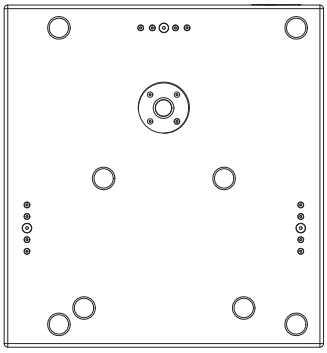
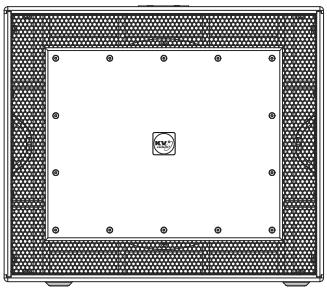
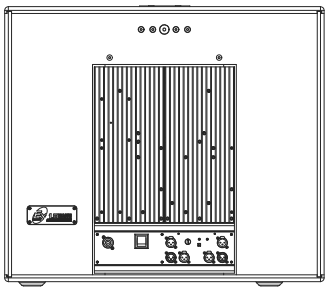
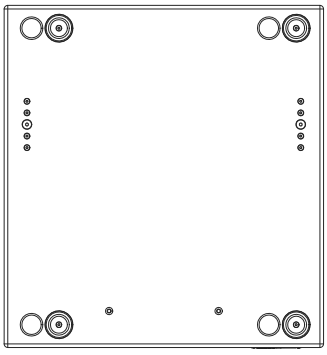
EX1.8
User Guide











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

USER'S GUIDE 1

CONTENTS 2

INTRODUCTION 3
- HOW TO USE THIS MANUAL 3
- Icons used include 3
- Introducing the EX1.8 3
- Electronics 3
- Acoustic Components 4
- Enclosure Design 4
- APPLICATIONS 4

AC POWER REQUIREMENTS 4
- AC POWER 4
- Voltage Requirements 4
- The Power Connector 5
- Current Requirements 5
- AC Cable Color Coding 5
- IMPORTANT SAFETY INSTRUCTIONS 6
- SAFETY SUMMARY 6

EX1.8 CONTROL PANEL 7
- REAR CONTROL PANEL 7
- Audio Input and Output 7
- Amplifiers and Acoustic Filters 8
- LED Status Lights 8
- Power On / Thermal LED 8
- Signal 8
- Limiter 8
- Phase Switch 8
- Level Control 8

EX1.8 DRAWING 9

EX1.8 SPECIFICATIONS 10

EX1.8 ACCESSORIES 11

HOW TO USE THIS MANUAL

As you read this manual, you'll find figures and diagrams to help you understand and visualize what you're reading. You'll also find numerous icons that serve as cues to flag important information or warn you against improper or potentially harmful activities.

Icons used include:

"NOTE" identifies an important or useful piece of information relating to the topic under discussion.



"TIP" offers a helpful tip relevant to the topic at hand.



"CAUTION" gives notice that an action can have serious consequences and could cause harm to equipment or personnel, delays, or other problems.



Introducing the EX1.8

The EX1.8 is a high output, active subwoofer system. Through the use of proprietary amplifier technology, a precision manufactured state of the art woofer component and the innovative implementation of a high efficiency, twin chamber acoustic design, the EX1.8 delivers tight, fast, controlled bass response at very high output levels. This system falls directly out of KV2 Audio's philosophy to develop products with increased dynamic range, very high output and a consistent sound character no matter what the output level.
The system establishes new performance standards for an active powered subwoofer that can only be achieved through the integration of new amplifier topologies, transducer designs and electronic control technologies that are closely tied to a passion for taking performance to the next level.

The EX1.8 can be used in a variety of system applications. It can add high performance bass reproduction to active speaker systems such as KV2 Audio's EX12 loudspeaker, or it can be easily used with passive speaker systems. The built in electronic high pass filter, phase and independent output level controls provide high precision, easy to use system integration circuitry.

Electronics

Amplifier power, electronic crossovers, equalization and speaker protection are integrated into the EX1.8's amplifier module. On-board electronics ensures fast, easy set up and complete control making it easy to set up and provides long-term reliability. An improved version of KV2 Audio's switch mode, current enhancing low frequency amplifier has been specially developed for the EX1.8 . The new design improves overall system efficiency to over 90% and delivers 1000 watts of continuous power.

