



K-framework 2

User Guide

English

SYSTEM REQUIREMENTS

Operating System: Windows XP / Vista / 7 / 8 / 10

CPU: Intel Pentium Dual Core

Memory: 2 GB

TABLE OF CONTENTS

1. SOFTWARE INSTALLATION AND SETTINGS	5
1.1 INSTALLATION.....	5
1.2 USB - RS485 CONNECTION SETTINGS.....	5
1.3 DANTE CONNECTION SETTINGS	7
1.4 DISCOVERY	8
2. KA84/KA24 AMPLIFIER SECTION.....	9
2.1 OUTPUT CONFIGURATION	9
2.2 ROUTING	10
2.3 INPUT	11
2.4 OUTPUT.....	11
2.5 DELAY.....	12
2.6 GAIN.....	12
2.7 CONFIGURATION	13
2.7.1 ID SETTING	13
2.7.2 FIRMWARE UPDATE.....	13
2.7.3 LCD SETTINGS.....	14
2.7.4 KA-POT1 SETTINGS	14
2.8 DEVICE PRESETS	15
2.9 CHANNEL PRESETS	15
3. KA14 AMPLIFIER SECTION.....	16
3.1 OUTPUT CONFIGURATION	16
3.2 ROUTING	17
3.3 INPUT	18
3.4 OUTPUT.....	18
3.5 DEVICE PRESETS	19
3.6 CHANNEL PRESETS	19
3.7 CONFIGURATION	20
3.7.1 ID SETTING	20
3.7.2 FIRMWARE UPDATE.....	20
3.7.3 LCD SETTINGS.....	21

4. PORTABLE SECTION	22
4.1 INPUT	22
4.2 OUTPUT	23
4.3 ROUTING	23
4.4 DELAY	24
4.5 DEVICE PRESETS	24
4.6 CONFIGURATION	25
5. PORTABLE MARK I SECTION.....	26
5.1 OUTPUT CONFIGURATION	26
5.2 ROUTING	27
5.3 INPUT	28
5.4 OUTPUT	28
5.5 DELAY	29
5.6 CONFIGURATION	29
5.7 DEVICE PRESETS	30
5.8 CHANNEL PRESETS	30
6. CONCERT SECTION	31
6.1 INPUT.....	31
6.2 GENERAL	32
6.3 FROM EASE FOCUS TO THE K-FRAMEWORK	33
6.3.1 FIR CALCULATION	33
6.3.2 FIR ORDER - KH5 SUSPENDED	35
6.3.3 FIR ORDER - KH5 STACKED	35
6.3.4 FIR ORDER - KH3/KH2 SUSPENDED.....	36
6.3.5 FIR ORDER - KH3/KH2 STACKED.....	36
6.4 CONFIGURATION	37
6.4.1 ID SETTING	37
6.4.2 FIRMWARE UPDATE.....	37
6.4.3 LCD SETTINGS	38
7. BLUELINE SECTION.....	39
7.1 CONFIGURATION	39
7.2 MIXER WINDOW	40
7.3 CHANNEL PRESET POP UP WINDOW	41

- 7.4. CHANNEL EQ WINDOW42
 - 7.5 CHANNEL COMPRESSOR WINDOW42
 - 7.6 OUTPUT WINDOW 43
- 8. PICCOLO SECTION..... 44
 - 8.1 CONFIGURATION 44
 - 8.2 USER 45
- 9. GROUPS 46
- 10. VIRTUAL WORKSPACE SYNC 49

1. SOFTWARE INSTALLATION AND SETTINGS

1.1 INSTALLATION

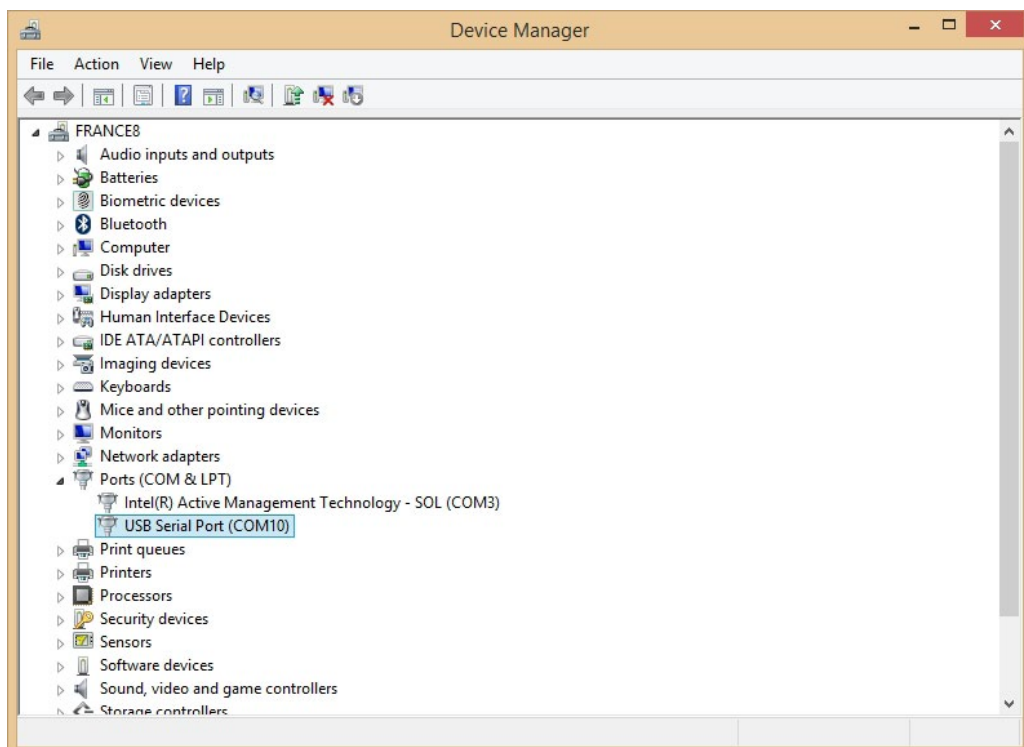
To download your free K-framework software, visit the K-array *Software* page at:
http://www.k-array.com/software_download

Download the latest version, decompress the .zip file and extract the installer file. Follow the installation instructions.

