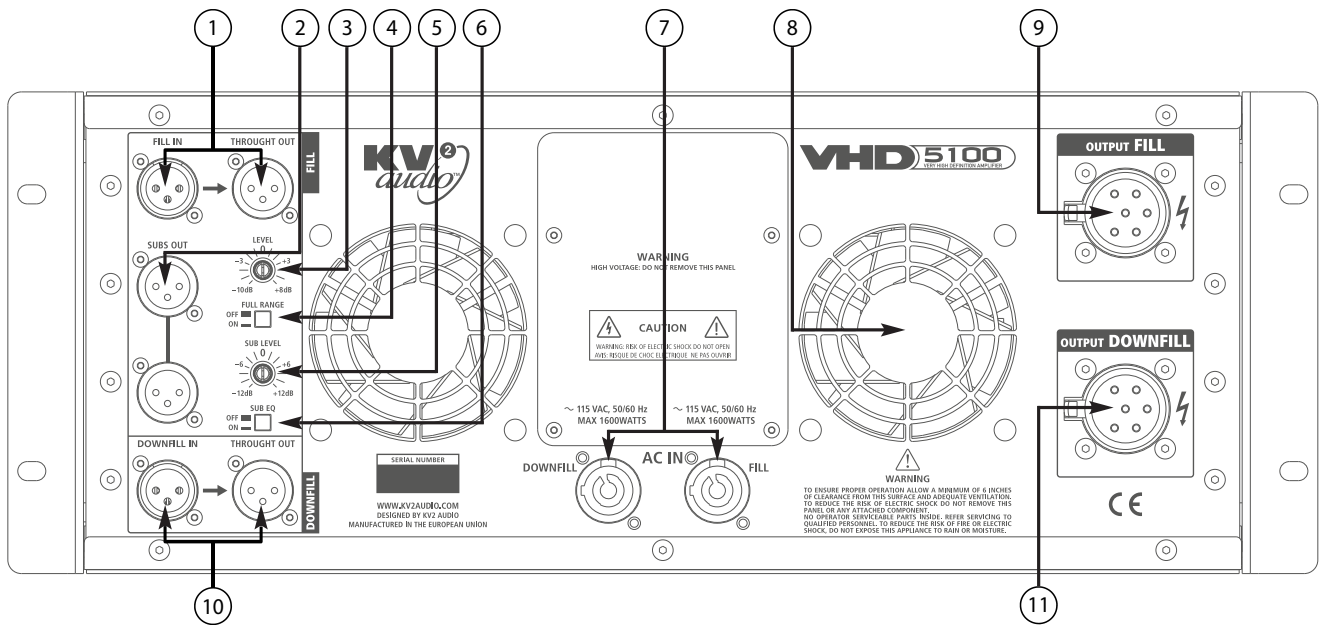
### 3) Signal Present

Green LED indicates when audio signal is present at the amplifier input.

### 4) Power On / Thermal (Auto reset)

Green LED indicates that the AC power is on. When red, it indicates that the thermal limit of the VHD5100 Amplifier has been exceeded and the unit has shut down.

## Rear Panel



### VHD5100 Fill Channel

#### 1) Fill in / Through out

This is the Fill channel input balanced XLR connector with associated Through Signal Output connector for sending unprocessed signal to other devices in a system.

#### 2) Subs out

Balanced XLR crossover subs output connectors, used to connect additional subwoofers. Outputs are active even when FULL RANGE switch is ON.

#### 3) Level

Input Level adjustment potentiometer that allows the user to adjust input levels from -10dB to +8dB.

#### 4) Full Range

Switch, selects the amplifier crossover setup, when ON: full range signal is reproduced by ESR215MkII cabinets, when OFF: signal is crossed over at 70Hz between OUTPUT FILL and the Subs out.

#### 5) Sub Level

This is the level control for the External Sub output in the range -12 to +12 dB.

#### 6) Sub EQ

This switch turns on the Low frequency enhancement circuitry (ON position) which boosts frequencies around 60Hz to enhance the lowest frequency band.

#### 7) Powercon Power Connectors

The VHD5100 Amplifier uses two connectors per two channel. Each connector supplies one channel. They accept standard PowerCon terminated AC Mains cables.

#### 8) 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 dust filters and exits through the rear. Be sure to allow adequate air flow to the front of the rack in which the VHD5100 Amplifier is mounted.

#### 9) Output Fill

Speaker output, accepts a standard AP6 terminated loudspeaker cable for connecting up to a single ESR215MkII cabinet.

