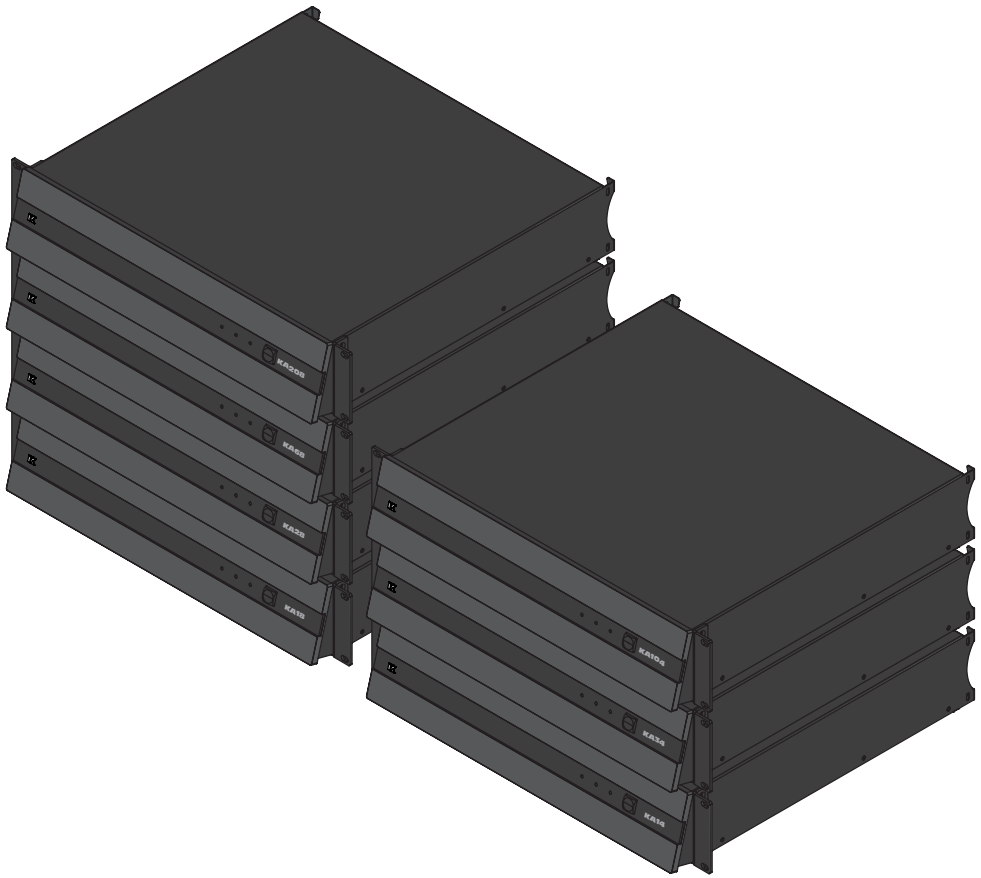
# Kommander-KA

2RU Digital Processing Multi-Channel Amplifiers

USER GUIDE

• 20230206 •



K-ARRAY

Unique Audio Solutions

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## IMPORTANT SAFETY INSTRUCTIONS

**CAUTION**
RISK OF ELECTRIC SHOCK
DO NOT OPEN

ATTENTION: RISQUE DE CHOC ELECTRIQUE NE PAS OUVRIR

**CAUTION**: TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER (OR BACK).
NO USER-SERVICEABLE PARS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

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

The lighting 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.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in this guide.

Operator's manual; operating instructions
This symbol identifies the operator's manual that relates to the operating instructions and indicates that the operating instructions should be considered when operating the device or control close to where the symbol is placed.

For indoor use only
This electrical equipment is designed primarily for indoor use.

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 device complies with Restriction of Hazardous Substances Directive.

**WARNING**

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

## General heed and warnings

- Read these instructions.
- Keep these instructions.
- Heed all warnings.
- Follow all instructions.
- Do not use this apparatus near water.
- Clean only with 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 defeat the safety purpose of the polarized or grounding plug. A polarized plug has two blades with one wider than the other. A grounding 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.
- Only use attachments/accessories specified by the manufacturer.
- Protect the power cord from being walked on or pinched particularly at the plugs, convenience receptacles, and at the point where they exit from the apparatus.
- Clean the product only with a soft and dry fabric. Never use liquid cleaning products, as this may damage the products cosmetic surfaces.
- 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.
- Avoid placing the product in a location under direct sunlight or near any appliance that generates UV (Ultra Violet) light, as this may change the product surface finishing and cause a change in color.
- 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.
- CAUTION: These servicing instructions are for use by qualified service personnel only. To reduce the risk of electric shock, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so.
- WARNING: Only use attachments/accessories specified or provided by the manufacturer (such as the exclusive supply adapter, battery, etc.).

This apparatus is intended for professional use.

Installation and commissioning may only be carried out by qualified and authorized personnel.

- Before turning the power on or off for all devices, set all volume levels to minimum.
- Use only speaker cables for connecting speakers to the speaker terminals. Be sure to observe the amplifier's rated load impedance particularly when connecting speakers in parallel. Connecting an impedance load outside the amplifier's rated range can damage the apparatus.
- K-array cannot be held responsible for damage caused by improper use of the loudspeakers.
- K-array will not shoulder any responsibilities for products modified without prior authorization.

## CE Statement

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!

## FCC Statement

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

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

## FCC Radiation Exposure Statement

This device complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment must be installed and operated in accordance with provided instructions and the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. this device may not cause harmful interference, and
2. this device must accept any interference received, including interference that may cause undesired operation.

**CAUTION!** Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

## Canadian Statement

This device complies with Industry Canada's licence-exempt RSSs. Operation is subject to the following two conditions:

- this device may not cause interference, and
- this device must accept any interference, including interference that may cause undesired operation of the device.

The device meets the exemption from the routine evaluation limits in section 2.5 of RSS 102 and compliance with RSS-102 RF exposure, users can obtain Canadian information on RF exposure and compliance.

This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.

## Trademark Notice

All trademarks are the property of their respective owners.

## Sommario

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Thank you for choosing this K-array product!

To ensure proper operation, please carefully read the owner's manuals and safety instruction before using the products.
After reading this manual, be sure to keep it for future reference.

Should you have any questions about your new device please contact K-array customer service at support@k-array.com or contact the official K-array distributor in your country.

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Kommander-KA is the line of K-array amplifiers meticulously designed and built with powerful DSPs and Class D amp modules that extend the sound experience through intelligent sound processing that can adapt to any context.