KV2 Audio has developed an amplifier topology that possesses two unique characteristics that are critically important for high performance, active subwoofer systems. The EX1.8 amplifier topology delivers very high efficiency and generates minimal thermal losses allowing the amplifier to deliver extremely high power levels reliably whilst employing a simple cooling system.

Secondly, in order to reproduce low frequency information with high transient content and extend the operational boundaries of the acoustic design, the amplifier needs to deliver an extraordinary amount of current in order to keep the woofer's high mass under control. This is especially true under typical "phase shift" conditions, in which the amount of the current requirement is sometimes doubled. Through the implementation of a proprietary, switch mode amplifier technology, the EX1.8 amplifier provides extremely high efficiency with low losses and delivers the highest woofer control by delivering higher current levels under "phase shift" conditions.

The amplifier module is fitted onto a large format, finned, aluminum alloy heat sink providing high flow, passive cooling and eliminating standard maintenance cycles associated with forced cooled amplifier designs. The entire mechanical assembly is fitted on a mechanical suspension system that isolates low frequency energy and ensures long-term reliability.

Acoustic Components

The EX1.8's woofer technology is based around high efficiency, high power woofer designs. The device features: high temperature polymide voice coil assemblies that undergo multiple baking and curing processes as well as advanced magnetic structures with complex cooling systems. The woofer cones have been specially developed to withstand the demanding environment created by the high acoustic loading inside the EX1.8 chambers. The EX1.8 was designed using new concepts in twin asymmetrical acoustic chambers that deliver very high speaker loading and output from a relatively small cabinet footprint. It is ideal for use in live applications that require reproduction of low frequencies with very high transient content at high output levels.

Enclosure Design

There are two industrial grade, internal braces placed at the top of the cabinet. Each brace is held in place by four M8 bolt and feature two M10 hang points providing a wide range of installation and suspension flexibility. There is also a pole mount "top hat" located on the top side of the cabinet.

APPLICATIONS

- Live and Playback Applications
- Portable PA Systems
- Corporate Events
- Fixed Installations

AC POWER

The EX1.8 is an advanced self-powered loudspeaker system with on-board amplification and control systems. Understanding power distribution, voltage and current requirements, as well as electrical safety issues, is critical to the safe operation of the EX 1.8.

The EX1.8 uses a PowerCon 3-pole AC main system with locking connectors to prevent accidental disconnection. The main AC connector (blue) serves as the power input.

The EX1.8 operates in either 115V or 230V modes. Although pre-conf igured at the factory, the unit's operating voltage mode can be changed in the field.

Voltage Requirements

The EX1.8 operates safely and without audio discontinuity if the AC voltage stays within the operating window of 100V-130V in 115V mode and 200V-250V when working in 230V mode, at 50 or 60Hz.

CAUTION: If the On LED does not illuminate or the system does not respond to audio input, remove AC power immediately. Verify that the voltage is within the proper range. If the problem persists, please contact KV2 Audio or an authorized service center.

If the voltage drops below the low boundary of its safe operating range, the loudspeaker will shut down if the voltage does not rise above the low boundary before storage circuits are depleted. How long the loudspeaker will continue to function during brownout depends on the amount of voltage drop and the audio source level during the drop.
If the voltage increases above the upper boundary of the range, the power supply can be damaged.

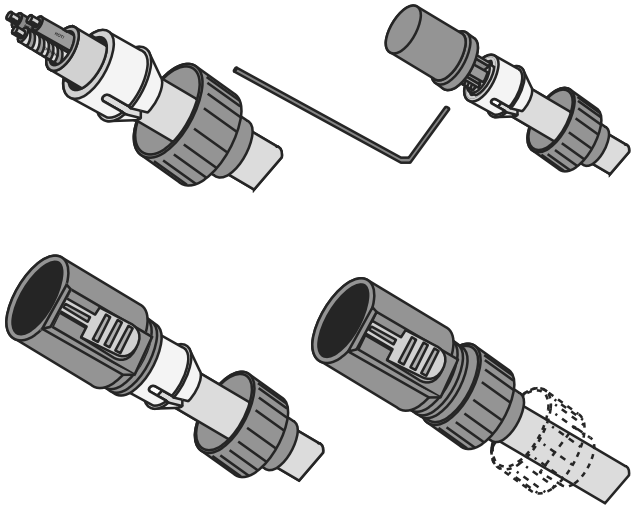
NOTE: It is recommended that the voltage supply be within the rated voltage window. This ensures that AC voltage variations from the service entry-or peak voltage drops due to cable runs-do not cause the amplifier to cycle on and off or cause damage to the power supply.