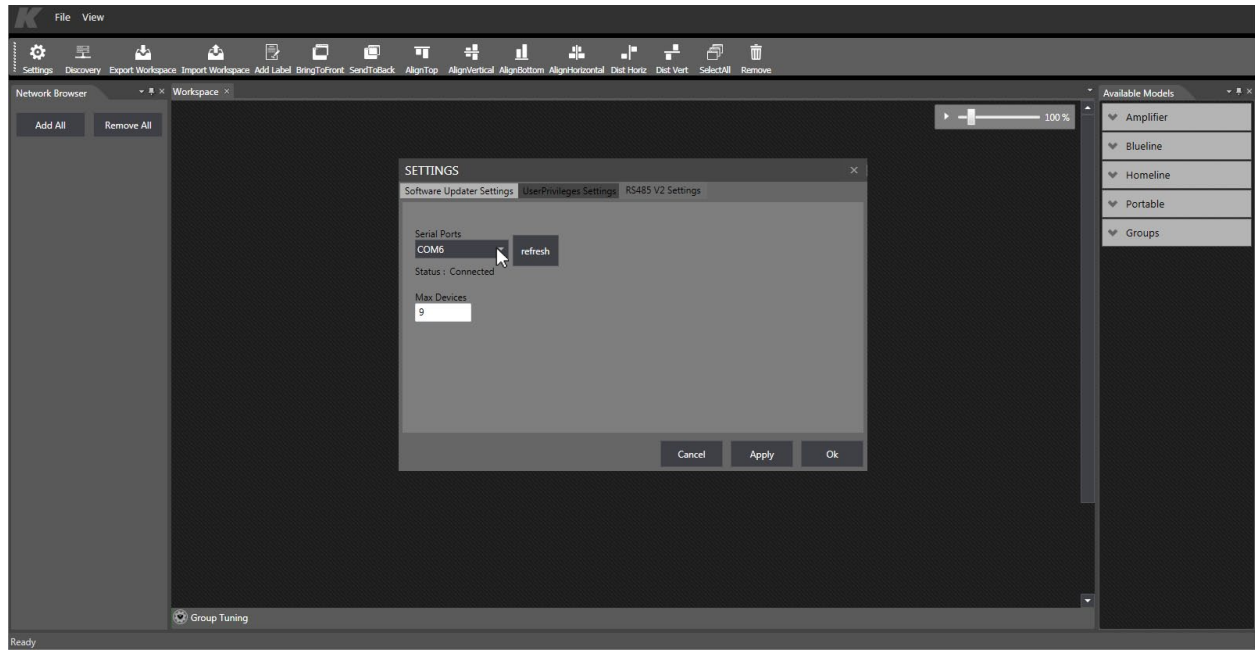
1.2 USB - RS485 CONNECTION SETTINGS

In order to communicate with a network of K-array devices through RS485 protocol, proceed as follows:

1. Check that all the K-array devices in the network have different ID numbers (see your device's User Guide for details). We suggest that you set single or double digit ID numbers from 1 up to the number of devices in your network. This will create a faster communication with your computer.
2. Switch off all the devices in the network and connect one of them to a USB port of your computer using a USB cable or a XLR cable (*K-USB* accessory required). Then switch on all the devices.
3. Next, check the number of the COM port you are using to communicate with the devices through RS485. To do this, open the *Control Panel* menu from the *Start Menu* or *My Computer*. Open the *Device Manager* from the *Control Panel* and expand the *Ports* menu. Check the *USB Serial Port* number.



4. Open the K-Framework software and go to *Settings > RS485 Settings*. Select the correct COM Port number.
5. On the same page, insert the *Max Devices* number that has to be equal or greater than the maximum ID number used on the devices connected in the network. We suggest not to set a value much higher than the maximum ID number used because this may reduce the communication speed between the K-framework and the devices.

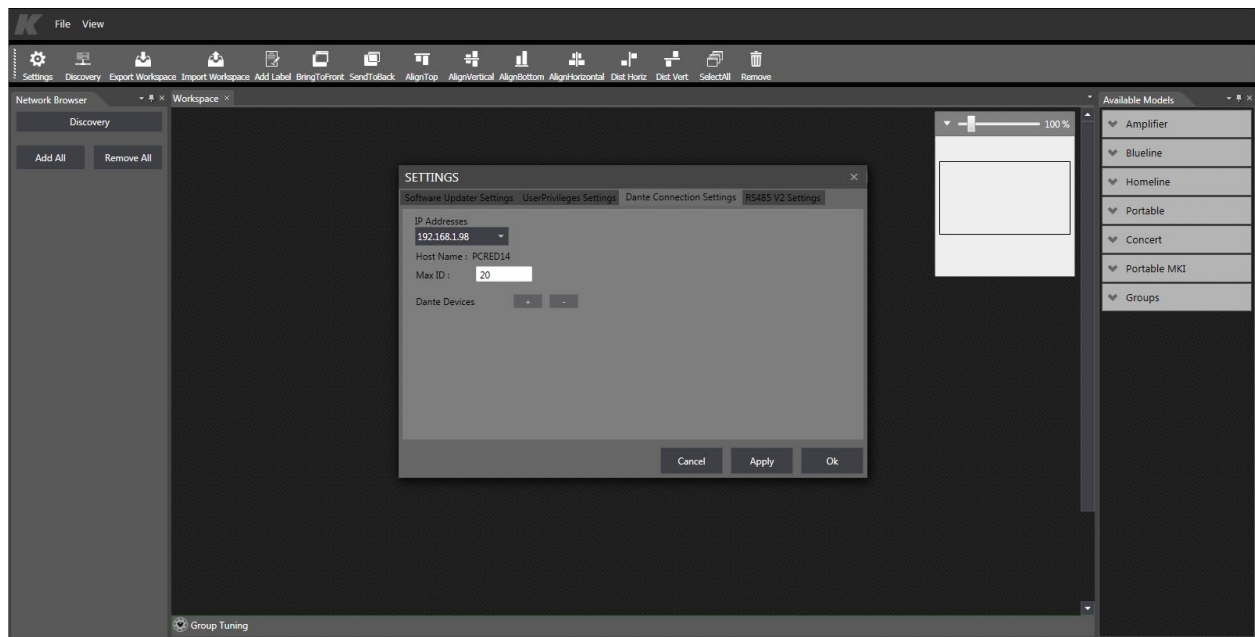


1.3 DANTE CONNECTION SETTINGS

The K-DANTE accessory can send both the audio signal and the control data to a network of K-array devices using a single CAT5e or CAT6 cable. Please refer to the *K-DANTE User Guide* for further details.