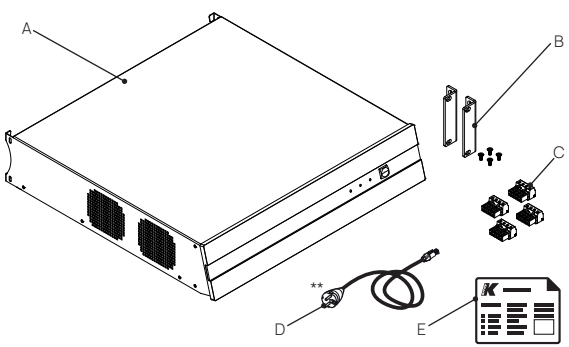
Each amplifier of the Kommander-KA line is fully loaded on board with all the configurations necessary to drive any K-array passive product to fulfill maximum power of each output channel, of course a variety of power differ from model to model to give you a wider choice for specific applications.

The K-array Connect mobile app and K-framework software provide the control dashboards to access all Kommander-KA DSP features for system settings, fine tuning and monitoring in single unit installations and demanding applications where thousands of watts must be carefully managed.

# Unpacking

Each K-array amplifier is built to the highest standard and 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. Check that the following parts are supplied with the product.

A. 1x Amplifier unit: model and version shall be one from the following list:
   - Kommander-KA14 I
   - Kommander-KA18
   - Kommander-KA28
   - Kommander-KA34
   - Kommander-KA68
   - Kommander-KA104
   - Kommander-KA208
B. 2x Rack mounting brackets with screws
C. PC 4/ 4-ST-7,62 speaker output flying connectors *
D. 1x Power cord
E. 1x The quick guide

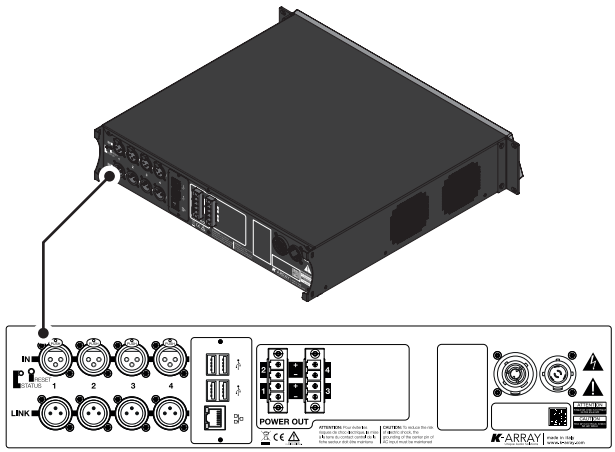



Notes

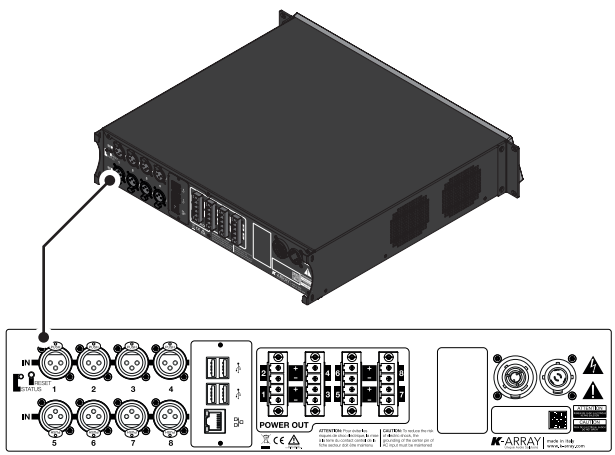
* 2 pieces in 4-channel units, 4 pieces in 8-channel units.

** The AC mains cord plug may differ from the picture according to local regulation.

4-channel units: KA14 I, KA34, KA104




8-channel units: K18, KA28, KA68, KA208



# Introduction

The Kommander-KA amplifiers are available in two versions: 4-channel units and 8-channel units. Both versions implement multichannel free routing and DSP with Grouping, Input EQ, Output EQ, Level adjustment, Dynamic Limiters and Delay per channel.

| 4-channel units | Connectors | | Power Rating per channel |
|---|---|---|---|
| | input | output | |
| Kommander-KA14 I | 4 | 4 | 600W @ 2Ω |
| Kommander-KA34 | 4 | 4 | 750W @ 4Ω |
| Kommander-KA104 | 4 | 4 | 2500W @ 4Ω |

| 8-channel units | Connectors | | Power Rating per channel |
|---|---|---|---|
| | input | output | |
| Kommander-KA18 | 8 | 8 | 150W @ 4Ω |
| Kommander-KA28 | 8 | 8 | 600W @ 2Ω |
| Kommander-KA68 | 8 | 8 | 750W @ 4Ω |
| Kommander-KA208 | 8 | 8 | 2500W @ 4Ω |

The dedicated K-array Connect app and the K-framework3 software for Mac and PC allow user access to the highly configurable output section and the powerful DSP making any Kommander-KA amplifier a flexible driving unit.
In order to remote control a Kommander-KA amplifier download the K-array Connect app or the K-framework3 software:

ANDROID APP ON Google play
Download on the App Store
click to go

WINDOWS and OSX software
K-framework3
click to go

# Getting Started

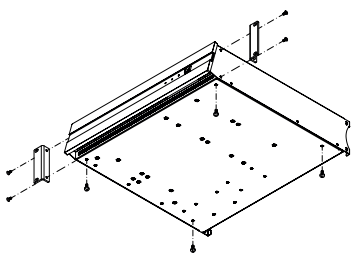
1. Connect the input and output signal cables according to the configuration you want to achieve.
2. Connect the Kommander-KA02 I to its power supply and plug the power cord to the AC mains socket.
3. Use the K-array Connect app to connect your mobile device to the Kommander amplifier unit
4. Set the amplifier Output Configuration*: the Devices menu will show the device(s) you can manage with the app: press on the image of the unit to configure.

   **Carefully check that the factory presets match the actual configuration of passive speakers connected to the amplifier connectors.**
5. Set the signal routing from the input channels to the output channels in the ROUTING tab.
6. Check the signal volume in the VOLUMES tab.
7. Enjoy K-array sound!

## Mounting and cooling

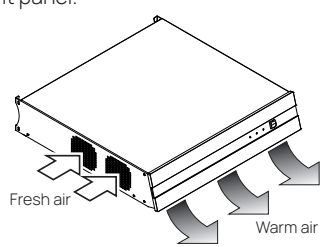
K-array Kommander amplifiers are provided with a couple of brackets for common 19" rack installation: each Kommander amplifier occupies 2 rack units. In order to set the amplifier for rack installation:

- unscrew the four bottom feet;
- assemble the lateral rack mounting brackets with screws provided within the package.



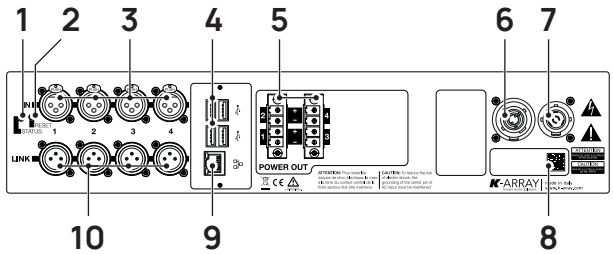
In order to prevent any mechanical issue, use both frontal and rear mounting brackets to secure the amplifier to its location.