### VHD5100 Downfill Channel

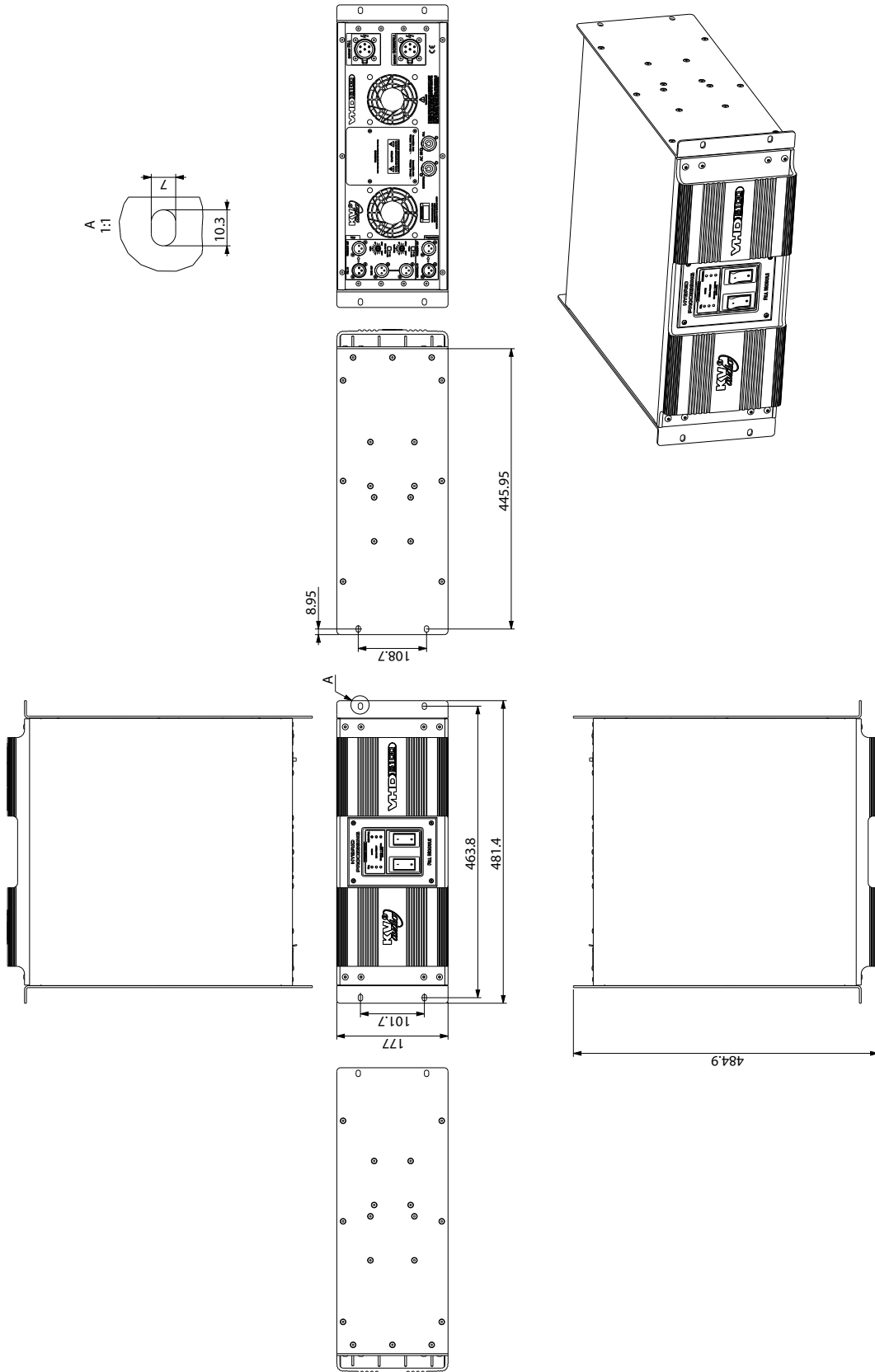
#### 10) Downfill in / Through out

This is the Downfill channel input balanced XLR connector with associated Through Signal Output connector for sending unprocessed signal to other devices in a system.

