



KA14

USER GUIDE
English

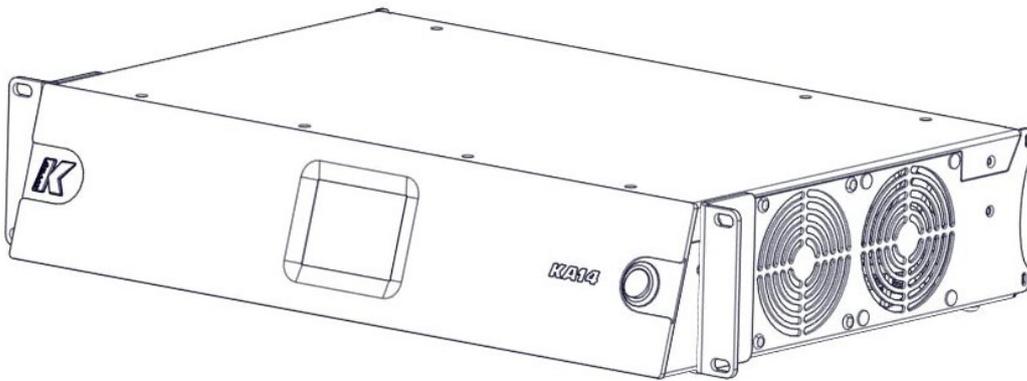


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SYMBOLS



K-array declares that this device is in compliance with applicable CE standards and regulations. Before putting the device into operation, please observe the respective country-specific regulations!



Waste Electrical and Electronic Equipment (WEEE)

Please dispose of this product at the end of its operational lifetime by bringing it to your local collection point or recycling center for such equipment.



This symbol alerts the user to the presence of recommendations about the product's use and maintenance.



Warning: DANGEROUS VOLTAGE.

Terminals marked with this symbol carry a risk of **electric shock**, therefore external wiring connected to these terminals requires installation by a qualified professional or the use of ready-made leads or cords.



This device complies with Restriction of Hazardous Substances Directive.

1. INTRODUCTION

The KA14 is a versatile amplifier, easily adaptable for small applications that do not require a lot of power. Responding to the needs for a simple solution for those who do not have a lot of additional resources, the KA14 is a complete system with a mixer, processor and amplifier.

The KA14 features four fully independent and configurable output channels (4 x 300 W @ 4 Ω). The integrated DSP offers EQ, Matrix, Levels, Delays and a Limiter to avoid the need for external additional processors. The front panel has an easy-to-use touchscreen that gives access to all the basic functions for quick setup and corrections. The KA14 can be used as a mixer for fixed installations thanks to the XLR and RCA analog inputs.

An onboard library preset with K-array speaker provides configuration for endless combinations of the Lyzard, Vyper, Tornado and Rumble loudspeakers. All DSP functions are remote controlled via the K-framework software.

The amplifier is built into a 2U lightweight, aluminum chassis and comes with a kit of removable rack adapters and four rubber pads for flat surfaces. KA amplifiers feature optical limiters and protection against overheating, overcurrent and short circuits.

2. KEY FEATURES

- 1000 W in just 2 rack units
- XLR and RCA Inputs
- 4 independent fully configurable outputs
- Integrated DSP with processing, matrix and delays
- Onboard touch screen for easy access functions
- K-array loudspeakers presets already on board
- USB connectivity for remote control

3. APPLICATIONS

- Optimized for Lyzard, Vyper, Tornado and Rumble speakers
- Restaurants, Lounges, Shops
- Exhibit audio for museum displays
- Portable and Installed AV systems

4. SAFETY INFORMATION

Read these instructions - Keep these instructions - Heed all warnings

 Warning: Failure to follow these safety instructions could result in fire, shock or other injury or damage to the device or other property.