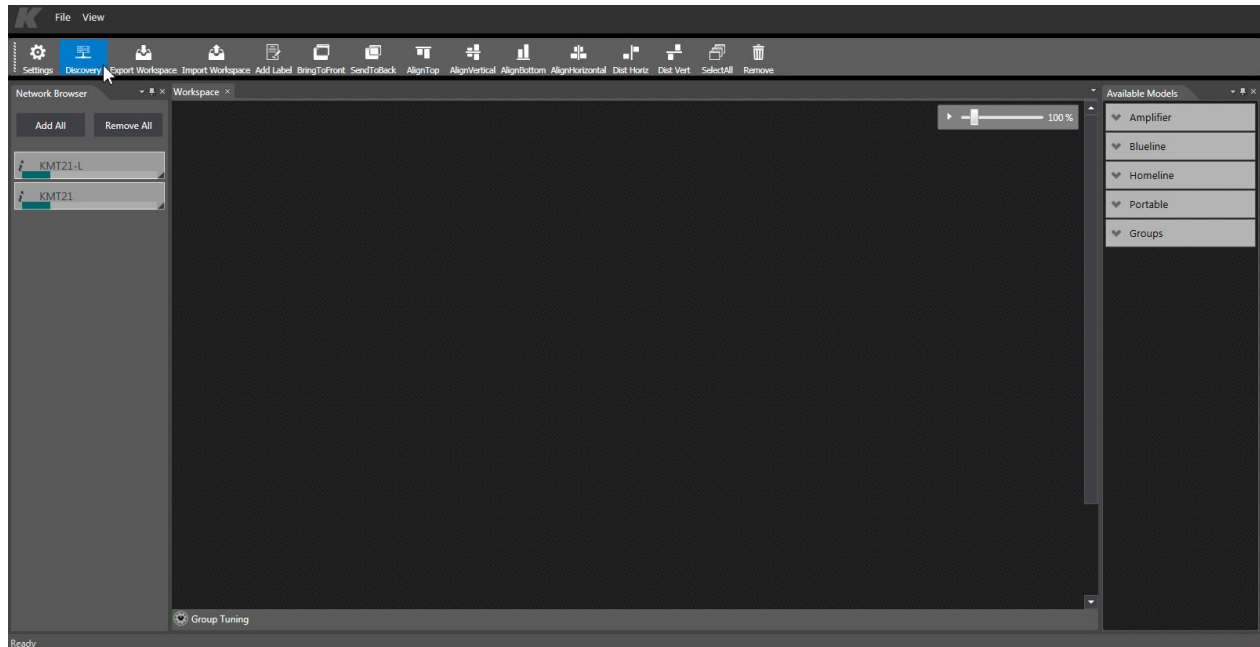
In order to communicate with a network of K-array devices through DANTE protocol, proceed as follows:

1. Check that all the K-array devices in the network have different ID numbers (see your device's User Guide for details). We suggest that you set single or double digit ID numbers from 1 and up to the number of devices in your network. This will create a faster communication with your computer.
2. Connect your computer to the network with a standard CAT5e or CAT6 cable.
3. Open the K-framework software and go to *Settings > DANTE Connection Settings*. Insert the Max Devices number that has to be equal to or greater than the maximum ID number used on the devices connected in the network. We suggest not to set a value much higher than the maximum ID number used, because this may reduce the communication speed between the K-framework and the devices. This page shows also the IP number of your Ethernet networking interface and a list of all DANTE-enabled devices found in the network.



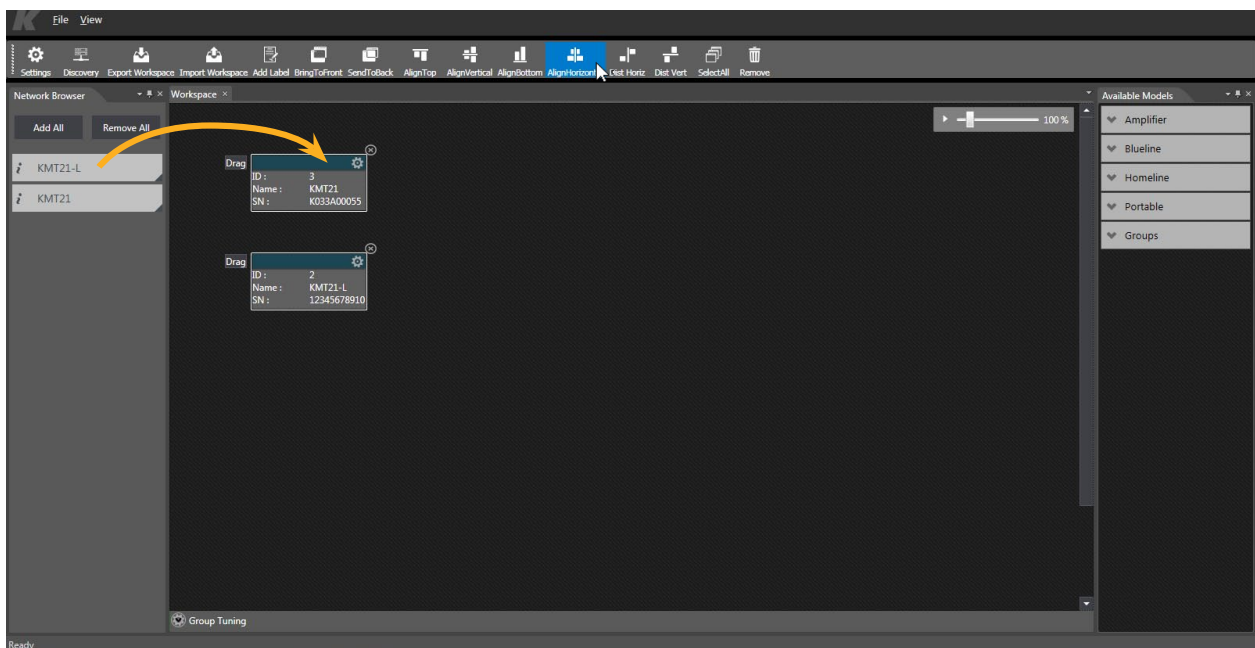
1.4 DISCOVERY

1. After adjusting the setting as showed in the previous paragraphs, press the *Discovery* button and the software will search the network and list all the speakers found, adding them to the *Network Browser* window on the left.



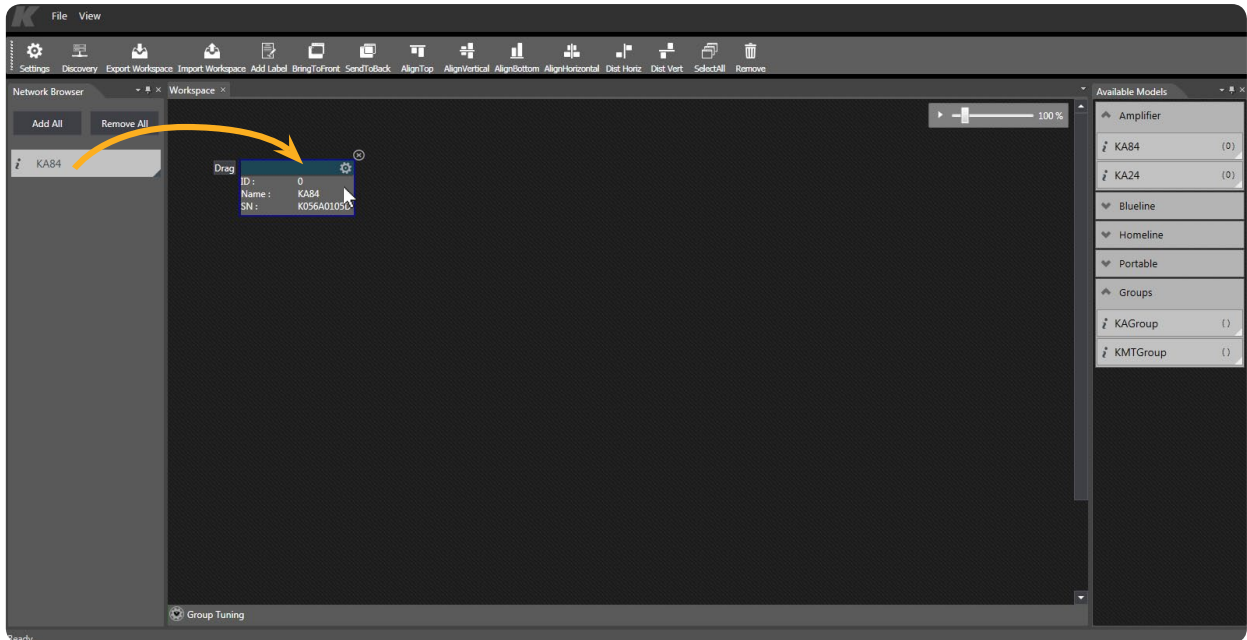
Note: pressing Discovery, the software will find both the devices connected via USB-RS485 and via DANTE

2. Drag and drop each device into the workspace and arrange them in an easy-to-work disposition using the tools *Bring to Front/Back*, *Align Vertical/Bottom/Horizontal* and *Dist Horiz/Dist Vert*. The devices loaded are now ready to be configured.