#### 11) Output Downfill

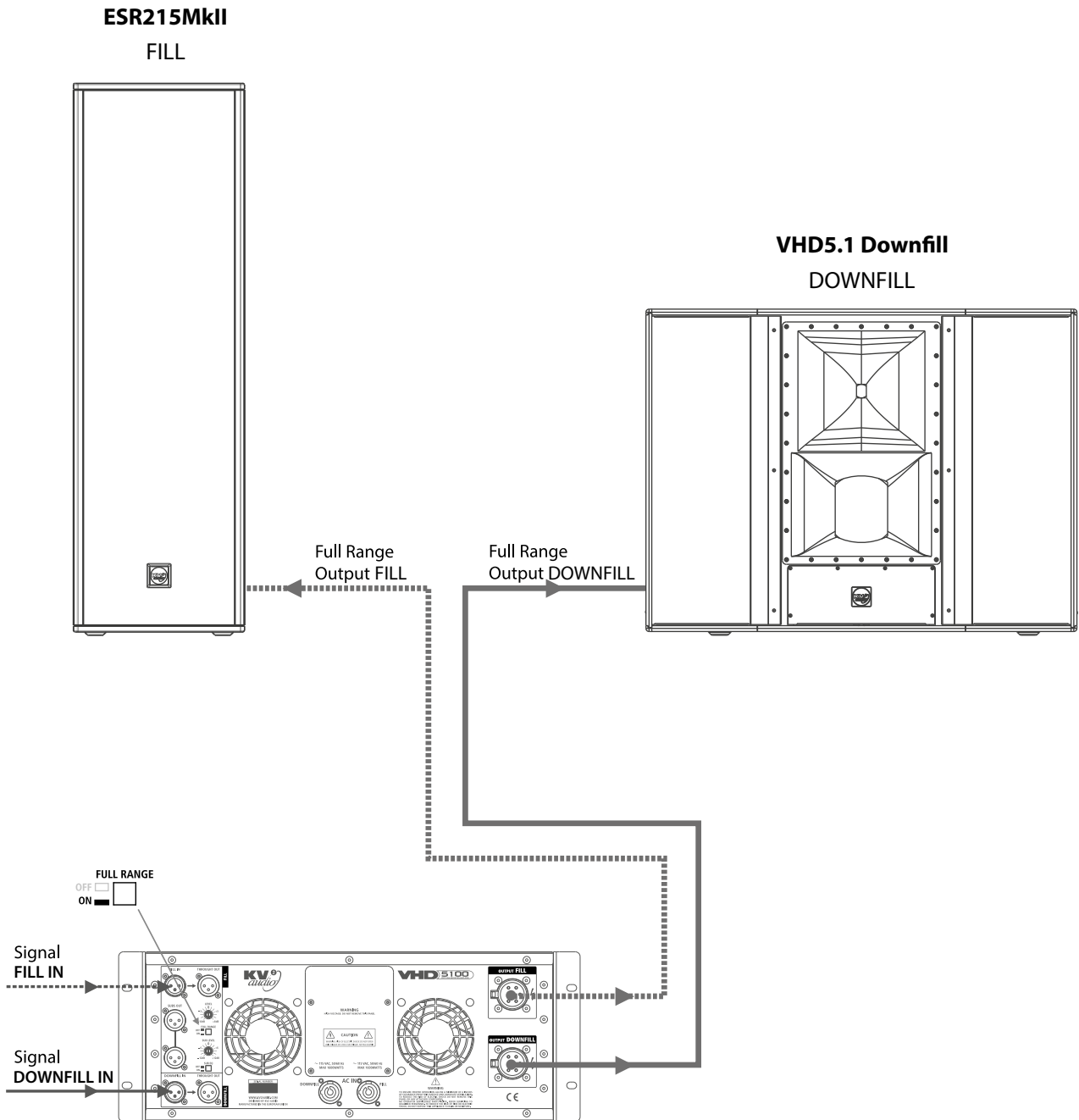
Speaker output, accepts a standard AP6 terminated loudspeaker cable for connecting up to a single VHD5.1 cabinet.