Install the amplifier in a well-ventilated location at 35°C (95°F) max environment temperature.
The ventilation openings must not be impeded by any item.
Fresh air enter the amplifier from aside, warm air is expelled under the front panel.



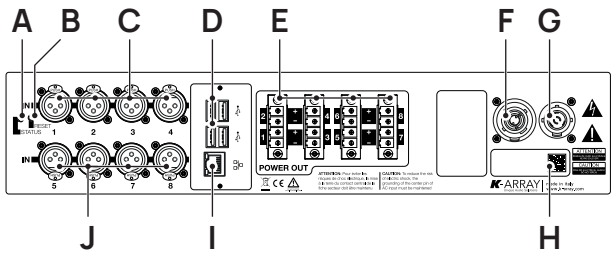

In rack mount installation leave one rack unit empty every three installed amplifiers to guarantee adequate air flow.

## 4-channel Amplifier Rear Panel



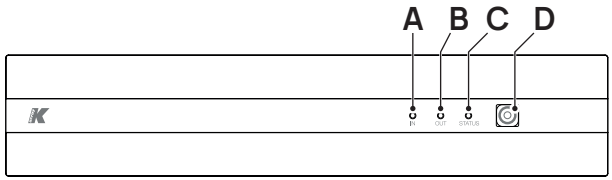

1. Status LED
2. Reset button
3. 4x XLR-F balanced line channel inputs
4. USB ports
5. 2x PC 4/ 4-ST-7,62 speaker output terminals
6. PowerCon TRUE link (AC mains out)
7. PowerCon TRUE inlet (AC mains in)
8. QR Code for the K-array Connect app remote connection
9. RJ45 Ethernet port
10. 4x XLR-M balanced line channel outputs

## 8-channel Amplifier Rear Panel




A. Status LED
B. Reset button
C. 4x XLR-F balanced line channel 1, 2, 3 and 4 inputs
D. USB ports
E. 4x PC 4/ 4-ST-7,62 speaker output terminals
F. PowerCon TRUE link (AC mains out)
G. PowerCon TRUE inlet (AC mains in)
H. QR Code for the K-array Connect app remote connection
I. RJ45 Ethernet port
J. 4x XLR-M balanced line channel 5, 6, 7 and 8 inputs

## Front Panel

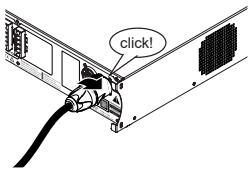



A. Input signal monitor LED
B. Output signal monitor LED
C. Status LED
D. Standby button

## AC mains supply

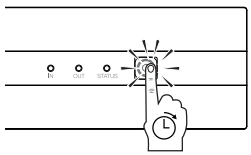
The AC Main connection is made via the provided power cord:

1. insert the powerCon TRUE flying connector into the inlet and then rotate it clockwise;
2. connect the power plug of the power cord to a mains socket outlet.




Once properly plugged, the amplifier power up: the front and back LEDs light on.

In order to set the amplifier unit in standby mode, keep pressed the button on the front panel for 2 seconds. Keep pressed the button for 2 seconds to wake up the amplifier from standby mode.



The powerCon TRUE link (AC mains out) connector allows to distribute the AC main power to other units according to their power consumption. Please don't exceed the limits stated on the next tables.

| | Power consumption* | Max number of cascade powered equal units |
|---|---|---|
| Kommander-KA14 I | 400 W | 4x KA14 I |
| Kommander-KA34 | 600 W | 4x KA34 |
| Kommander-KA104 | 1200 W | 2x KA104 |

| | Power consumption* | Max number of cascade powered equal units |
|---|---|---|
| Kommander-KA18 | 300 W | 6x KA18 |
| Kommander-KA28 | 800 W | 2x KA28 |
| Kommander-KA68 | 1200 W | 2x KA28 |
| Kommander-KA208 | 1200 W | - |

* Power Consumption at 4 Ω load, Pink noise, 1/8 rated power.

## LED chart

In the rear panel, the input signal monitor LED and the output signal monitor LED blink according to the presence of audio signal at any input or output channel respectively. The input and output signal monitor LEDs light on orange when the DSP is limiting the signal level.

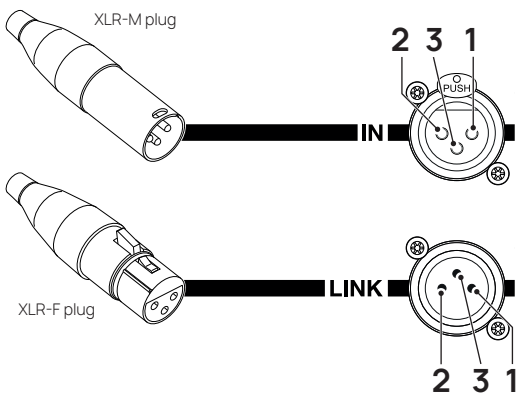
### Status LED

| Color | | Mode | Description |
|---|---|---|---|
| | orange | solid | DSP software is loading |
| | green | solid | System ready |
| | blue | solid | User command: system identification |
| | purple | flashing | Network parameters reset |

## Input Wiring

Kommander-KA amplifiers accept balanced input signals. Only high quality balanced, screened, twisted pair audio cables with metal XLR connectors should be used.

> ⚠ The amplifier input sensitivity is set to accept input signal at +4 dBu reference level.




IN: Line input audio connector.
Male XLR plug and female XLR chassis connector. Pinouts:

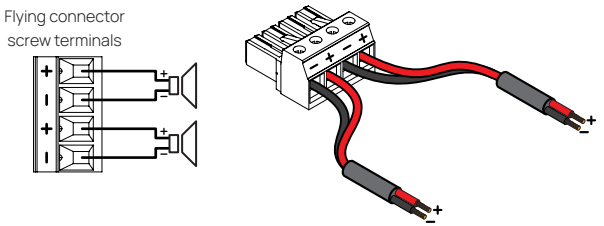
1. ground
2. hot
3. cold.

LINK (4-channel amplifiers only): audio connector phisically paralleled to the corresponding input connector.
Female XLR plug and male XLR chassis connector. Pinouts:

1. ground
2. hot
3. cold.

## Loudspeakers Wiring

In order to set the proper connections with the loudspeakers, a set of euroblock PC 4/4-ST-7,62 flying connectors are provided.
Each PC 4/4-ST-7,62 flying connector features four terminals designed to be connected to a couple of loudspeaker cables (carrying two wires each). Be sure to observe the correct polarity at both the loudspeaker and amplifier cable ends.