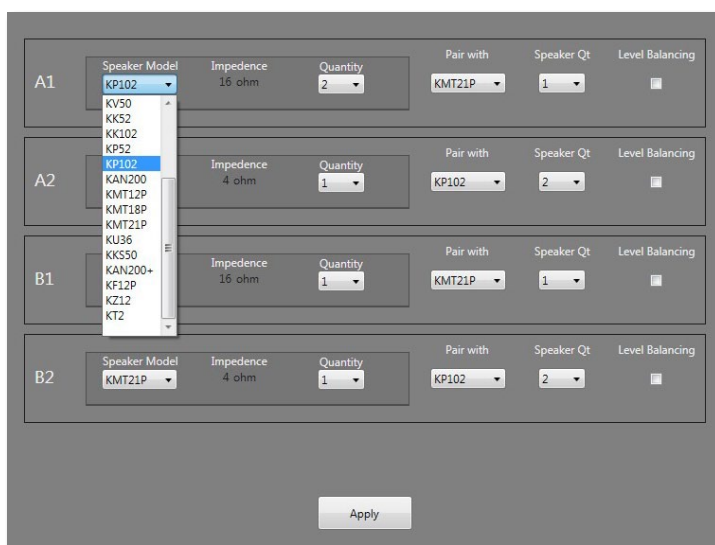
2. KA84/KA24 AMPLIFIER SECTION

Follow the instructions in Section 1 to load your devices into the *Network Browser* window, then drag and drop the devices from the *Network Browser* window into the workspace. Click on the wheel symbol to access a device's settings.



2.1 OUTPUT CONFIGURATION

First, click on *Output Conf* to set which speakers are connected to the device's outputs. This step is extremely important because the DSP will automatically adjust all settings (limiters, crossover, equalization) to match the requirements for the speakers connected..



For each output channel, select the model and the number of speakers connected to it, then specify which speakers they are paired with.

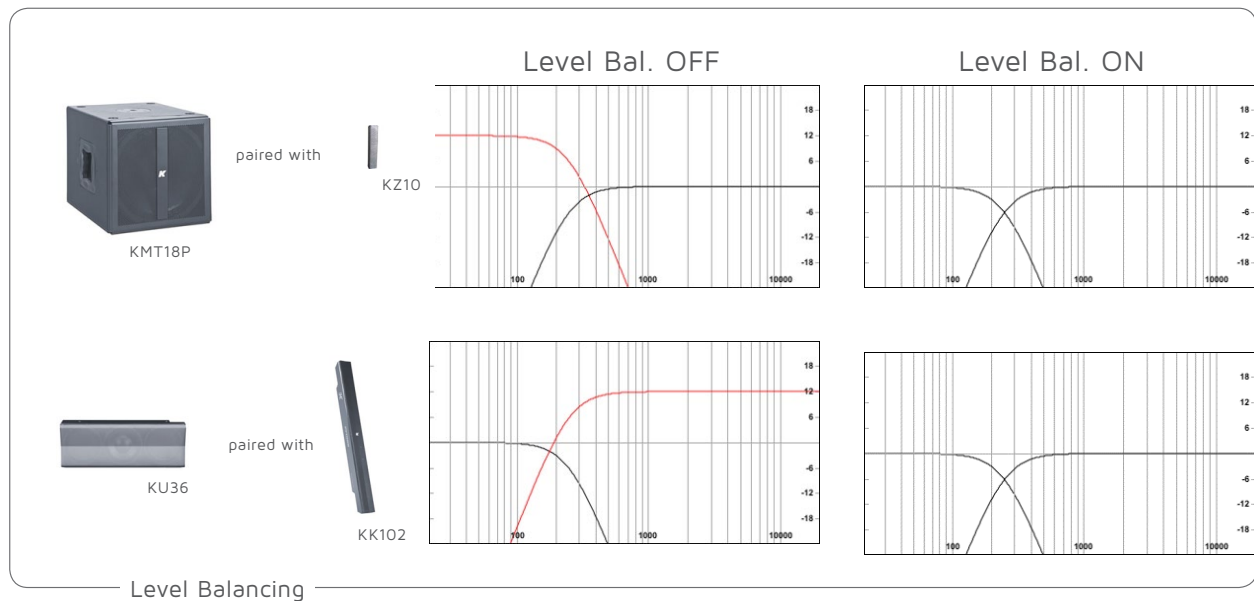
For instance, if you want to run two mid-high speakers (e.g. two KP102) with an output channel and a subwoofer (e.g. a KMT21P) with another one, you'll have to specify that the KP102 is paired with the KMT21P and the KMT21P is paired with the KP102. The DSP will load automatically the crossover settings to obtain a perfect match between the speakers.



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



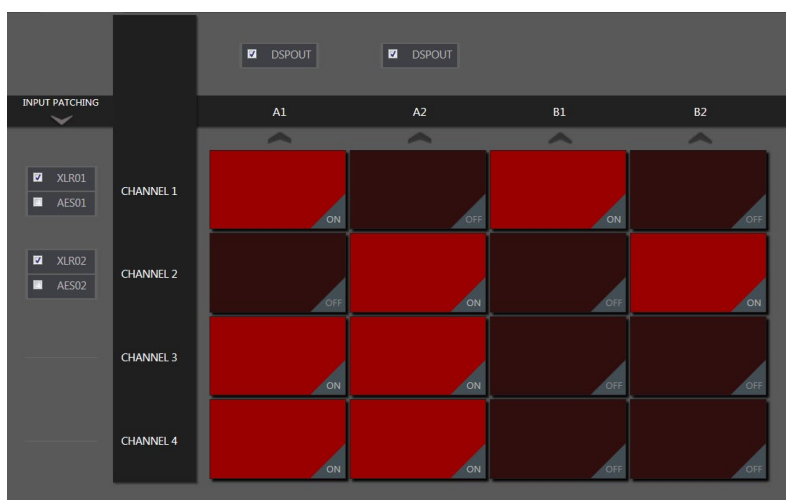
If you also want a perfect volume balance between the paired speakers, select *Level Balancing*. This function aligns the output volume of the paired speakers, offering the possibility to get a balanced equalization also when loudspeaker models are very different in power.



TIP: The *Level Balancing* option is not always the best choice. Sometimes a perfect level balance between the lows and the mid-highs is not needed. In that case, leave the *Level Balancing* option unchecked.