## Drawing

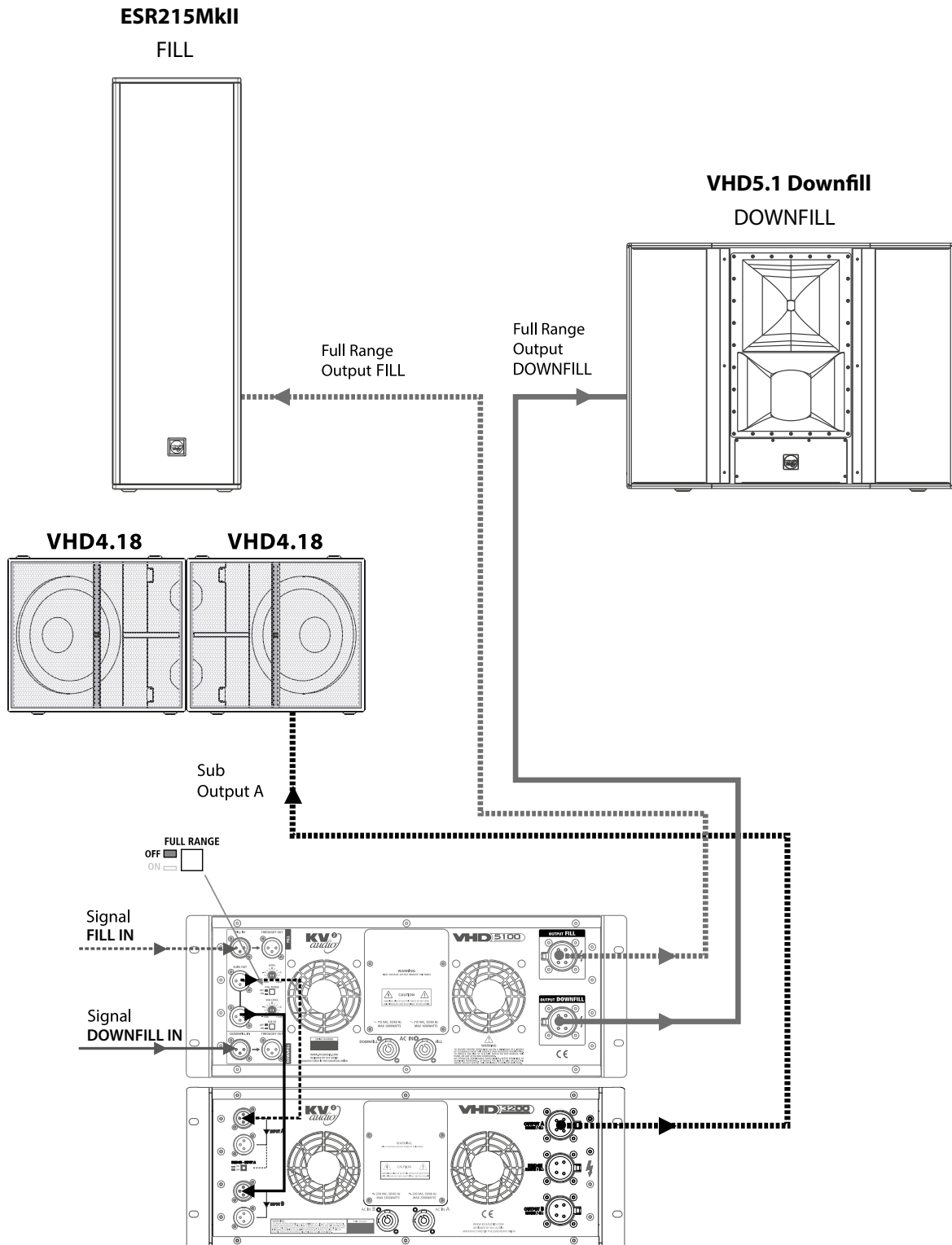




## Full range setup



## External subwoofer setup



VHD5100 · Using the System

Set VHD5100 Amplifier to FULL RANGE OFF mode. Signal is crossed over at Hi/Mid for ESR215MkII cabinets and SUB for external subwoofer. Crossover frequency is app. 70Hz.

SUB SET UP LEVEL setting depends on subwoofer type and music style.