When connecting multiple loudspeakers in parallel to the same amplifier's output channel, make sure the total nominal impedance doesn't lower under the amplifier minimum recommended load impedance.

| | Minimum Load | Power Rating per channel at minimum load |
|---|---|---|
| Kommander-KA14 I | 2 Ω | 600 W @ 2Ω |
| Kommander-KA34 | 4 Ω | 750 W @ 4Ω |
| Kommander-KA104 | 4 Ω | 2500 W @ 4Ω |
| | | |
| Kommander-KA18 | 4 Ω | 150 W @ 4Ω |
| Kommander-KA28 | 2 Ω | 600 W @ 2Ω |
| Kommander-KA68 | 4 Ω | 750 W @ 4Ω |
| Kommander-KA208 | 4 Ω | 2500 W @ 4Ω |

# Remote Connectivity

The Kommander-KA amplifier unit features a built-in hot spot establishing a local Wi-Fi network dedicated to remote control the amplifier with mobile devices.
The default local Wi-Fi SSID and unit IP address are printed on a label located on the rear plate of the unit; a QR code for easing the connectivity is printed as well.

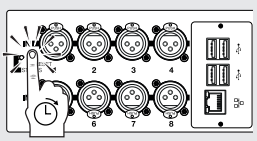
The RJ45 Ethernet port on the rear panel allows to connect the unit to a local area network (LAN). Since every host on a network must be identified by a unique IP address, the simplest local network usually implement a router/switch with a DHCP server managing the addresses allocation: by default the Kommander-KA unit is set to obtain a local IP address from the DHCP server.
In case a DHCP server is not present on the LAN, the unit goes in AutoIP mode: in few seconds the amplifier automatically self-assign an IP address in the range 169.254.0.0/16.
A static IP address can be assigned to the amplifier unit using the amplifier's embedded web app (Network menu).

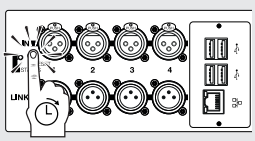
## Connectivity Reset

With the unit switched on, keep pressed the RESET button on the rear panel for 10 to 15 seconds in order to:

- Revert the wired IP addressing to DHCP;
- Activate the built-in Wi-Fi and reset the wireless parameters to the default SSID name and password

The status LED turns purple while the RESET button is pressed.



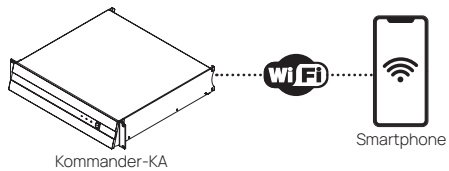

The Kommander-KA amplifiers can be controlled remotely by a mobile device or desktop PC/MAC.

K-array Connect mobile app

K-array Connect is the mobile app that allows to direct manage and control a Kommander-KA amplifier with a mobile device (smartphone or tablet) wireless.
Download the K-array Connect mobile APP from the dedicated store of your mobile device.

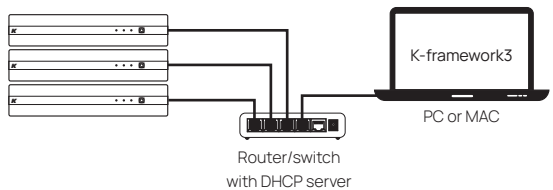
Embedded web app

The integrated operating system osKar features a complete web user interface accessible over the network: connect to the Kommander-KA02I on a local network or wireless via its built-in hot spot and access the web app with a web browser (Google Chrome recommended).



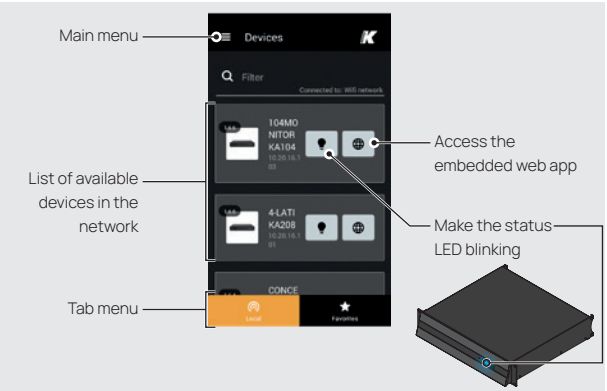

K-framework3

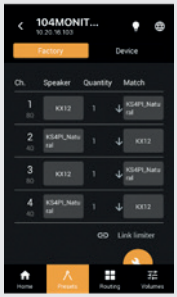
The K-array K-framework3 is the managing and control software dedicated to professionals and operators looking for a powerful tool for designing and managing a large number of units in demanding applications. Download the K-framework3 software from K-array website.



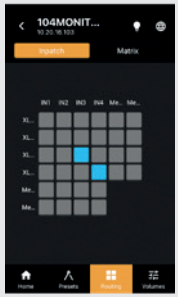
## K-array Connect Mobile App

The K-array Connect mobile app allows to access the Kommander-KA amplifiers wireless, leveraging on the local Wi-Fi established by the built-in hot spot.

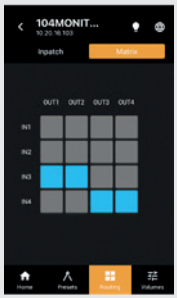


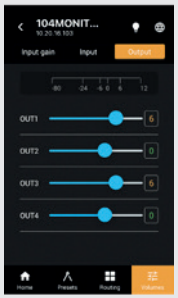

**Preset menu**
Load the loudspeaker factory presets on the output channels and manage the device configuration presets.




**Routing menu**
**INPATCH**
Patch the input signals to the DSP inputs.




**Preset menu**
**MATRIX**
Set the signal routing from the DSP to the output connectors.

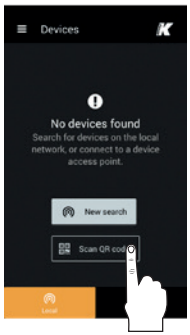



**Volumes menu**
Manage the the input and output volumes.

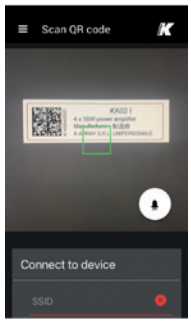
## Connecting To The Built-In Hot Spot

1. Ensure the Wi-Fi of the mobile device is on.
2. Launch the K-array Connect app.
3. If the list of available devices is empty touch the SCAN QR CODE button and use the mobile device camera to frame the QR code in the bottom panel of the Kommander-KA unit: this provides the mobile device to connect to the amplifier's hot spot.
4. Click on the image of the Kommander-KA unit to manage the amplifier with the K-array Connect app or click on the button with the globe in order to lanch the embedded web app.

> In case you need to connect manually connect to the amplifier's hot spot, the default password is the device serial number, e.g. K142AN0006 (case sensitive).