	
<p>This symbol alerts the user to the presence of recommendations about the product’s use and maintenance.</p>	<p>The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated, dangerous voltage within the product enclosure that may be of magnitude to constitute a risk of electrical shock.</p>

IMPORTANT SAFETY INSTRUCTIONS

- Follow all instructions.
- Do not use this apparatus near water.
- Clean only with a dry cloth.
- Do not block any ventilation openings. Install in accordance with the manufacturer’s instructions.
- Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- Do not obstruct the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- Protect the power cord from being walked on or pinched particularly at the plug, convenience receptacles, and the point where they exit from the apparatus.
- Only use attachments/accessories specified by the manufacturer.
- Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus.
- When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
- Unplug this apparatus during lightning storms or when unused for long periods of time.



- Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has

been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.



WARNING



- Since the device is a CLASS I apparatus, it must be only connected to an AC three-wire grounding outlet. If your outlet isn't grounded, contact a licensed electrician to replace it with a property grounded outlet.
- To reduce the risk of electric shock, disconnect the amplifier from the AC mains power before installing audio cable. Reconnect the power cord only after making all signal connections. Do not use the product if the power cord is broken or frayed. Protect the power cord from being walked upon or pinched.
- To completely disconnect this apparatus from the ac mains, disconnect the power supply cord plug from the ac mains connector.
- **Voltage requirement.** Make sure that the supplied voltage stays within the specified range. Verify that your mains connection satisfies the power ratings of the device.
- Only connect the power supply to an appropriate power outlet.
- Do not install the amplifier in wet or humid locations without using weather protection.
- TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, do not expose this apparatus to rain or moisture and objects filled with liquids, such as vases, should not be placed on this apparatus.
- The main plug of the power supply cord shall remain readily accessible.



CAUTION



- **Choking Hazards.** This device contains small parts, which may present a choking hazard to small children. Keep the device and its accessories away from small children.
- **Temperature.** Operate the device in a place where the temperature is between -20°C and 35°C (-4°F to 95° F). Avoid dramatic changes in temperature or humidity when using it, as condensation may form on or within the device.
- **Do not make repairs yourself.** Caution, risk of electric shock. Do not open the device, it contains potentially hazardous voltage. Never attempt to disassemble, repair or modify the system yourself. Disassembling the unit may cause damage that is not covered under the warranty. The device contains no user-serviceable parts. Repairs should only be performed by factory trained service personnel. Do not plug the power cord in if you suspect that your device needs service or repair.

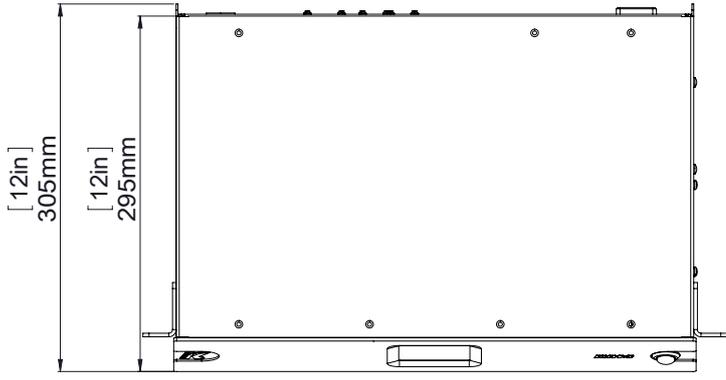
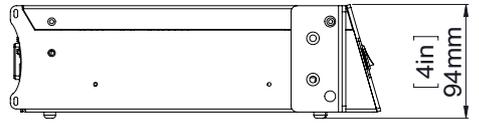
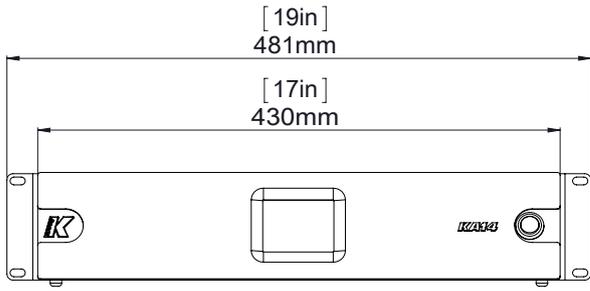
5. UNPACKING

Each K-array amplifier is built to the highest standard and is thoroughly inspected before leaving the factory. Upon arrival, carefully inspect the shipping carton, then examine and test your new amplifier. If you find any damage, immediately notify the shipping company. Only the consignee may institute a claim procedure regarding the system's electronic equipment.