2.2 ROUTING

The Routing page allows users to manage the routing of the four input channels to the four output channels.

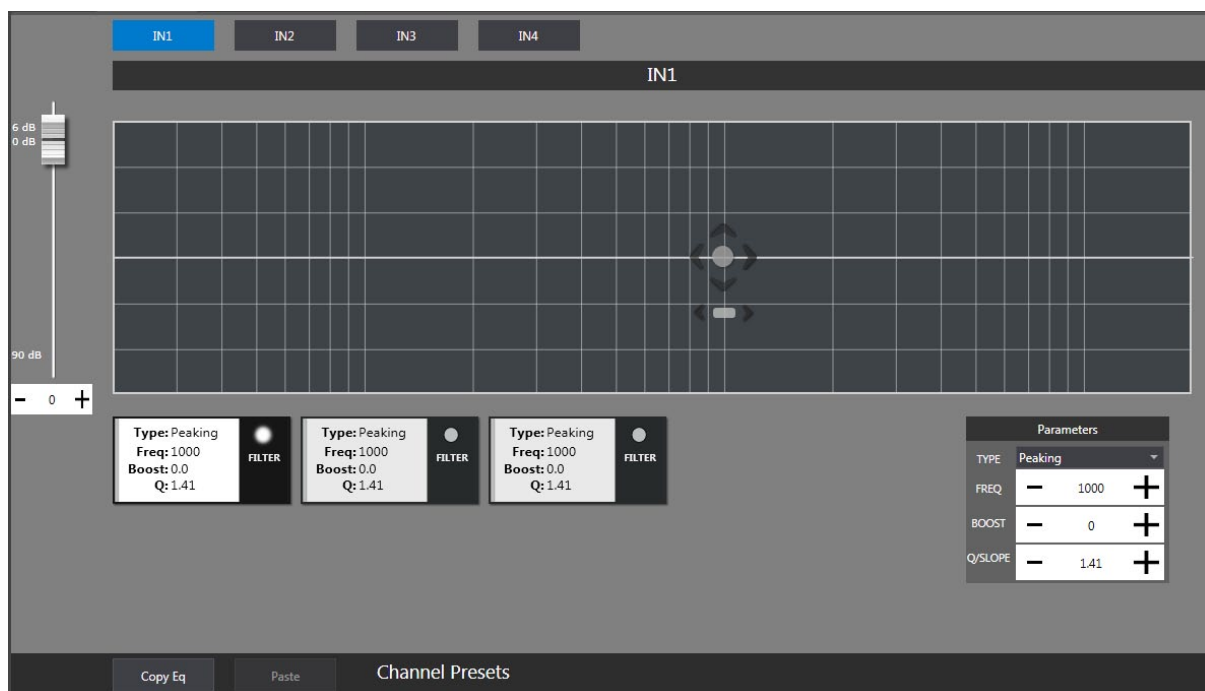


Users can choose the physical input for channels 1 and 2: XLR is the analog input while AES is the digital input. Each input can be routed to any amplifier power output.

The audio signals routed to the outputs A1 and/or A2 can also be routed to the DSP Out XLR connector if the *DSP OUT* box is checked. DSP Out is the analog XLR output that can be enabled pressing the *DSP Out* switch located on the amplifier panel.

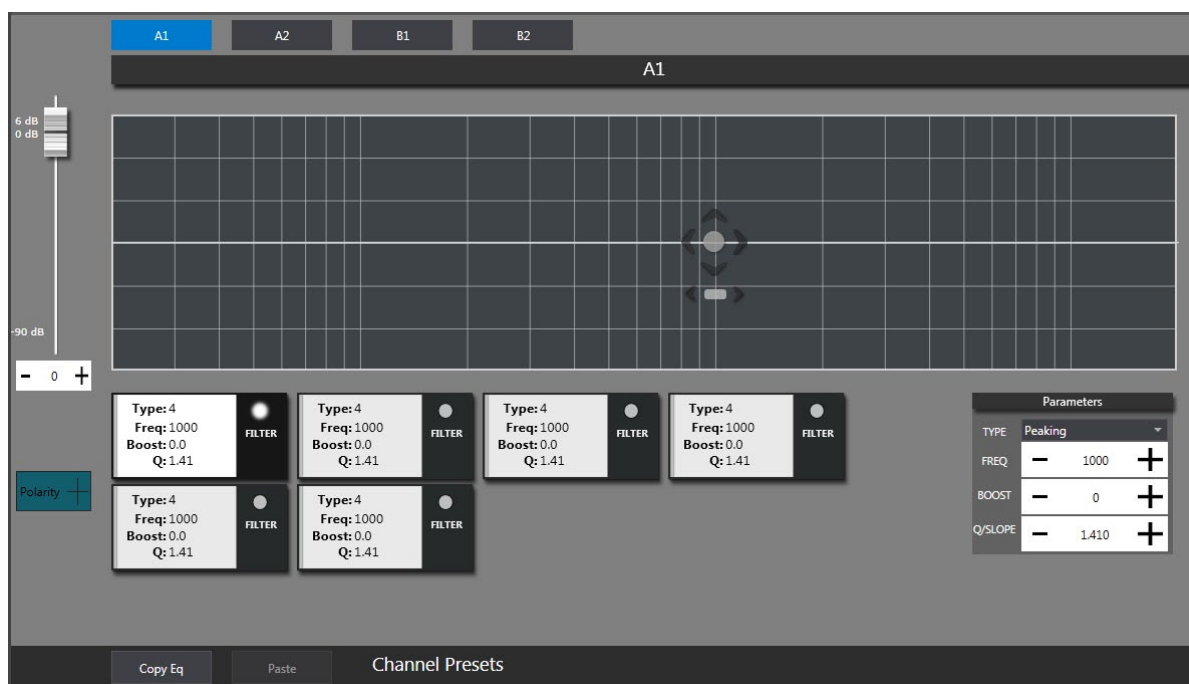
2.3 INPUT

The Input page allows users to manage the EQ and the gain of the four input channels independently. Three parametric EQ are available on each channel. All changes can be copied and pasted to other channels.



2.4 OUTPUT

The Output page allows users to manage the EQ and the gain of the four output channels independently. Six parametric EQ are available on each channel. It's also possible to reverse the polarity of a channel. All changes can be copied and pasted to other channels.



2.5 DELAY

The Delay page allows users to set delays for the four output channels (up to 3.5m) and for Channel 3 and Channel 4 input channels (up to 114m).

The screenshot displays the 'Delay' configuration interface, divided into two main sections: 'LONG DELAY' and 'SHORT DELAY'.

- LONG DELAY:** This section contains four rows, one for each channel (CH1, CH2, CH3, CH4). Each row has a label on the left and a horizontal slider on the right. The sliders for CH3 and CH4 have numerical readouts above them: CH3 shows '0.00000 m' and '0.0000 ms', while CH4 shows '0 m' and '0 ms'.
- SHORT DELAY:** This section is located to the right of the LONG DELAY section and also contains four rows for CH1, CH2, CH3, and CH4. Each row features two horizontal sliders, one for 'm' (milliseconds) and one for 'ms' (microseconds). Each slider has a numerical readout above it, all of which are currently set to '0'.