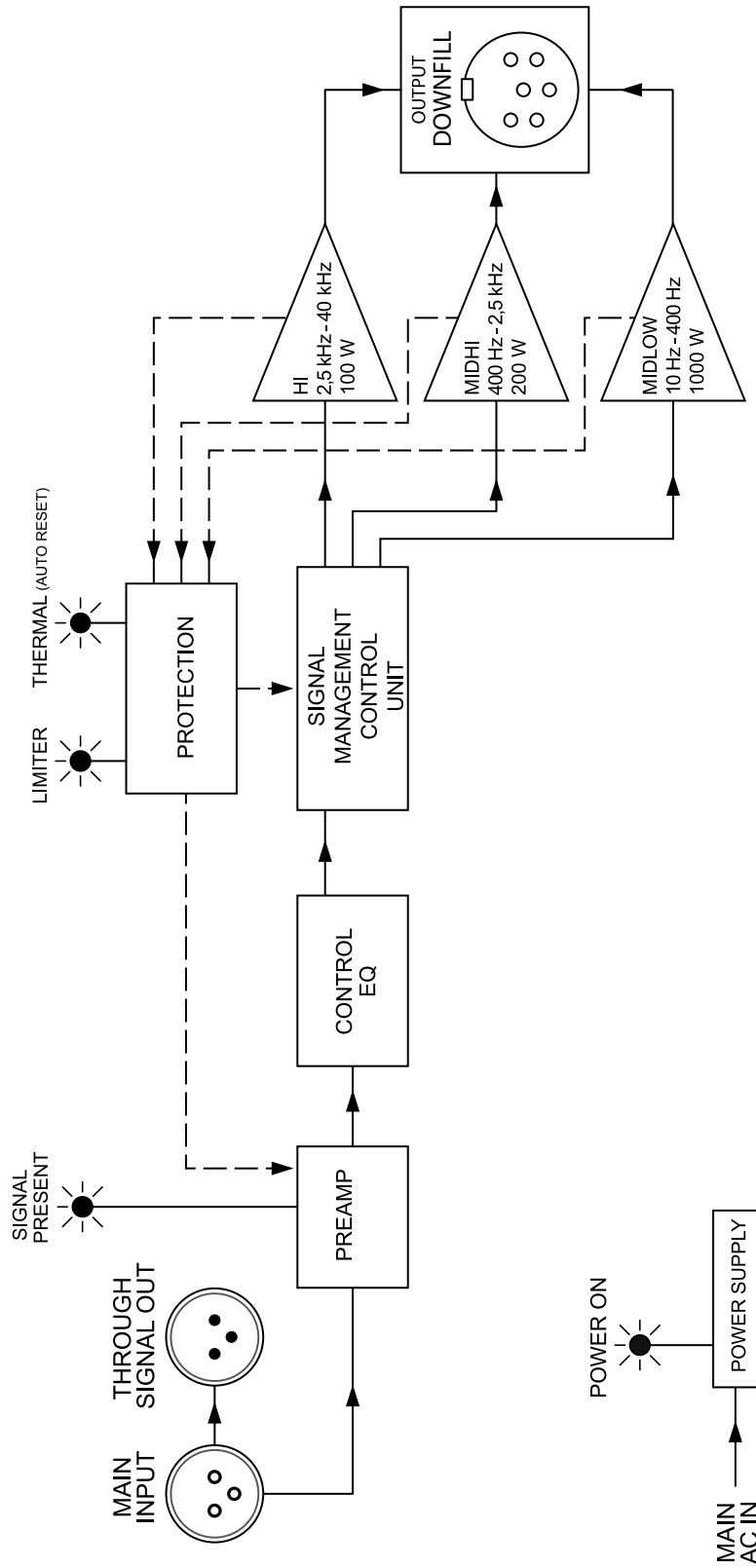
## Specifications

<b>Output Channels</b>	
Number of Channels	2 (Fill + DownFill)
Total Output Power	2x 1300W
<b>High Frequency Amplifier Specification</b>	
Type	Class AB - Push Pull - Low IM Design, Transformer balanced output
Rated Continuous Power	100W
Distortion	<0.02%
Operating Bandwidth	2,5kHz to 40kHz
<b>Mid Frequency Amplifier Specification</b>	
Type	Class AB - Push Pull - Low IM Design, Transformer balanced output
Rated Continuous Power	200W
Distortion	<0.02%
Operating Bandwidth	400Hz to 2,5kHz
<b>Low Frequency Amplifier Specification</b>	
Type	High efficiency, Current-enhancing switch mode
Rated Continuous Power	1000W
Distortion	<0.02%
Operating Bandwidth	10Hz to 400Hz
<b>Signal Input</b>	
Input Sensitivity Fill	1.0V RMS +8dB -10dB
Input Impedance	20kΩ (balanced)
Input Sensitive DownFill	0.5V RMS
<b>Speaker Output</b>	
Speaker Output	2x AP6 female
<b>Power</b>	
Power Connector	2x Neutrik PowerCon®
Operating Voltage	115V / 230V / 250V
Operating Voltage Range	100 to 120V@60Hz   205 to 240V@50Hz   225 to 260V@50Hz
Recommended Amperage	2x10A 115V   2x5A 230V   2x5A 250V
<b>Physical Dimensions</b>	
Height	177.8 mm (7.0"), 4RU
Width	481.4 mm (18.95")
Depth	455.3 mm (17.93")
Weight	39 kg (86lbs)