6. INCLUDED ACCESSORIES

- Power cable
- USB cable
- Rubber pads for flat surfaces installation
- Rack brackets

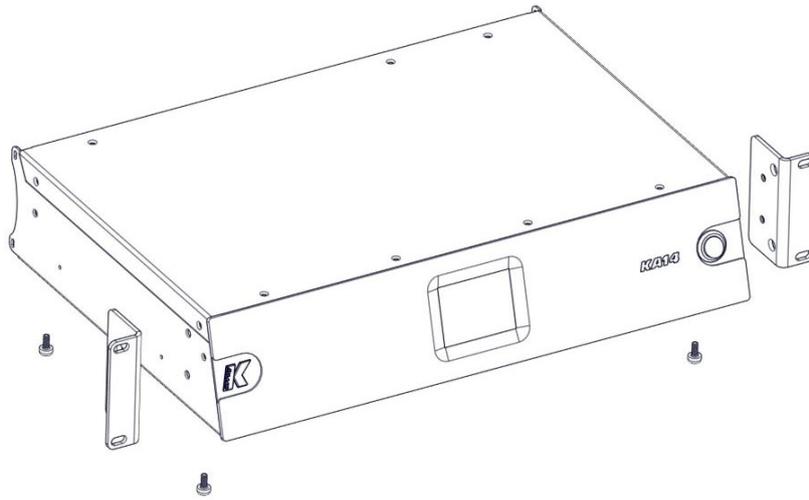
7. PHYSICAL OVERVIEW



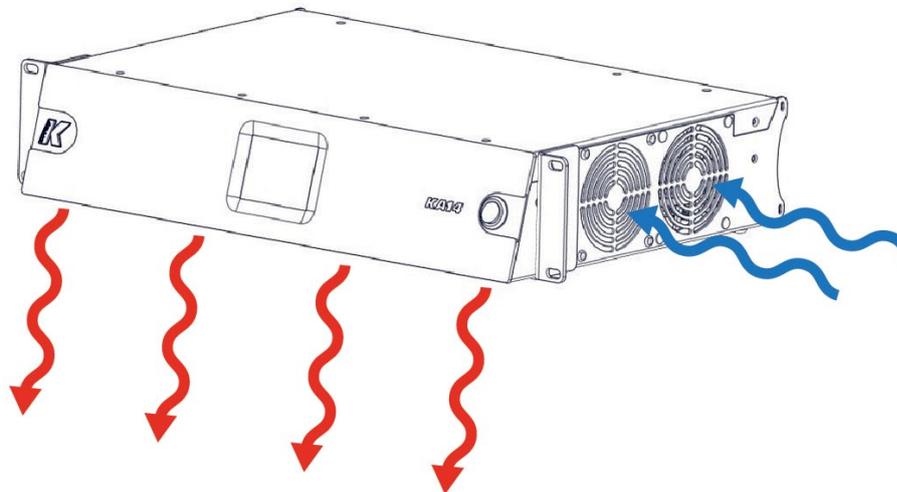
Weight
3.8 kg (8.0 lbs)

8. INSTALLATION

The KA14 is the height of two rack units (2U) and can be mounted in an EIA-standard 19" rack using two rack adapters (included). In case of installation on a flat surface, use the four rubber pads included.



To maintain a low and even operating temperature, the amplifier contains two fans on the right side. The figure below shows the air flow:



WARNING:
For effective cooling, do not obstruct the ventilation openings.



9. VOLTAGE AND CURRENT REQUIREMENTS

The amplifier module and any audio equipment connected to it (mixing consoles, processors, etc.) must be properly connected to the AC power distribution, preserving AC line polarity. Every grounding point must be connected to a single node or common point using the same cable gauge as the neutral and line cable. Bad grounding connections between speakers and the rest of the equipment may produce noise, hum or serious damage to the input/output stages in the system's electronic equipment.



Before applying AC to any K-array self-powered speaker, be sure that the voltage potential difference between neutral and earth ground is less than 5 VAC.