2.6 GAIN

The Gain page allows users to manage the input gain of the four analog channels. Any changes on this page will not affect the input gain of the digital channels. Please note that the gains on this page correlate with the gains on the Input Channel page.

The screenshot displays the 'Gain' configuration interface, featuring four vertical sliders for input channels IN1, IN2, IN3, and IN4.

- Each slider is positioned vertically, with a scale ranging from -90 dB at the bottom to 20 dB at the top. A horizontal line marks the 0 dB position.
- Below each slider is a control element consisting of a minus sign, a '0' in a box, and a plus sign, likely used for fine-tuning or resetting the gain.

2.7 CONFIGURATION

The Configuration page allows users to change the name of the device, change the ID number, check the status of the amplifier, update the firmware, manage the LCD screen of the amplifier and adjust the KA-POT settings.

2.7.1 ID SETTING

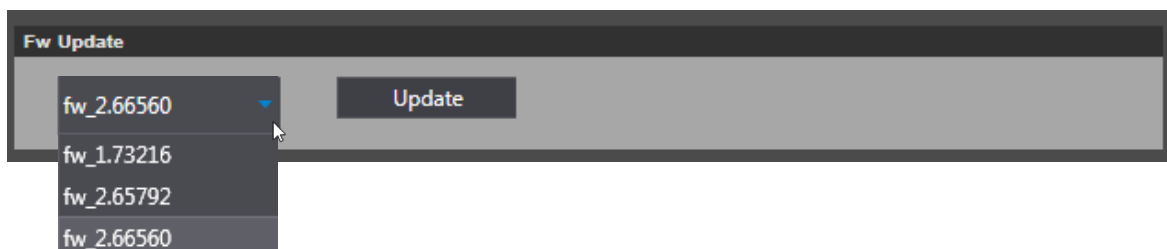
To change the ID number of the device, choose one of the available IDs in the drop down menu. Make sure there are no units in the network that share the same ID.



The screenshot shows the 'INFO' configuration page. At the top, there is a 'Device Name' field containing 'KA84' and a 'Set Name' button. Below this is an 'ID' dropdown menu currently set to '0'. Further down, several device details are listed: 'Firmware Version : 2.66560', 'Serial Number : K056MQOGBZ', 'Device Status : Demo', and 'Temp : A1/A2 (00 °) B1/B2 (00 °)'. At the bottom, the 'Out Protection' status is shown with four red indicator lights labeled A1, A2, B1, and B2.

2.7.2 FIRMWARE UPDATE

To update the firmware, choose the desired option to load from the menu and press *Update*. We recommend to always be updated with the latest release.



The screenshot shows the 'Fw Update' configuration page. It features a dropdown menu with the following options: 'fw_2.66560', 'fw_1.73216', 'fw_2.65792', and 'fw_2.66560'. An 'Update' button is located to the right of the dropdown menu.

WARNING: Do not send any audio signals while the firmware is updating!

2.7.3 LCD SETTINGS

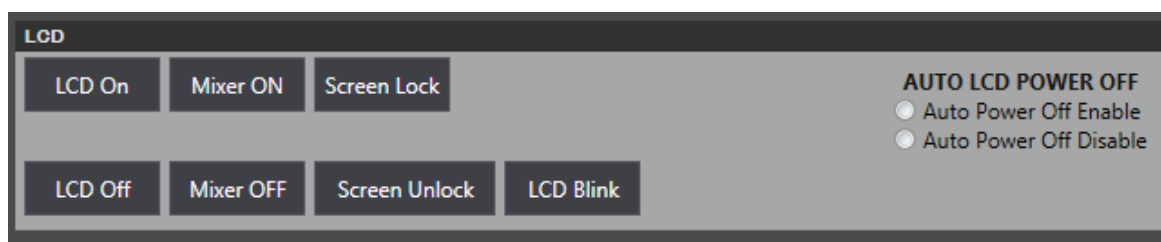
LCD On/Off: When LCD Off is selected, the LCD is switched off and can be reactivated only by connecting a computer and selecting LCD On on this page.

Mixer On/Off: When Mixer On is selected, the LCD will show the Gain section where users can adjust the four input gains. No other functions are accessible to the end user when Mixer On is selected. To go back to the Home page in the LCD, connect a computer and select Mixer Off on this page.

Screen Lock/Unlock: When Screen Lock is enabled, the LCD screen turns black and no functions are accessible to the user until the screen is unlocked by connecting a computer and selecting Screen Unlock on this page. The name of the device is shown on the black LCD screen when locked.

LCD Blink: When this option is enabled, the LCD will start blinking.

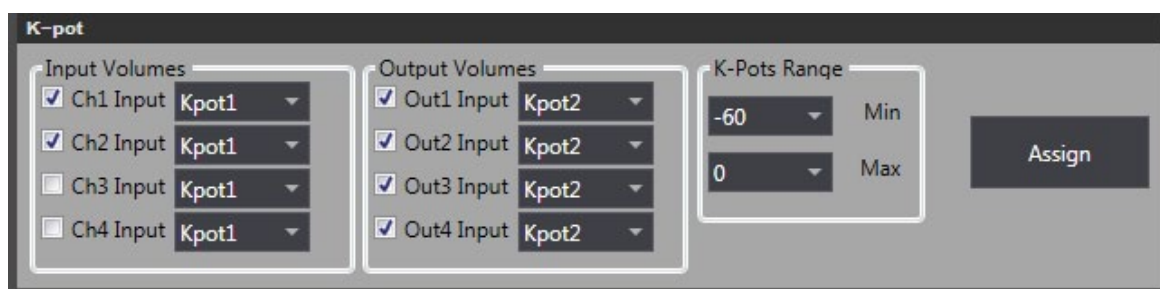
Auto Power Off: The *Auto Power Off Enable* box toggles the LCD auto-dim. When auto-dim is active, the LCD on the device will automatically turn off 60 seconds after the last touch. Touching the LCD will reactivate it.