# VHD5100 · Block Diagram

## VHD5100 Block Diagram

Channel DOWNFILL

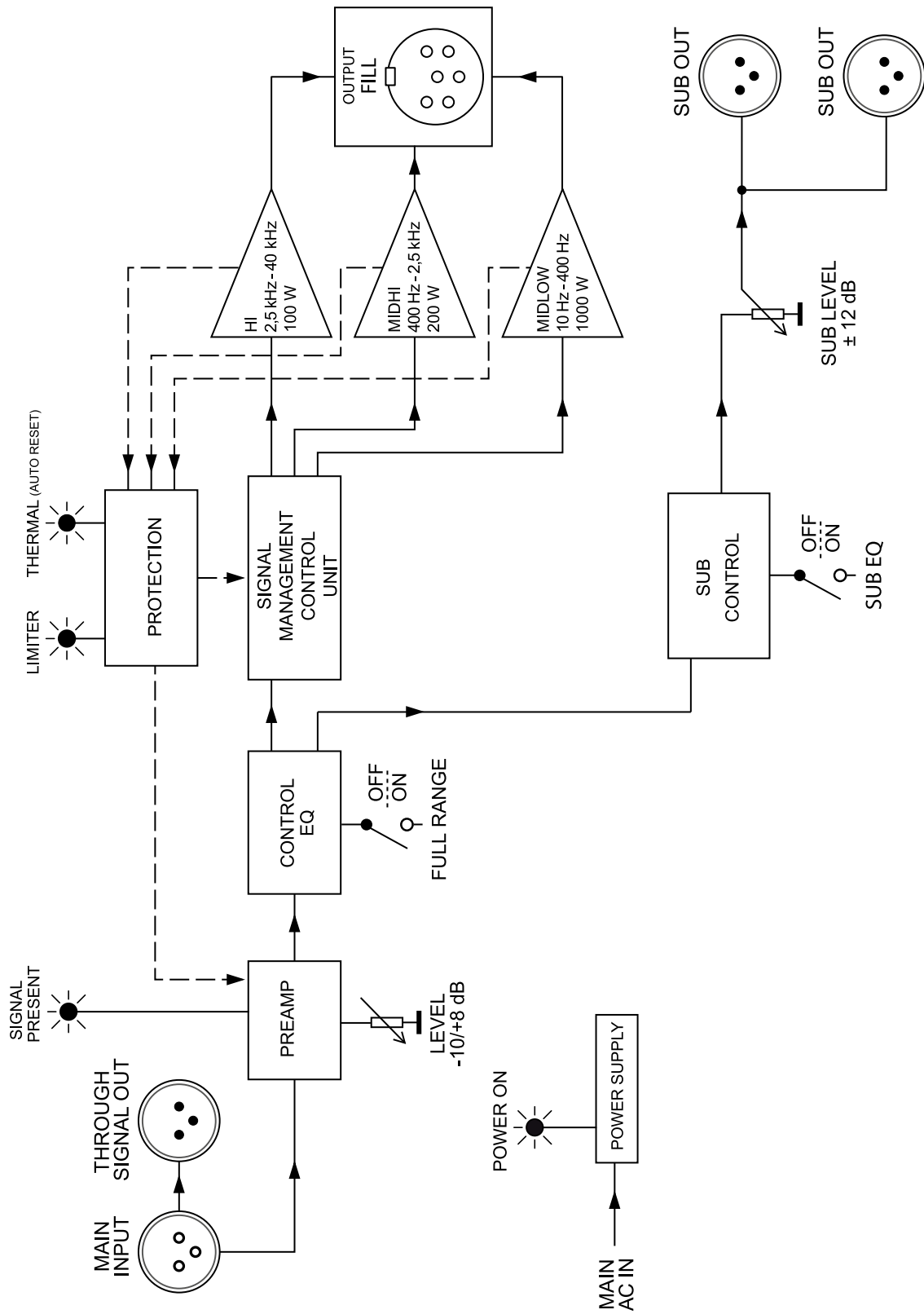


# VHD5100 · Block Diagram



## VHD5100 Block Diagram

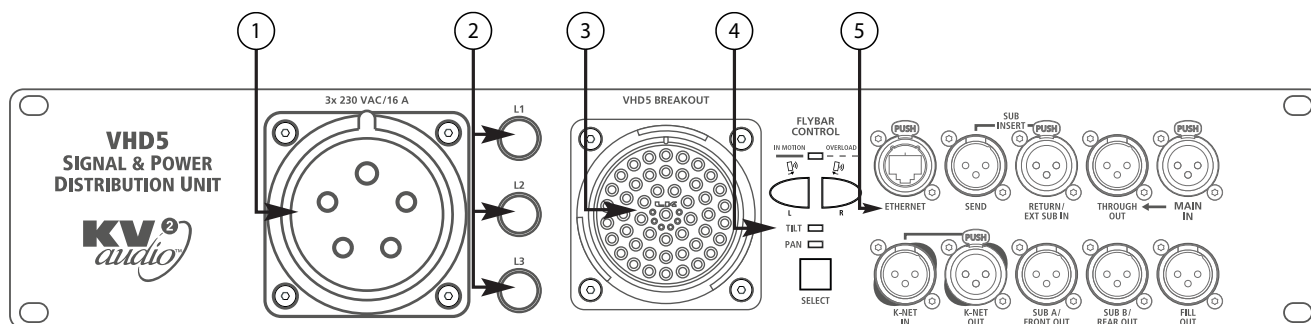
Channel FILL



## VHD5.0 Power Unit

The VHD5 Power Unit serves to present VHD5000 amplifiers as an easy to use, plug and play, rack mounted system. This unit provides power for VHD5000, VHD5000S and 3 additional adjacent devices from one 3 phase 230V/16A power outlet. The VHD5 Power Unit also provides interconnection of signals and data cables from back to front of the rack system. The Unit also provides easy system management of speaker cables and interconnection between amplifiers and the VHD5 system, using LK multi-pin speaker connectors. Indicators of connections on the unit are described the same as on the VHD5000 amplifiers to make rack interconnection intuitive.

## Front Panel



### 1) 3x230 VAC/16A

Serves as a mains 3 phase 230 VAC/ 16 A mains power input. Accepts standard IEC60309 230V/16A plug. The VHD5000 amplifiers should be powered off when plugging or unplugging the 3 phase socket. When remote controlled power on/off is required, use amplifier standby mode or a suitable 3 phase contactor.

### 2) L1,L2,L3 indicators

Lights green when L1,L2,L3 are present.

### 3) Speakers output

Using a LK multipin connector, serves as a VHD5 speaker output connector and contains combined outputs for 1xVHD5.0, 3xVHD8.10, 1xVHD5.1 and VHD5 Flybars.

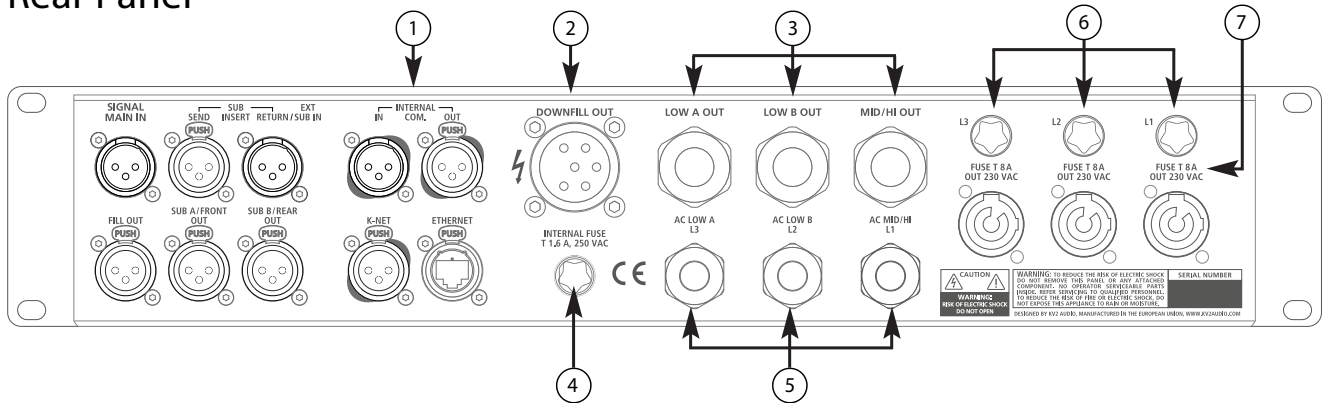
### 4) Tilt

Serves for remote control of the VHD5 Flybar. The Flybar control is two channel, One channel, serves for whole system tilt. The second channel serves for VHD5 Pan Flybar rotation. The Select switch serves for switching between those two channels. Tilting direction is selected by pressing the left or right button. Tilt occurs "up" or straight when the left tilt button is pressed and "down" when the right tilt button is pressed. Pan flybar rotates left when the left button is preset and vice versa. The Flybar motor movement is indicated using the red tilt light. When the motor reaches its limit position, the motor automatically stops and the red light goes off. When the tilt light flashes, the motor output is overloaded and a reversible fuse is activated, or during startup.

### 5) Ethernet and signal - XLR inputs and outputs interconnections

The VHD5 Power Unit serves as a interconnection of signal, power and data cables from back to front when using VHD5000 amplifiers rack mounted. Each connector is described the same as on the VHD5000 amplifiers to make rack interconnection intuitive.