9.1 VOLTAGE REQUIREMENT

The KA14 accommodates AC mains power operating at either 115 V or 230 V. The amplifier will continue to operate safely, without interruption, provided the AC voltage remains within a nominal range of 100 - 240 V (operating range 85 - 264 V) at 50 to 60 Hz.

Please verify that your AC mains power connection is capable of satisfying the power rating for the device.



CAUTION: Do not connect the system to the AC mains power exceeding 265 V. Doing so will cause significant damage to the device and create serious risk for users!

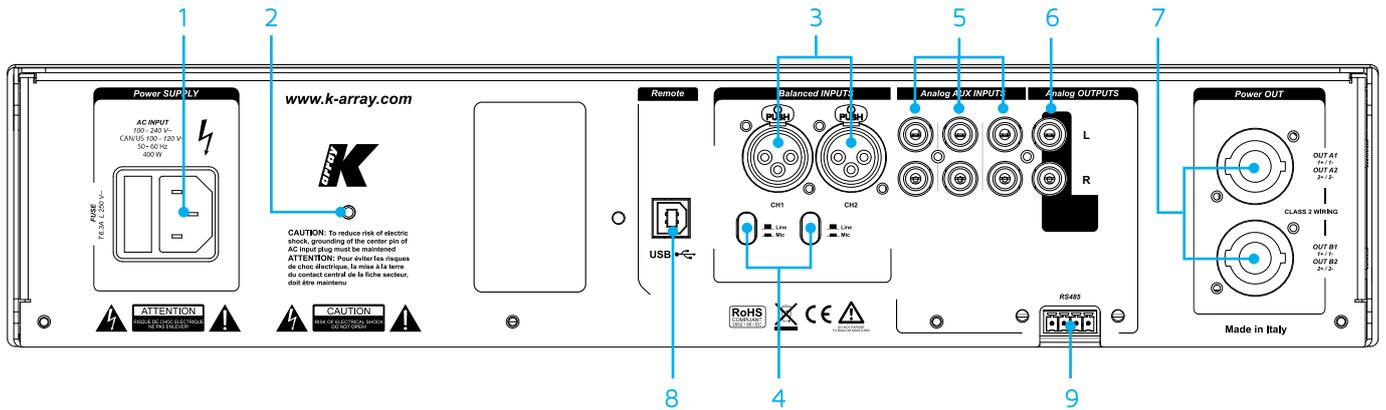


9.2 CURRENT REQUIREMENT

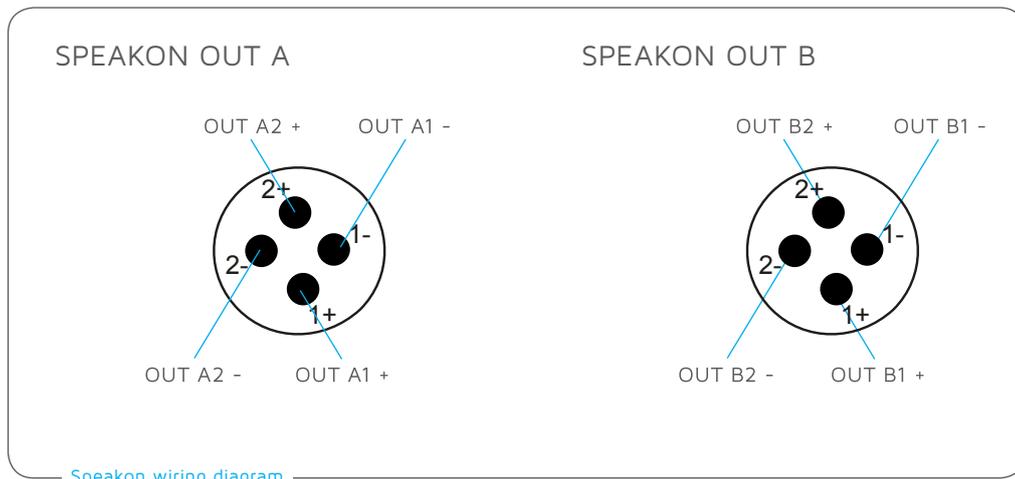
The amplifier presents a dynamic load to the AC mains power, drawing additional current as operating levels increase. Different cables and circuit breakers heat up at varying rates, so it is essential to understand current ratings and how they correspond to circuit breaker and cable specifications. Maximum continuous RMS current - measured over a period of at least ten seconds - is used to calculate the temperature increase in cables, which drives the proper size and gauge cable and rating for slow-reacting thermal breakers. Maximum burst RMS current - measured over a period of approximately one second - is used to select the rating for fast-reacting magnetic breakers.