NOTE: For best performance, the AC cable voltage drop should not exceed 10 volts, or 10 percent at 115 volts and 5 percent at 230 volts..

Make sure that even with the AC voltage drop, the AC voltage always stays within recommended operating ranges. The minimum electrical service amperage required by a EX1.8 speaker system is the sum of each loudspeaker's maximum continuous rms current. An additional 50 percent above the minimum amperage is recommended to prevent peak volt-age drops at the service entry.

The Power Connector

The EX1.8 requires a grounded outlet. It is very important that the loudspeaker AC supply be properly grounded in order to operate safely and correctly. Use the PowerCon AC cable-wiring diagram on page 5 to create international or special-purpose power connectors:



Power connector assembly

Current Requirements

Each EX1.8 requires approximately 10 Amps max at 115V AC for proper operation. This allows one EX1.8 to be powered from one 15 A breaker at 115 V and up to 2 subwoofers at 230 V.

The EX1.8 presents a dynamic load to the AC mains, which causes the amount of current to fluctuate depending on quiet or loud operating levels. Since different cables and circuit breakers heat up at varying rates, it is essential to understand the types of current ratings and how they correspond to circuit breaker and cable specif cations.

The maximum long-term continuous current consumption is the maximum rms current during a period of at least ten seconds. It is used to calculate the temperature rise in cables, in order to select a cable size and gauge that conforms to electrical code standards. It is also used to select the rating for slow-reacting thermal breakers.

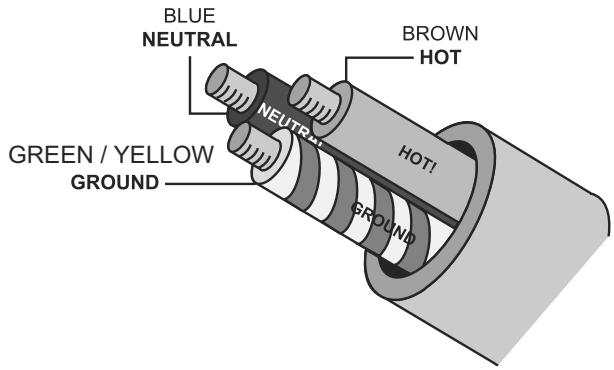
The burst current consumption is the maximum rms current during a period of approximately one second, used to select the rating of most magnetic breakers and to calculate the peak voltage drop in long AC cables according to the formula: V pk (drop)= I pk x R (cable total).

The ultimate short-term peak current is used to select the rating of fast reacting magnetic breakers. Use the table below as a guide when selecting cable gauge size and circuit breaker ratings for your operating voltage.

Current Draw	115 V Mode	230 V Mode
Max. Long Term Continuous	10 A rms	5 A rms
Burst Current	15 A rms	10 A rms
Short Term Peak	40 A peak	20 A peak

AC Cable Color Coding

If the colors referred to in the diagram don't correspond to the terminals in your plug, use the following guidelines:
Connect the blue wire to the terminal marked with a N or colored black. Connect the brown wire to the terminal marked with an L or colored red. Connect the green and yellow wire to the terminal marked with an E or colored green or green and yellow.



Power cable color coding

CAUTION: The EX1.8 requires a ground connection. Always use a grounded outlet and plug.

IMPORTANT SAFETY INSRUCTIONS

1. Read all product instructions.

2. Keep printed instructions, do not throw away.

3. Respect and review all warnings.

4. Follow all instructions.

5. Do not use this loudspeaker near water, in unprotected out door 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 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, and the point where they exit from the loudspeaker. The AC mains plug or appliance coupler shall remain readily accessible for operation.