Scroll down to update the list of devices or touch the Scan QR code button to activate the camera in order to connect the unit

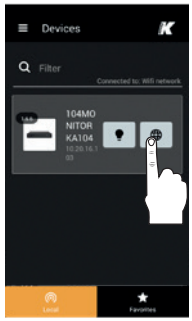



The K-array active unit has a label with the QR code for connecting the local Wi-Fi: target the code to establish the wireless connection

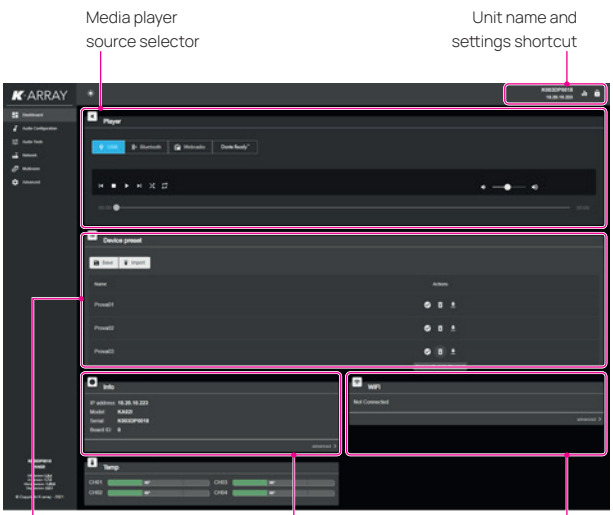

Connected and discovered!

# Embedded Web App

The embedded web app provides direct access to the operating parameters of the amplifier unit.
The web app is accessible via a web browser (Google Chrome recommended) over a wired or wireless connection to the amplifier unit.
The K-array Connect Mobile App and the K-framework3 software interfaces include a shortcut for opening the web app, once the connection to the amplifier unit is established.
If the amplifier unit is connected to a LAN and its IP address is set and known, it is possible to access its embedded web app typing its IP address in the address bar of the web browser.

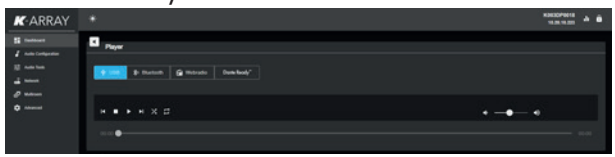



## Dashboard




The default menu provides access to the media player and the amplifier unit setup parameters.

### USB Media Player



### DanteReady™ streamer

K-array devices incorporate Dante as an optional software implemented solution, giving the user to get immediate, no-fuss connectivity over IP on demand.

The units born with no active Dante channels and can be upgraded to 2 IN x 2 OUT Dante channels (Ships with 0x0 / Upgradeable to 2x2).
Customers can make channel purchases directly within Dante Controller using Audinate's payment system.

When a unit receives Dante audio packets, it reconstructs them back into a continuous digital audio stream, which is then played out over the DSP Media channels.
The Dante audio implementation is 100% lossless 24- or 32-bit PCM, 48 kHz sample rate.

### Device preset

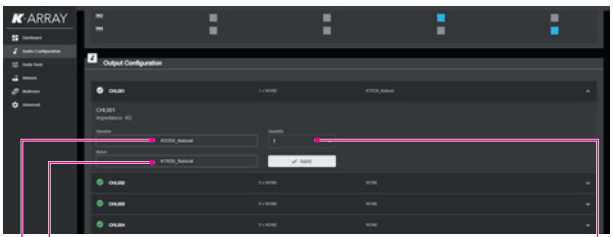
This tab contains the slot where to manage (save, import, export, delete) the unit configuration.

## Audio Configuration

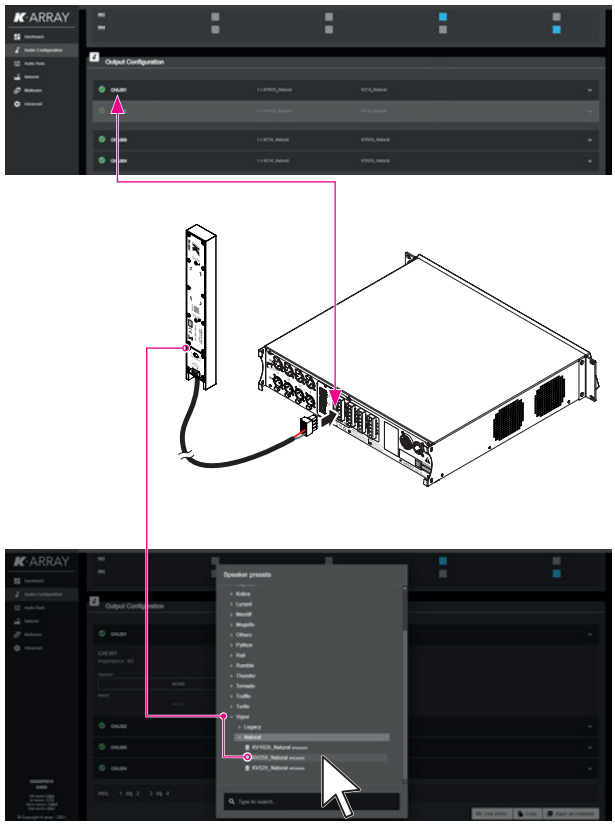
Use this menu to access the input/output signal routing and output configuration

### Output Configuration

The Output Configuration is where the K-array loudspeaker factory presets can be loaded on the output channels.
By default, all Kommander-KA units born with all the amplifier's output connections muted: in order to activate the output channels the output configuration shall be set.
Care must be taken matching the loudspeaker presents with the actual loudspeaker configuration.




1. Navigate the menu and go to Audio Configuration.
2. Go to the Output Configuration section.
3. Select the output channel to be configured.
4. Select the speaker factory preset corresponding to the loudspeaker model and version actually connected to the amplifier output connector.
5. If needed, set the number of loudspeakers that are connected in parallel to the amplifier output connector.
6. Select the matching loudspeaker, i.e. the subwoofer used in the actual loudspeaker configuration (eg. the Truffle-KTR26 matching the Vyper-KV25II) or the high/mid loudspeaker when configuring a subwoofer output channel (eg. the Lyzard-KZ14I matching the Truffle-KTR25).



Ensure to set the proper loudspeaker factory preset corresponding to the actual loudspeaker connected to the amplifier output channel

7. Apply the output channel configuration.
8. If needed set the proper pairing channels in PBTL mode.
9. Go to the Routing section and set the proper signal routng.