For best performance, voltage drops should not exceed 10% at 100 V or 10% at 230 V. The minimum electrical service amperage required by a K-array loudspeakers system is the sum of their maximum continuous RMS currents. K-array recommends allowing an additional 30% above the minimum amperage to prevent peak voltage drops at the service entry.

10. BACK PANEL

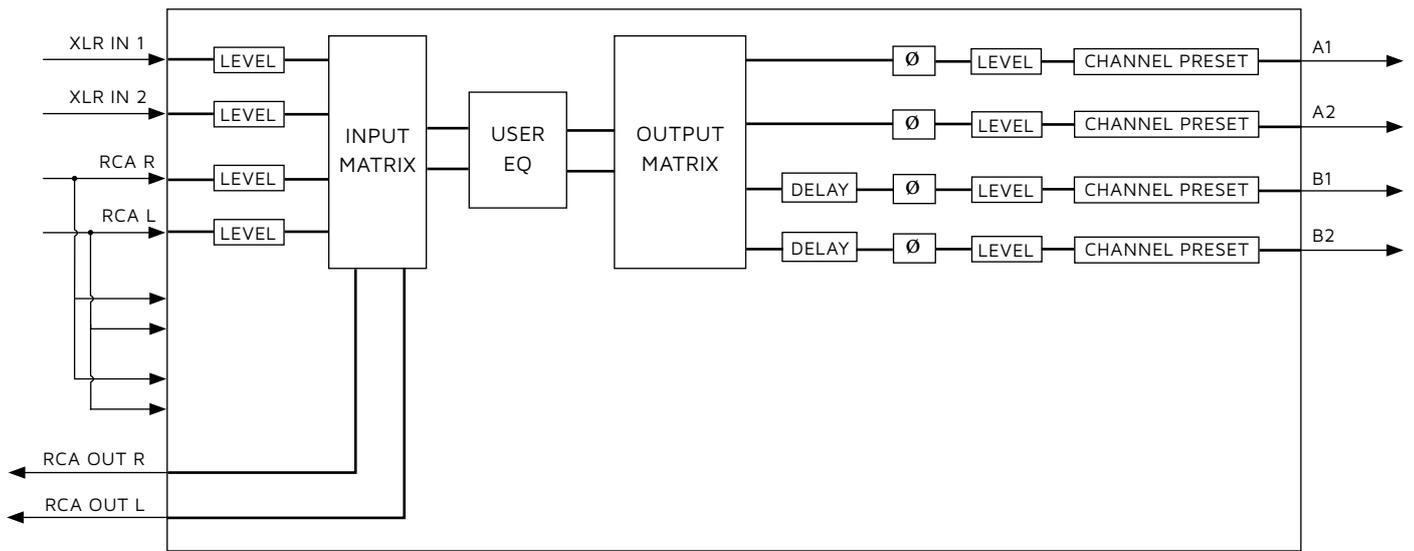


1. AC INPUT. Power socket IEC 320 C14.
2. POWER ON LED. Indicates the amplifier is ON.
3. XLR MIC/LINE INPUTS. Female balanced XLR analog inputs, with selectable sensitivity for Mic (-30 dBu) or Line (+4 dBu). These two inputs accept balanced, low impedance audio signals which allow the use of long cable runs (>10mt), without losing the quality of the signal.
4. MIC/LINE SWITCHES. Select XLR input sensitivity for Mic (pressed) or Line (depressed) level.
5. RCA INPUTS. Female unbalanced RCA analog inputs. These connections are the standard for consumer devices such as CD/DVD readers, portable devices, personal computers..
The two channels of each RCA input are completely independent. They can be used to connect the Left and Right channels of a stereo source, or two independent mono sources.
Please note that the three RCA inputs are wired in parallel, i.e their signals are summed before being processed.
6. RCA OUTPUTS. Female unbalanced analog RCA outputs.
7. POWER OUTPUTS. Speakon NL4 outputs to drive passive speakers (see wiring diagram below).
8. REMOTE USB INPUT. Connects a computer running the K-Framework software, for remote control of the amplifier.
9. RS485 INPUT. Phoenix 4-pin input for remote control of the amplifier via RS485 protocol. Do not connect the KA-POT1 accessory to this input.



Speakon wiring diagram

11. SIGNAL FLOW



KA14 Signal-flow

The KA14 features two independent input processing channels (CH1 and CH2) and four independent output processing channels (A1, A2, B1, B2).

The physical inputs (XLR 1, XLR 2, RCA L and RCA R) can be assigned to any input processing channel thanks to the *Input Matrix*. In the *Input Matrix*, it is also possible to assign any physical input to any RCA output (RCA OUT L or RCA OUT R).

Please note that the three RCA inputs are wired in parallel. If more the one device is connected to the RCA inputs and play simultaneously, their signals are summed.