## Rear Panel



### 1) Ethernet and signal - XLR inputs and outputs interconnections

VHD5 Power Unit serves as a interconnection of signals, power and data cables from back to front when using VHD5000 amplifiers rack mounted. Each connector is described the same as on the VHD5000 amplifiers to make rack interconnection intuitive.

### 2) Downfill Out

Serves as an interconnection between VHD5100 amplifier and combined outputs via the AP6 connector speaker cable feeding VHD5 system with VHD5.1 downfill.

### 3) Output Low A, Output Low B, Output Mid/Hi

Serves as an interconnection between combined speakers output and VHD5000 amplifiers. Description is the same as on the VHD5000 amplifiers outputs.

### 4) Fuse

VHD5 Power Unit mains fuse.

### 5) AC Mid/Hi, AC Low A, AC Low B

Serves as mains power interconnection between 3 phase 230V mains power input and VHD5000 amplifiers mains power input. Each output is marked with phase marking.

### 6) 230 VAC/8 A L1 and L2 power sockets

Is a 230V mains power output for powering adjacent devices such as VHD5100 or processors. Maximum power output is 8A RMS

### 7) L1,2,3 Fuses

Mains fuses for power outputs - Neutrik PowerCon.



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## Rack Mounting

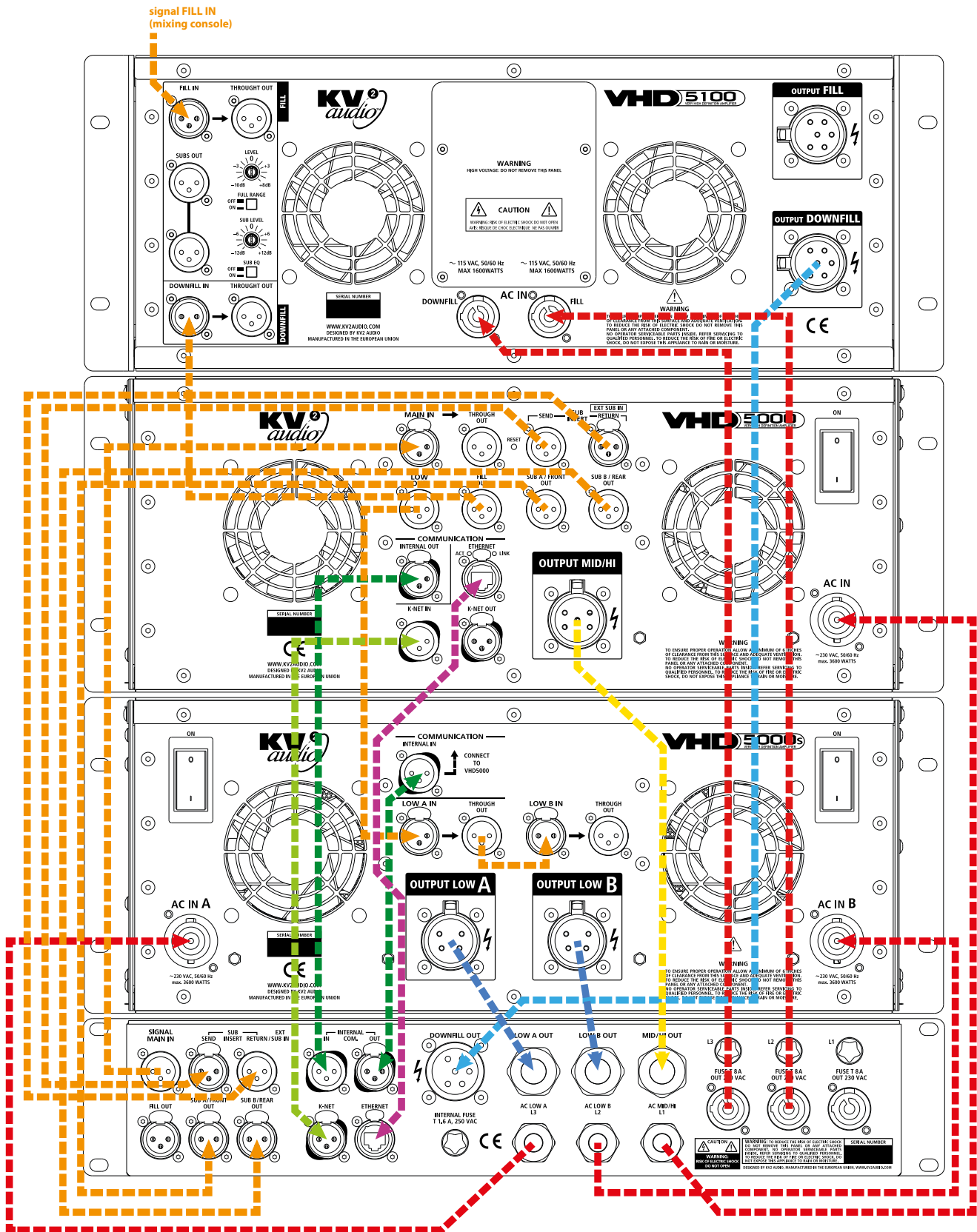
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We recommend using a shock mounted rack for touring use to prolong the life of your VHD5000 amplifiers.