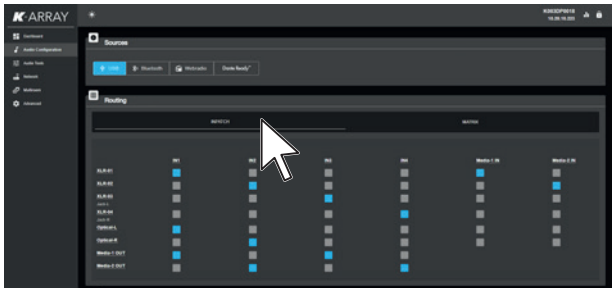
### MATRIX

The matrix allows to set the signal routing path between the amplifier's input channels and the amplifier's output connectors. Blue boxes at the cross intersection between raws and columns state an open path between sources (raw) and destinations (columns).


### INPATCH - 4-channel unit only

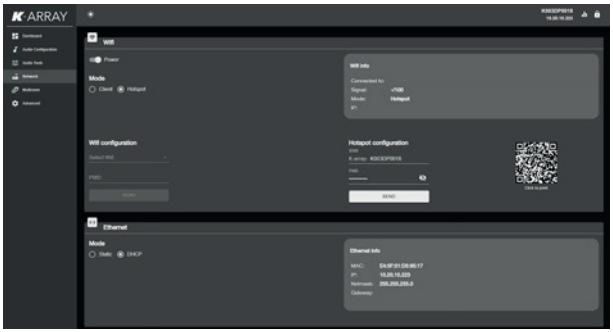
The input patch tab allows to address the input connections and the input streamer (media player) to the four amplifier's input channels.

The signal managed by the media player can be routed to the amplifiers' input channels via the Media-1 OUT and Media-2 OUT.



## Network

This menu section allows the user to monitor and set the network parameters.



### WiFi

The WiFi can be configured to connect the unit to a wireless LAN as a CLIENT or, alternatively, to create an independent local wireless network behaving as HOT SPOT.
By default the WiFi is set as HOT SPOT allowing any mobile device to connect to the unit.
By default, the SSID of the HOT SPOT is composed by the word "K-array-" followed by the serial number of the unit; the default password is the unit's serial number. The SSID and the password of the HOT SPOT can be modified manually: the QR Code will change accordingly.
When set as CLIENT, enter the data of the WiFi LAN in order to connect the unit to that network.
The power switch allows to toggle on and off the WiFi.

### Ethernet

Set the IP addressing static or DHCP.

## Advanced

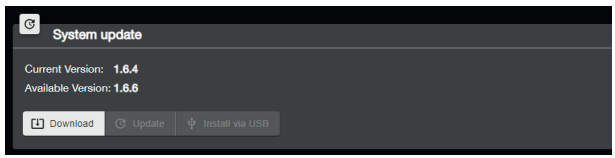
This menu provides access to the system informations, like the device name and ID and the system update tool.

### System Update

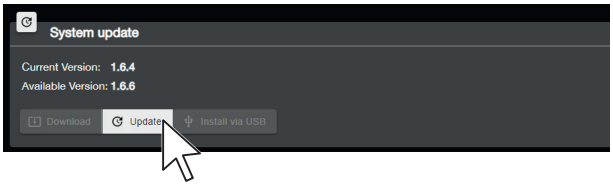
In order to update the internal DSP software and osKar operating system two methods are available: via an Internet connection or USB key.

### Update via Internet

1. Connect the Kommander-KA amplifier to Internet – possibly via a wired connection.
2. The Download button turns active when a new software version is available on K-array server: when active, press on the Download button to start downloading the software from the Internet. This step doesn't install the software: the installation shall be actiated manually.



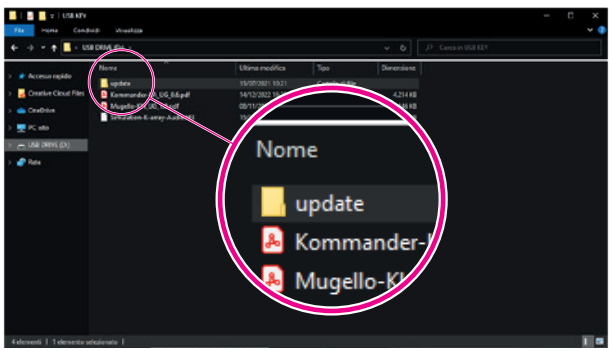

3. The Update button activates when the software is completely dowloaded: when active, press on the Update button to start updating the Kommander-KA amplifier.

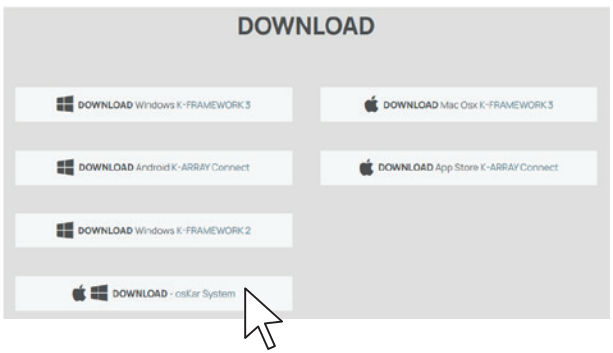



The update procedure lasts in about 15 minutes: after updating the Kommander-KA amplifier reboots.

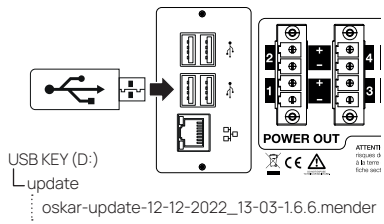
### Update via USB

A. Make a folder named **update** (case sensitive) on the root of a USB key or drive.




B. Open the K-array website on the Internet browser on your PC or Mac.
C. Navigate the Products→Software menu and scroll down to the Download section of the Software webpage.
D. Download the osKar System (ensure to be registered to the website in order to proceed with the download) and save the update file with extension **.mender** into the **update** folder on the USB drive.
E. Plug the USB drive to a free USB port on the amplifier rear panel.




F. If not already operating, switch on the Kommander-KA amplifier.
G. Connect your mobile device to the Kommander-KA amplifier and access the embedded web app.
H. Naigate the user interface to the Advanced menu: the Install via USB button activates when the USB drive contains the .mender file in the proper folder.


I. Press on the Install via USB button to start updating the Kommander-KA unit.

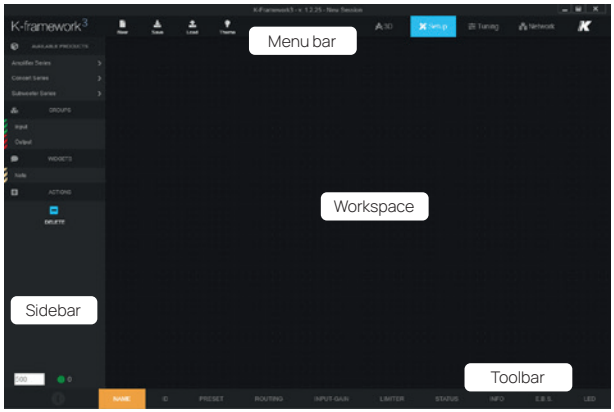
The update procedure lasts in about 15 minutes: after updating the Kommander-KA amplifier reboots.