Please note also that the two channels of each RCA input are completely independent. They can be used to connect the Left and Right channels of a stereo source, or two independent mono sources.

	RCA Outputs		Processing Inputs	
	RCA OUTPUT L	RCA OUTPUT R	CH 1	CH 2
XLR INPUT 1	X		X	
XLR INPUT 2		X		X
RCA INPUT L	X		X	
RCA INPUT R		X		X

Input Matrix - Default settings

The processing input channels CH1 and CH2 can be independently equalized via the K-framework software, then they can be routed to any output channel (A1, A2, B1, B2) thanks to the *Output Matrix*. The user can adjust the level of the four output channels independently. If necessary, the phase can be inverted on each output channel.

It is also possible to add a delay (up to 6ms) on the output channels B1 and B2.

	A1	A2	B1	B2
CH1	X		X	
CH2		X		X

Output Matrix - Default settings

12. TOUCH SCREEN FUNCTIONS

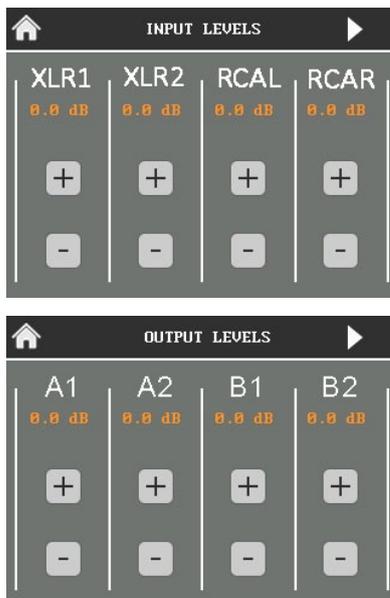
The main functions of the onboard DSP can be managed with the integrated touch screen. Functions are grouped into six pages, shown as icons on the Home page.

HOME PAGE



To reach the homepage from any other page, touch the *Home* button.

LEVELS



The *Levels page* allows users to independently manage the amplitude of the XLR and RCA input channels and all the four output channels.

Click the arrow button on the top right corner to switch between *Input levels page* and *Output levels page*.

MATRIX



The *Matrix page* allow users to manage the routing of the two input channels to the four output channels.

Remember that, by default, the XLR 1 and RCA L physical inputs are routed to the CH1 input channel, while the XLR 2 and RCA R physical inputs are routed to the CH2 input channel (see Chapter 12). If you would like to change these settings, connect a computer running the *K-framework* software and follow the instructions you find in the *K-Framework User Guide*.

DELAY



The *Delay page* allows users to independently set the delays for the B1 and B2 output channels (up to 6 m).

The delays are available on these outputs because they are often used to realign the subwoofers (connected to the B1 and B2 outputs) with the mid-high speakers (connected to the A1 and A2 outputs).