2.7.4 KA-POT1 SETTINGS

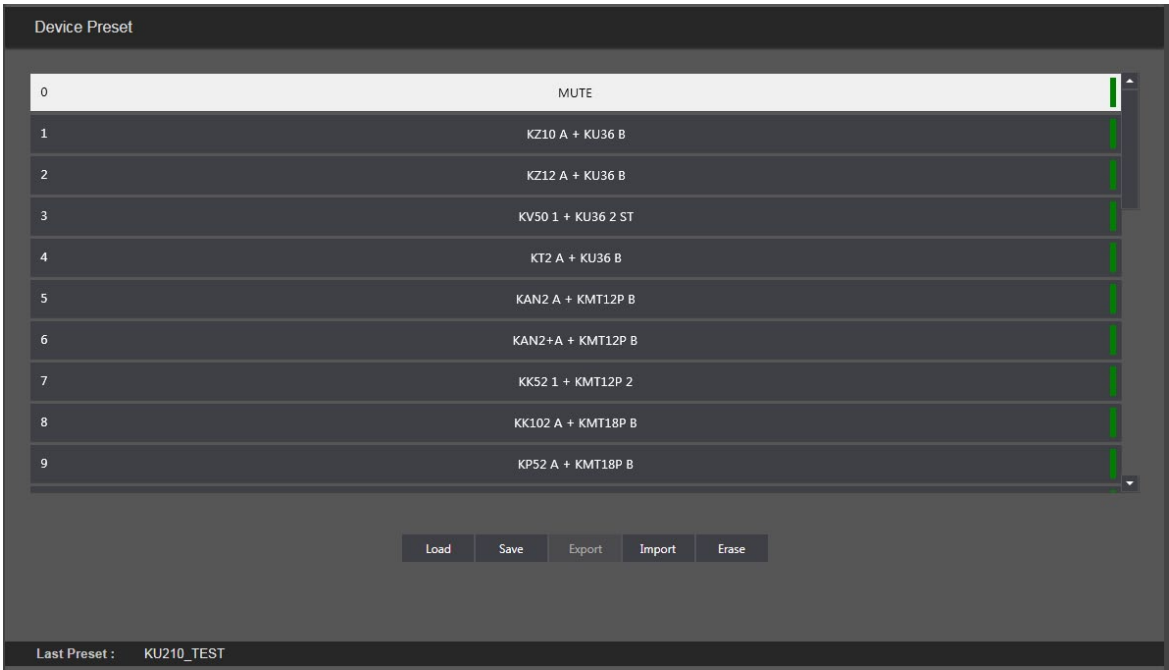
KA-POT1 allows users to control input and output channel levels with a potentiometer installed in a standard box for switches. It is possible to connect up to two independent KA-POT1 devices to each amplifier in order to control two independent levels (see the KA24/KA84 User Guide for further details).

If one or two KA-POT1 accessories are connected to the amplifier, users can assign the channel levels to be controlled by each KA-POT1. In the example shown below, the KA-POT Number 1 controls the gain of both Input Channel 1 and Input Channel 2, and KA-POT1 Number 2 controls the gain of all the output channels. Users can also set the range of values controlled by the KA-POT1. Press *Assign* for any changes to be applied.



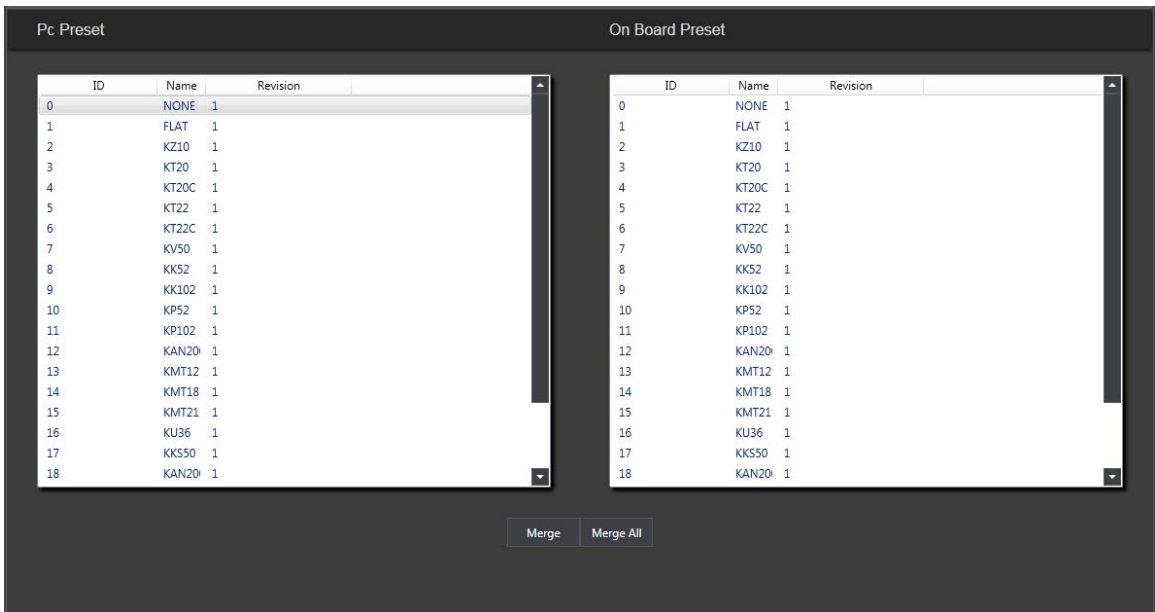
2.8 DEVICE PRESETS

The Device Presets page allows users to manage the available presets stored onboard. Users can save their own presets in the empty slots.



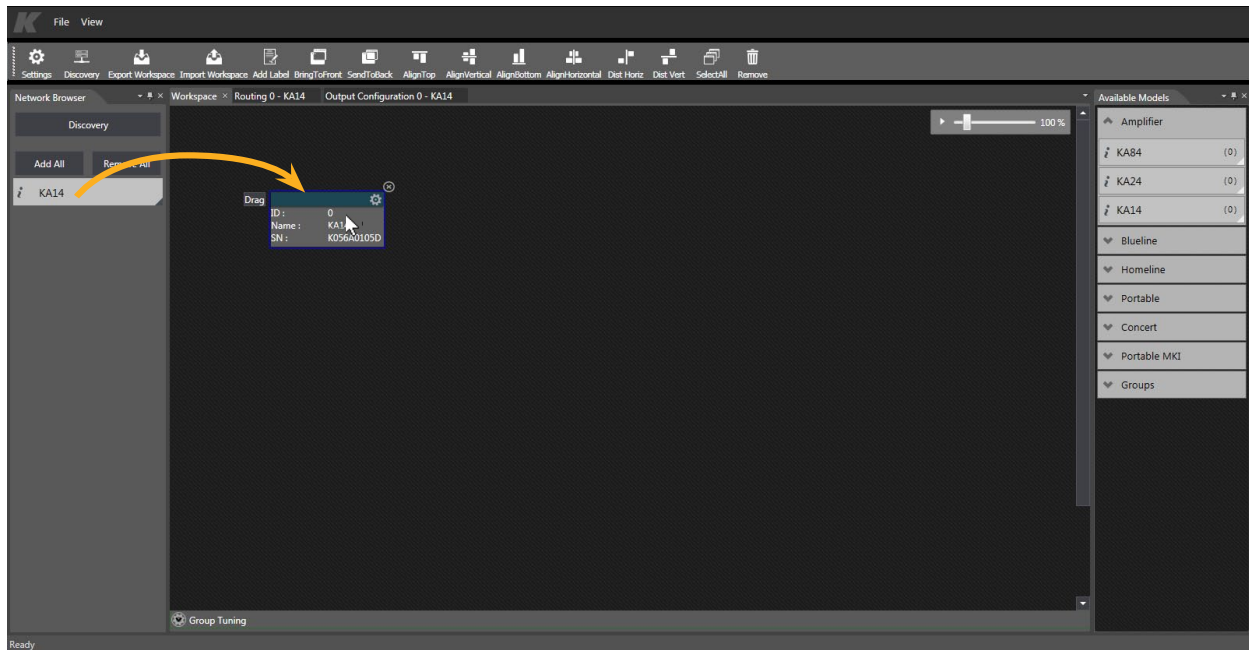
2.9 CHANNEL PRESETS

As shown in Paragraph 2.1, users must fill out the Configuration page with the number and the model of all the speakers connected to each output channel. If a new K-array model is introduced to the market, a new version of the framework, including the new model which will appear in the *PC Preset* window of the Channel Presets page, will be released. On that page, select the new model and click *Merge*. This way, the new model will be loaded on board and it will be available also in the Configuration page accessible from the onboard touch screen.