## K-framework3

The Kommander-KA amplifiers can be remotely controlled with the dedicated K-framework3 software available for PC and MAC on K-array website.

The K-framework3 is the managing and control software dedicated to professionals and operators looking for a powerful tool for designing and managing a large number of units in demanding applications.

WINDOWS and OSX software
K-framework3

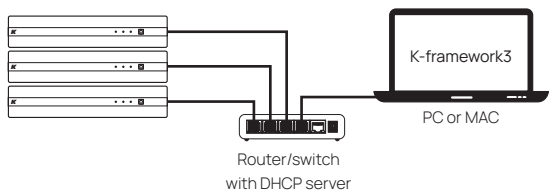



The K-framework3 operates in three modes:

- 3D – Design a loudspeaker system for your venue in a full 3D environment and make free field acoustic simulations;
- SETUP – import from the 3D design the active components into the workspace or build from scratch a PA system composed of active loudspeakers and amplifiers; use the input and output groups to allow full control of the system;
- TUNING – Manage and control the loudspeaker system in real time: optimize the performance of the loudspeaker system during the tuning session and control its behavior in live events.

The K-framework3 can work either off-line with virtual devices or on-line with real active loudspeakers and amplifiers connected over the same Ethernet network.

The K-framework3 allows you to start designing the PA system off-line and sync the virtual devices to the real ones on site, when the devices are available, or import from scratch in the workspace the real active loudspeakers and amplifiers available on the network. In both cases, in order to discover and sync the active devices, both the PC or Mac running the K-framework3 and the real units shall be properly connected to the same Local Area Network – LAN – with star topology.




The network shall comprise:

- single PC or MAC, running the K-framework3 software with network interface 100Mbps (or higher);
- router with DHCP server 100Mbps (or higher);
- Ethernet switch 100Mbps (or higher);
- Cat5 (or higher) Ethernet cables.

A DHCP server is highly recommended even if the device units implement the zeroconf network technologies: if a DHCP service is not available, every device will self assign an IP address in the range 169.254.0.0/16 (auto-IP).

## Discovery

1. Ensure that all the units and the PC/Mac running the K-framework3 are properly connected to the same network.
2. Power up the units.
3. Launch the K-framework3.
4. Open the Network window and launch the discovery:

- If the K-framework3 finds two or more devices with the wrong ID, a dialog window appears where unique IDs can be assigned to the units.


5. Once discovered, the real units are shown in the left columns, following the order of their ID number; if the workspace contains virtual devices of the same type you can eventually modify the IDs in order to match the units and allows the synchronization. The synchronization can be in either directions: Workspace-to-Real or Real-to-Workspace. Select the sync direction and synchronize all or the single units separately

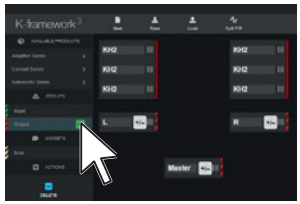
## Grouping

The working paradigm in the K-framework3 is to group the input and output channels of the units in the workspace and adjust the system performance within the groups.
Groups can be created working both off-line and on-line and are retained by the real units even once unplugged: if a real device belongs to a group, the group is re-created in the workspace during the synchronization process.
An active loudspeaker or amplifier might belong to multiple groups sharing its features (eq filters, time delay, volume, etc).

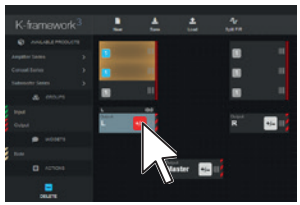
> **The K-framework3 synchronization process reset to default the EQ, delay and volume parameters edited with the K-array Control mobile app and the embedded Web app.**

A. In Setup mode: set the unit local parameters (presets, routing, input gains, limiters, etc).

B. Add INPUT and OUTPUT groups as needed.




C. Assign the units' channels to the groups.




D. Switch to Tuning mode.
E. Align the system using the tools available on the groups (eq, delay, polarity, etc).

## Service

To obtain service:

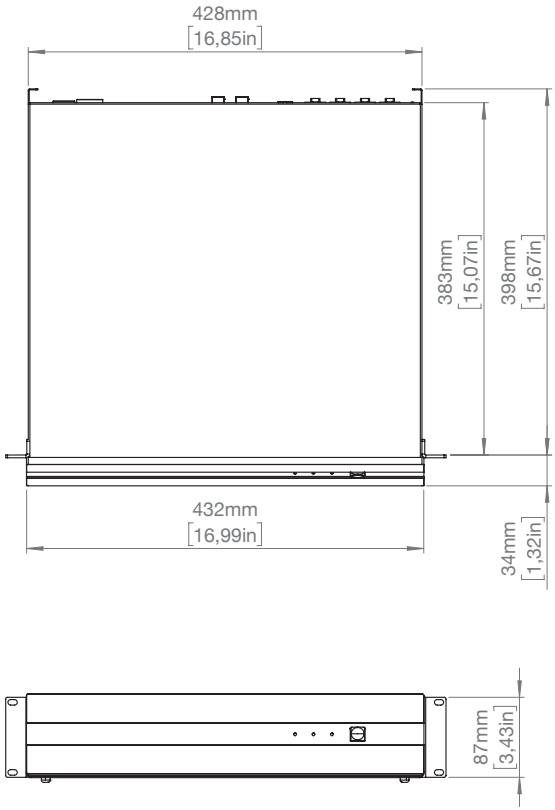
1. Please have the serial number(s) of the unit(s) available for reference.
2. Contact the official K-array distributor in your country: find the Distributors and Dealers list on K-array website. Please describe the problem clearly and completely to the Customer Service.
3. You will be contacted back for on-line servicing.
4. 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

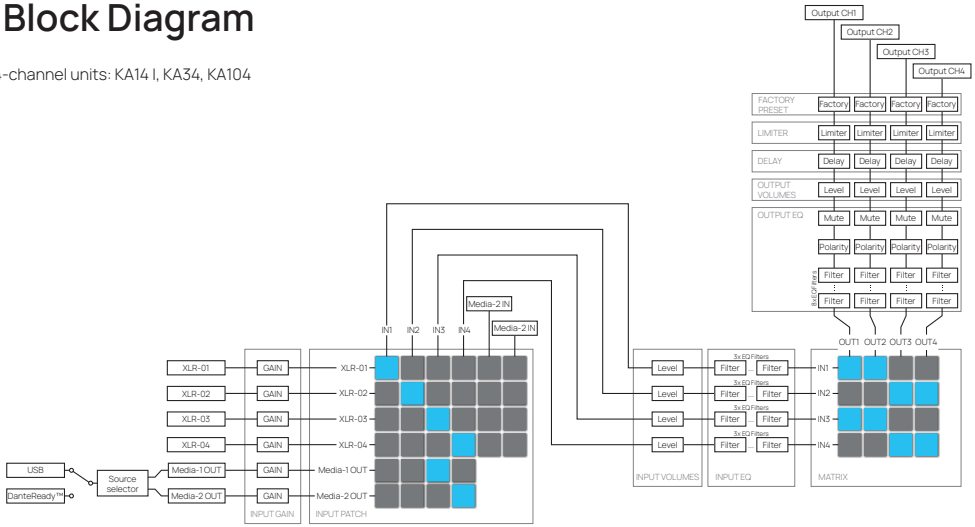
Use only a soft, dry cloth to clean the housing. Do not use any solvents, chemicals, or cleaning solutions containing alcohol, ammonia, or abrasives. Do not use any sprays near the product or allow liquids to spill into any openings.