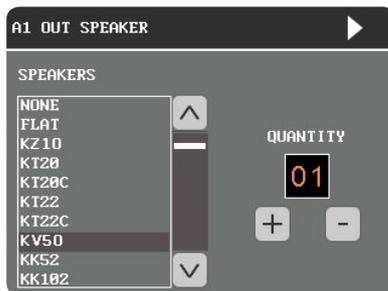
CONFIGURATION

SPEAKER	IMP	QT	MATCH	QT	OUT
KV50	16	01	KU26	01	A1
KV50	16	01	KU26	01	A2
KU26	08	01	KV50	01	B1
KU26	08	01	KV50	01	B2

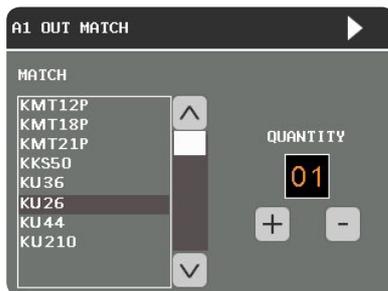
Buttons for "SETUP" and "APPLY" are at the bottom.

Before connecting the speakers to the amplifier, follow the instructions below.

Warning. Failure to follow these instructions could result in serious damage to the speakers connected to the amplifier!



Go to the *Configuration page* and press the SETUP button. Insert the model and the number of speakers connected to Output A1 (one KV50 in the example on the left). Press the arrow button on the top right corner.



Insert the model and the number of speakers you want to match to the previous ones. For example, if you have one KV50 mid-high array connected to the A1 output and a KU26 sub connected to another output (or to another amplifier) select KU26 to the *A1 Out Match page* and the DSP will automatically compute the crossover setting to obtain a perfect match between the speakers.

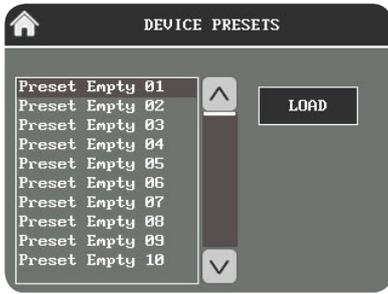
Press the arrow button on the top right corner. Repeat Step 2 and 3 for all other outputs. At the end you will return to the main *Configuration page*. Press APPLY to load all settings. The DSP will automatically adjust the parameters on each output channel to match the requirement for the speakers connected.



Warning: If you are using speakers with selectable impedance, pay attention to set the value indicated in the Configuration page!



PRESET



The *Preset page* allows users to load presets stored on-board.

INFO



The *Info page* contains information about the current software and firmware, and the Board ID of the amplifier. When connecting the amplifier in a K-framework network, please make sure that all devices in the network have different ID numbers.