# VHD5.0 Power Unit · Wiring Scheme



## Power Unit Wiring Scheme with VHD5000 and VHD500S



- - - XLR - signal
- - - XLR - internal communication
- - - XLR - KV2 NET (communication between VHD5 systems)
- - - XLR - Ethernet CATS
- - - Amphenol 6P / LK Link 8P - Mid/Hi speaker output
- - - Amphenol 4P / LK Link 9P - Mid/Low speaker output
- - - Powercon
- - - Amphenol 6P - Downfill speaker output

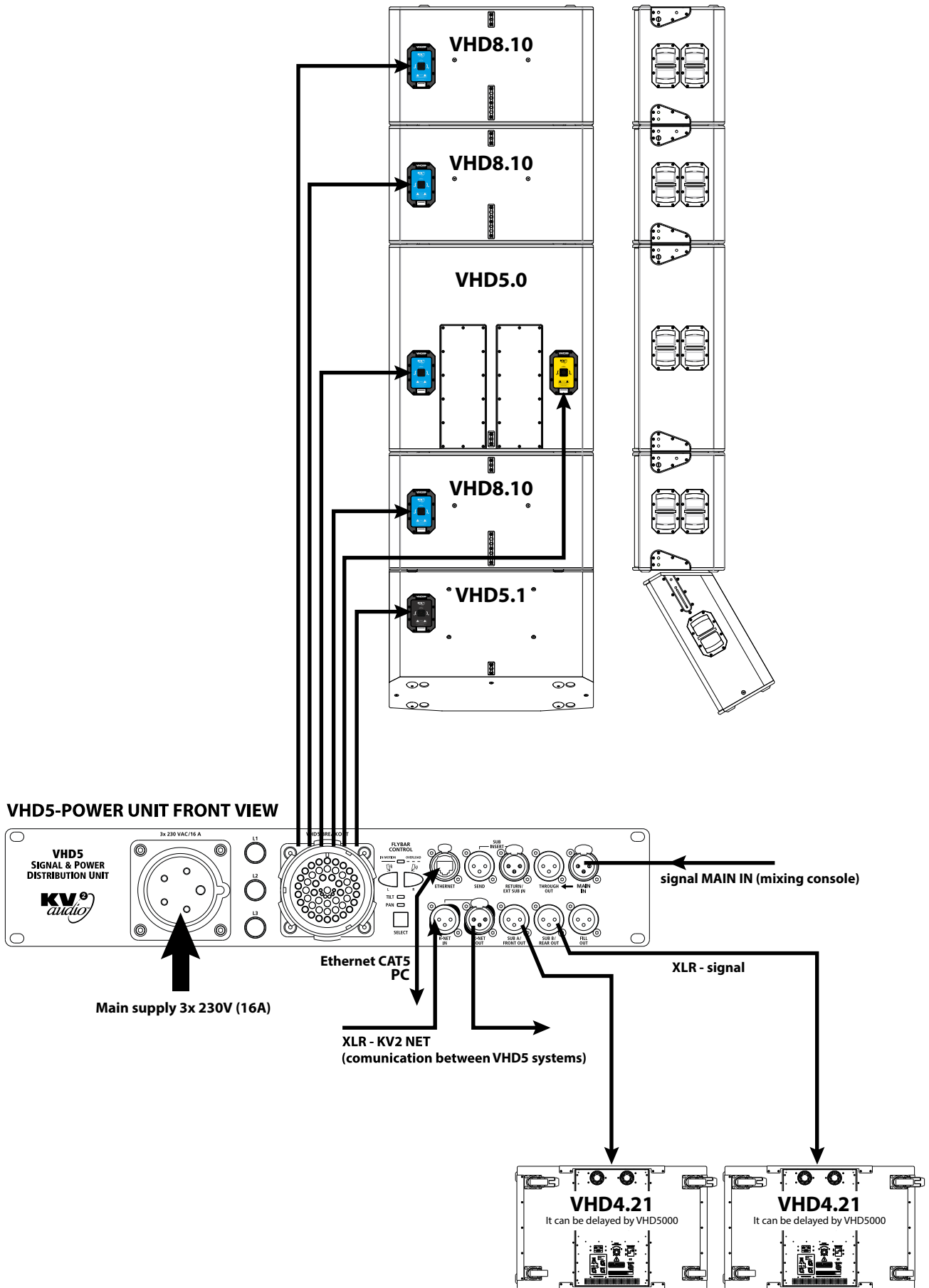
VHD5.0 Power Unit · Wiring Scheme



# VHD5.0 Power Unit · Basic configuration



Basic configuration VHD5.0 + 3x VHD8.10 with VHD5.1 downfill



VHD5.0 Power Unit · Basic configuration

## Warranty

Your VHD5.0 Amplifiers are covered against defects in material and workmanship.

Refer to your supplier for more details.

## Service

In the unlikely event that your VHD5.0 Amplifiers develops a problem, it must be returned to an authorized distributor, service centre or shipped directly to the KV2 Audio factory. Because of the complexity of the design and the risk of electrical shock, all repairs must be attempted only by qualified technical personnel.

If the unit needs to be shipped back to the factory, it must be sent in its original carton. If improperly packed, the unit may be damaged.

To obtain service, contact your nearest KV2 Audio Service Centre, Distributor or Dealer.









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