## Mechanical Drawing

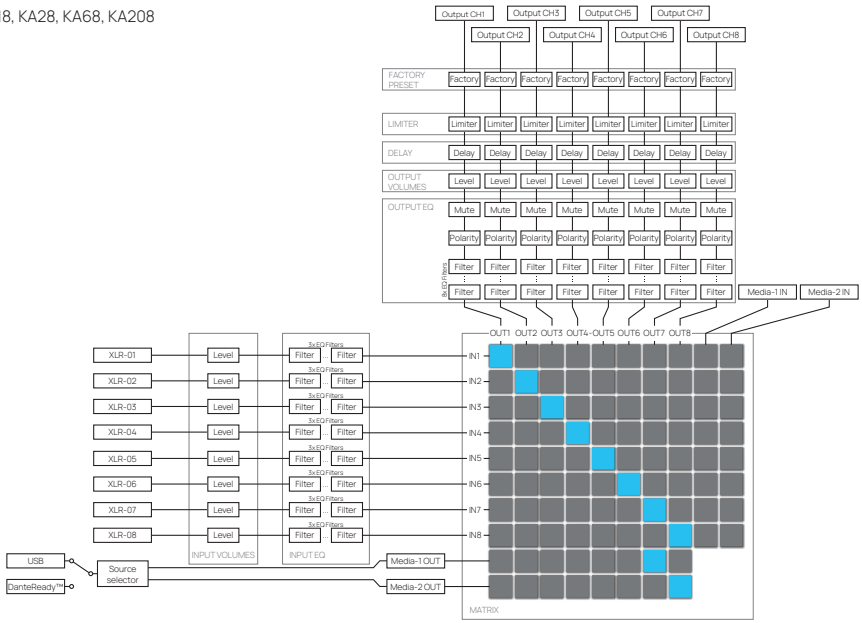


# DSP Block Diagram

4-channel units: KA14 I, KA34, KA104




8-channel units: K18, KA28, KA68, KA208



# Specifications

| | Kommander-KA14 I | Kommander-KA34 | Kommander-KA104 |
|---|---|---|---|
| Type | 4ch switching mode, Class D Amplifier | | |
| Output Power [1] | 4x 600W @ 2Ω | 4x 750W @ 4Ω | 4x 2500W @ 4Ω |
| Minimum impedance | 2 Ω | 4 Ω | 4 Ω |
| Frequency Response | 20 Hz – 20 kHz (±1 dB) | | |
| Connectors | Input:<br>4x XLR-F balanced input<br><br>Output:<br>4x XLR-M balanced LINK output<br>2x PC 4/ 4-ST-7,62 speaker output<br><br>Remote connectivity:<br>1x Ethernet RJ45<br>4x USB-A<br>Wi-Fi IEEE 802.11 b/g/n | | |
| DSP | Input gain, routing matrix, delay, full parametric IIR filters (Peaking, Shelving, Hi/Lo pass, Hi/Lo Butterworth),<br>On-board preset, Remote monitoring | | |
| Remote control | Wi-Fi dedicated APP I K-framework3 via wired Ethernet connection | | |
| MAINS Operating Range | 100-240V AC, 50-60 Hz with PFC | | |
| Power Consumption | 400 W @ 8 Ω load,<br>Pink noise, 1/4 rated power | 600 W @ 8 Ω load,<br>Pink noise, 1/4 rated power | 600 W @ 4 Ω load,<br>Pink noise, 1/4 rated power |
| Protections | Thermal protection, output short circuit, RMS output current protection, high frequency protection, power limiter, clip limiter. | | |
| IP Rating | IP20 | | |
| Dimensions (WxHxD) | 430 x 87 x 430 mm (17 x 3,4 x 17 in) | | |
| Weight | 6 kg (13,2 lb) | 7 kg (15,4 lb) | 8,15 kg (18 lb) |

| | Kommander-KA18 | Kommander-KA28 | Kommander-KA68 | Kommander-KA208 |
|---|---|---|---|---|
| Type | 8ch switching mode, Class D Amplifier | | | |
| Output Power [1] | 8x 150W @ 4Ω | 8x 600W @ 4Ω | 8x 750W @ 4Ω | 8x 2500W @ 4Ω |
| Minimum impedance | 4 Ω | 2 Ω | 4 Ω | 4 Ω |
| Frequency Response | 20 Hz – 20 kHz (±1 dB) | | | |
| Connectors | Input:<br>8x XLR-F balanced input<br><br>Output:<br>4x PC 4/ 4-ST-7,62 speaker output | | Remote connectivity:<br>1x Ethernet RJ45<br>4x USB-A<br>Wi-Fi IEEE 802.11 b/g/n | |
| DSP | Input gain, routing matrix, delay, full parametric IIR filters (Peaking, Shelving, Hi/Lo pass, Hi/Lo Butterworth),<br>On-board preset, Remote monitoring | | | |
| Remote control | Wi-Fi dedicated APP I K-framework3 via wired Ethernet connection | | | |
| MAINS Operating Range | 100-240V AC, 50-60 Hz with PFC | | | |
| Power Consumption | 300 W @ 8 Ω load,<br>Pink noise, 1/4 rated power | 800 W @ 8 Ω load,<br>Pink noise, 1/4 rated power | 1200 W @ 4 Ω load,<br>Pink noise, 1/4 rated power | 1200 W @ 4 Ω load,<br>Pink noise, 1/4 rated power |
| Protections | Thermal protection, output short circuit, RMS output current protection, high frequency protection, power limiter, clip limiter. | | | |
| IP Rating | IP20 | | | |
| Dimensions (WxHxD) | 430 x 87 x 430 mm (17 x 3,4 x 17 in) | | | |
| Weight | 7 kg (15,4 lb) | 7,4 kg (16,3 lb) | 8,3 kg (18,3 lb) | 10 kg (22 lb) |

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Designed and Made in Italy

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