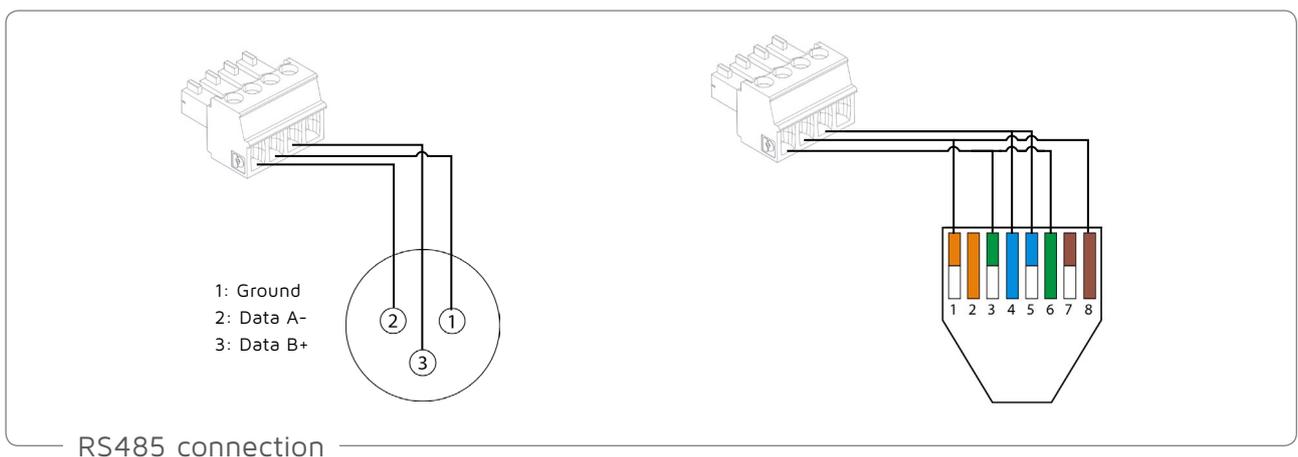
13. REMOTE CONTROL

All amplifier functions, including signal routing, output configuration, channel equalization and delay can be controlled via K-Framework software.

To download your free K-Framework software and K-Framework User Guide, please navigate to the K-array website http://www.k-array.com/software_download

Connect you computer to the USB input of the amplifier using a USB cable.

The amplifier features also 4-pins phoenix connector, for remote control of the amplifier via RS485 protocol. We recommend to use the K-USB accessory as a USB to serial converter. The K-USB allows you to use a XLR cable or RJ45 cable to connect the computer to the amplifier. To connect the XLR or RJ45 cable to the phoenix connector, please follow the scheme below:



14. SERVICE

To obtain service:

- 1) Contact the official K-array distributor in your country. Your local distributor will direct you to the appropriate service center.
- 2) If you are calling for service, please have the serial number(s) of the unit(s) available for reference. Ask for Customer Service, and be prepared to describe the problem clearly and completely.
- 3) If the problem cannot be resolved over the phone, you may be required to send the unit in for service. In this instance, you will be provided with an RA (Return Authorization) number which should be included on all shipping documents and correspondence regarding the repair. Shipping charges are the responsibility of the purchaser.

Any attempt to modify or replace components of the device will invalidate your warranty. Service must be performed by an authorized K-array service center.



Cleaning:

Use only a soft, dry cloth to clean the housing. Do not use any solvents, chemicals or cleaning solutions containing alcohol, ammonia or abrasives. Do not use any sprays near the product or allow liquids to spill into any openings.

15. SPECIFICATIONS

Output Power @ 4Ω	Power Output	4 x 300 W ⁽¹⁾
Minimum impedance		4 Ω
Distortion (THD + N)	Audio specs	0.005% typical (1W @ 4Ω)
Bandwidth		20 Hz - 20 kHz (±1 dB)
Input Impedance		47 kΩ
Dynamic Range		113 dB
Nominal Voltage Gain (f =1 kHz)		28.2 dB
Thermal	Protection	Yes
Short circuit / overcurrent		Yes
DC Output		Yes
Input Connectors	Audio Input/Output	2 female 3-pin balanced XLR + 3 stereo female unbalanced RCA
Output Connectors		Stereo female unbalanced RCA
Connectors	Remote control Input	1 USB B Jack serial converter
Connectors	Audio powered Output	2 x 4-pin Speakon NL4
NL4 1 wiring		1+1- = A1 2+2- = A2
NL4 2 wiring		1+1- = B1 2+2- = B2
Connector	AC power	3-pin inlet IEC 320 C14
Nominal voltage		100 - 240 V _{AC} , 50 - 60 Hz
Operating Range		85 - 264 V _{AC}
1/8 rated power (pink noise) @ 4Ω		400 W
IP	Certification	20
Dimensions	Physical	43.0 cm x 29.5 cm x 9.4 cm (16.9" x 11.6" x 3.7")
Weight		3.8 kg (8.0 lbs)
<p><small>Notes for data</small></p> <p><small>1. EIAJ Test Standard, 1kHz, 1%THD</small></p> <p><small>New materials and design are introduced into existing products without previous notice. Present systems may differ in some respects from those presented in this catalogue.</small></p>		

The contents of this manual are furnished for informational purposes only. K-array s.u.r.l. assumes no responsibility for any errors or inaccuracies that may appear in this manual. K-array s.u.r.l. reserves the right to make modifications without prior notice.