12. Only use accessories specif ed by KV2 Audio.

13. Install the product only with rigging specified by KV2 Audio, or sold with the loudspeaker.



CAUTION: Rigging should only be done by experienced professionals.

14. Unplug this loudspeaker during lightning storms or when unused for long periods of time.

15. Refer all servicing to qualifed 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.

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.

REAR CONTROL PANEL

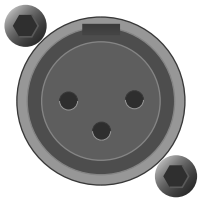
The EX1.8 features an easy to use rear control panel featuring audio input and output connections, level control, LED status lights and a low pass filter that can be engaged when the loudspeaker is used as a stage monitoring device.

Audio Input and Output

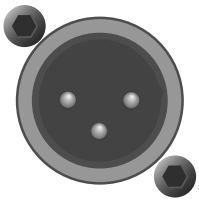
The EX1.8 uses balanced, female XLR connectors for audio signal input, and a male XLR connector to provide through output signal. The EX1.8 features Left and Right stereo inputs and outputs allowing the product to be integrated into stereo systems that require one subwoofer.

The EX1.8 also features Left and Right High Pass Outputs that can be used to provide audio signal to full range speakers being used in conjunction with the EX1.8. The high pass filter provides a crossover point of 125Hz.

The through output connector, wired in parallel to the audio input, will continue to provide the input signal if the EX1.8 is turned off. The audio input circuit presents a 20 kOhm balanced input impedance to a three-pin XLR connector with the following connectors:



Main input



Through output

Pin 1 - Ground

Pin 2 - Signal (+)

Pin 3 - Signal (-)

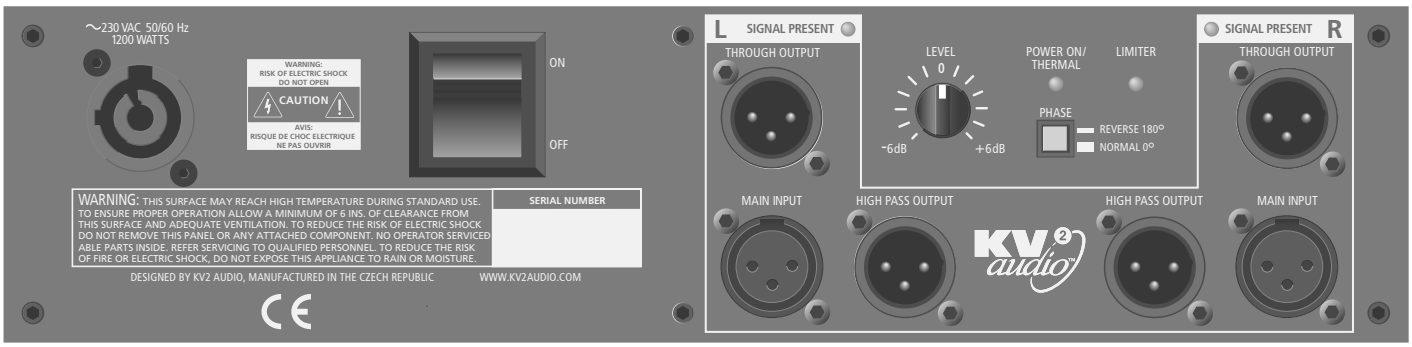
Case - Earth (AC) ground and chassis

Audio signal can be daisy-chained using the through output connector on the input panel. A single source can drive multiple EX1.8 subwoofers with a paralleled input loop. If you are driving multiple EX1.8's in an array, make certain that the source device can drive the total load impedance presented by the paralleled input circuit of the array.

NOTE: Most source equipment is safe for driving loads no smaller than 10 times the source's output impedance. For example, cascading an array of 10 units consisting of EX1.8 subwoofers produces an input impedance of 2000 ohms (20kOhms divided by 10). The source equipment should have output impedance of 200 ohms or less. This is also true when connecting EX1.8's in parallel (loop out) with other KV2 Audio amplifiers, active speakers and subwoofers.

TIP: If the loudspeaker produces noises such as hiss and popping, disconnect the audio cable from the loudspeaker, if the noise stops, then most likely the problem is not with the loudspeaker. Check the audio cable, source, and AC power for the source of the problem.

NOTE: Ensure that all **cabling** carrying signal to multiple amplifiers and active speaker systems is **wired correctly**. Make sure that the **polarity** has not been reversed. Reversed polarity can cause severe degradation in frequency response and can also impact the dispersion characteristics of the speaker.



EX1.8 Rear panel

Amplifiers and Acoustic Filters

A power amplifier specifically designed and optimized for the low frequency woofer powers the EX1.8 . The control system in the EX1.8 processes the audio signal through a series of electronic filters and circuits providing equalization, crossover filters, thermal and overdrive protection.

LED Status Lights

The EX1.8 control panel uses three distinct LED's to provide operating status information.

Power On / Thermal LED

This LED turns green when the speaker is turned ON. The light will continue to be green during normal operation of the speaker system. The LED will change from green to yellow under a thermal condition resulting from overheating of the amplifier system. Under this condition, the speaker system will shut down. You can expect for the system to be down for at least 2-3 minutes depending the ambient temperature and whether the system is being exposed to direct sun light.

Signal

There are individual LED's for each the Left and Right signal inputs. The LED turns green when there is audio signal present in the EX1.8. This signal indicator can be used to troubleshoot wiring problems.

Limiter

Should the rms limiting system be engaged due to overdriving of the EX1.8, the LED will light up yellow. The audible effect of the rms limiter is a lowering of overall output level. The rms limiter will disengage only if the input level is turned down.

NOTE: Please contact KV2 Audio or a local service representative should the system enter a thermal condition under normal operating conditions.

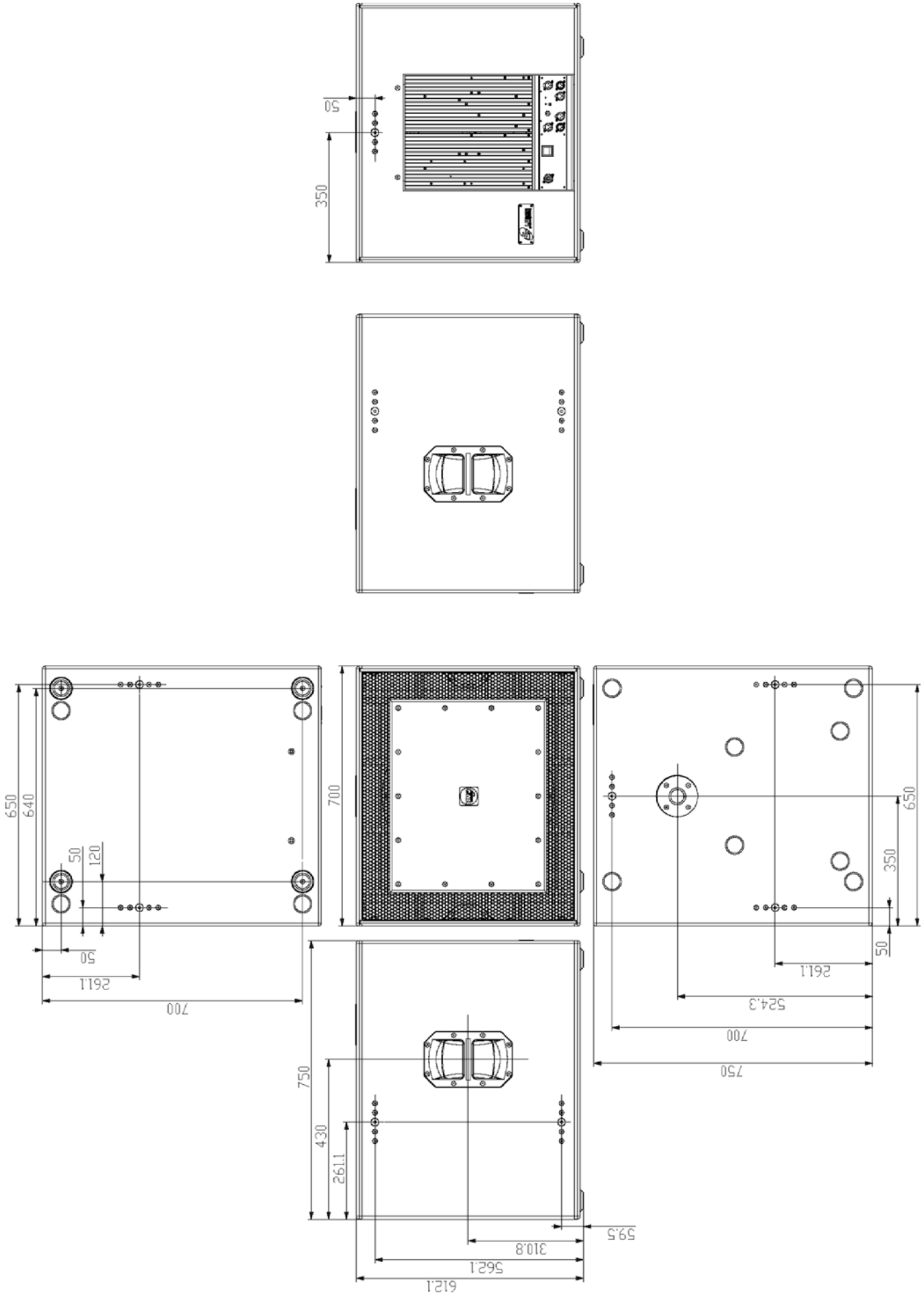
Phase Switch

The EX1.8 features a phase switch that changes the phase of the high pass audio output signal. Changing the phase of the output signal serves as a tool for integrating the full range cabinet and the subwoofer into challenging audio environments. We recommend using a suitable measuring device for performing relevant measurements and determining whether the phase should be reversed.

Level Control

The EX1.8 features a rotary control knob providing adjustment of the audio level. The operational range of the control is –6dB to +6dB.

EX1.8 DRAWING



EX1.8 SPECIFICATIONS

Product Number
KVV 987 223 - EX1.8 *250V*
KVV 987 007 - EX1.8 230*V*
KVV 987 008 - EX1.8 *115V*

System Acoustic Perfomance	
Max SPL Long-term	*131dB*
Max SPL Peak	*134dB*
-3dB Response	*30Hz - 125Hz*
-10dB Response	*27Hz - 125Hz*
Crossover Point	*125Hz*

Low Frequency Section	
Acoustic Design	*Twin Asymmetrical loading*
Woofer Size / Voice Coil Diameter/ Design	*18" / 4" / Inside outside*
Diaphragm Material	*Epoxy Reinforced Cellulose*
Magnet Type	*Neodymium*

Low Frequency Amplifier Specification	
Type	*High efficiency, Current-enhancing switch mode*
Rated Continuous Power	*1000W*
Distortion	*<0.05%*

Signal Input	
Input Sensitivity	*1.0V RMS*
Input Impedance	*20 kΩ*

Power Requirements	
Power Connector	*Neutrik PowerCon®*
Operating Voltage	*100 - 120V @ 60Hz* | *205 - 240V @ 50Hz* | *225 - 260V @ 50Hz*
Recommended Amperage	*10A 115V* | *5A 230V* | *5A 250V*

Cabinet	
Cabinet Material	*Baltic birch*
Handles	*2*
Pole Mount	*M20*
Color	*Black*

Physical Dimensions	
Height	*612.1mm (24.1")*
Width	*700mm (27.56")*
Depth	*750mm (29.5")*
Weight	*65kg (143.3lbs)*

EX1.8 ACCESSORIES

Heavy duty cover for EX1.8 used without cart
part name: COVER EX1.8
part number: KVV 987 258



Heavy duty cover for EX1.8 used with cart CRT - 0011
part name: COVER EX1.8 WITH CART
part number: KVV 987 257



Heavy duty telescopic speaker pole for ES/EX series
part name: KV2-H
part number: KVV 987 130



Front mount magnetic cart for EX1.8
part name: CRT - 0011
part number: KVV 987 230
- wheels not included



Cart Wheels with bolts nuts kit
part name: CRT - WHL
part number: WHL - KVV 987 031
- 4 pcs in pack (rotating), (blue)



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