3. KA14 AMPLIFIER SECTION

Follow the instructions in Section 1 to load your devices into the *Network Browser* window, then drag and drop the devices from the *Network Browser* window into the workspace. Click on the wheel symbol to access a device's settings.



3.1 OUTPUT CONFIGURATION

First, click on *Output Conf* to set which speakers are connected to the device's outputs. This step is extremely important because the DSP will automatically adjust all settings (limiters, crossover, equalization) to match the requirements for the speakers connected..

	Speaker Model	Speaker Impedance	Quantity	Pair with	Speaker Qt	Level Balancing
A1	KT2	32 ohm	2	KU26	1	<input type="checkbox"/>
A2	KU26	8 ohm	1	KT2	2	<input type="checkbox"/>
B1	KV50	16 ohm	2	KU210	1	<input type="checkbox"/>
B2	KU210	4 ohm	1	KV50	2	<input type="checkbox"/>

Apply

For each output channel, select the model and the number of speakers connected to it, then specify which speakers they are paired with.

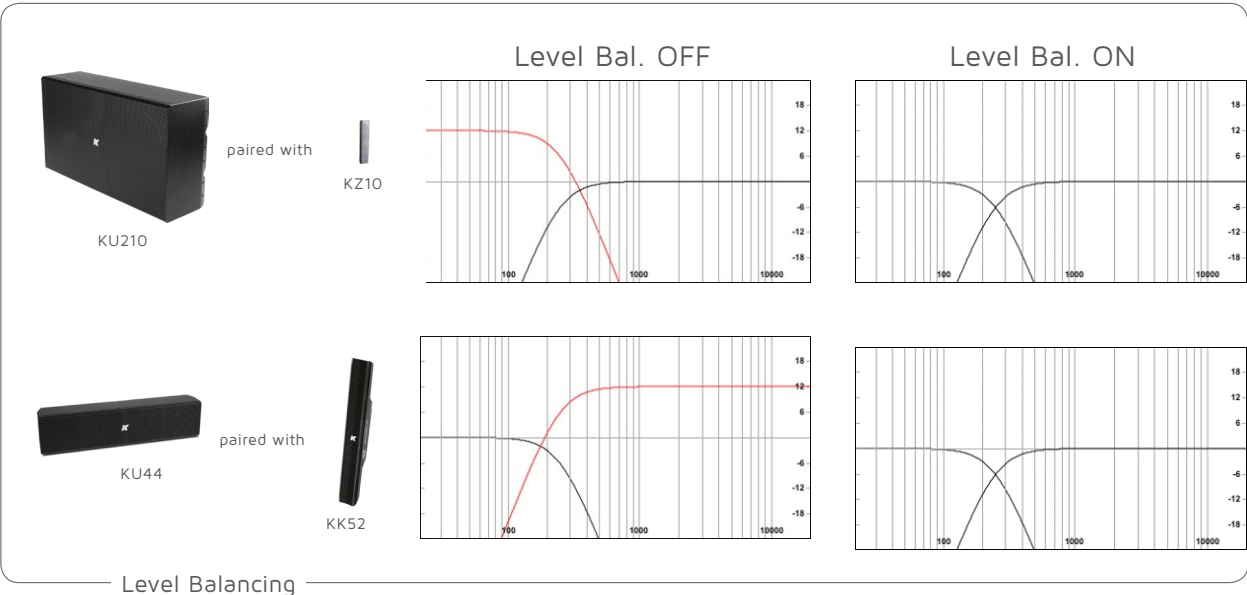
For instance, if you want to run two mid-high speakers (e.g. two KT2) with an output channel and a subwoofer (e.g. a KU26) with another one, you'll have to specify that the KT2 is paired with the KU26 and the KU26 is paired with the KT2. The DSP will load automatically the crossover settings to obtain a perfect match between the speakers.



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



If you also want a perfect volume balance between the paired speakers, select *Level Balancing*. This function aligns the output volume of the paired speakers, offering the possibility to get a balanced equalization also when loudspeaker models are very different in power.

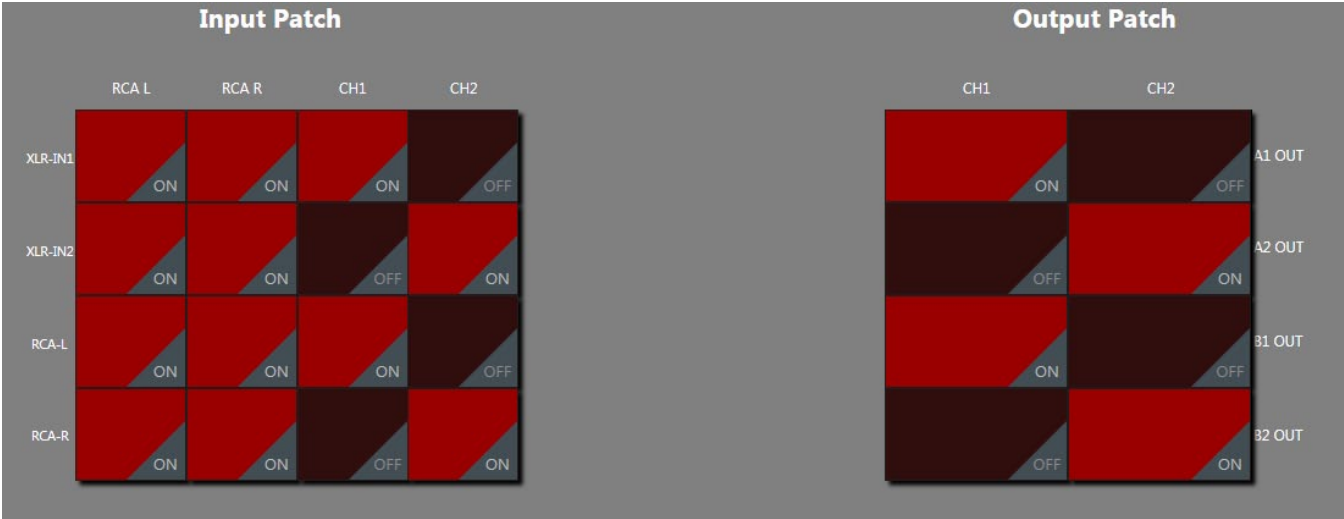


TIP: The *Level Balancing* option is not always the best choice. Sometimes a perfect level balance between the lows and the mid-highs is not needed. In that case, leave the *Level Balancing* option unchecked.

3.2 ROUTING

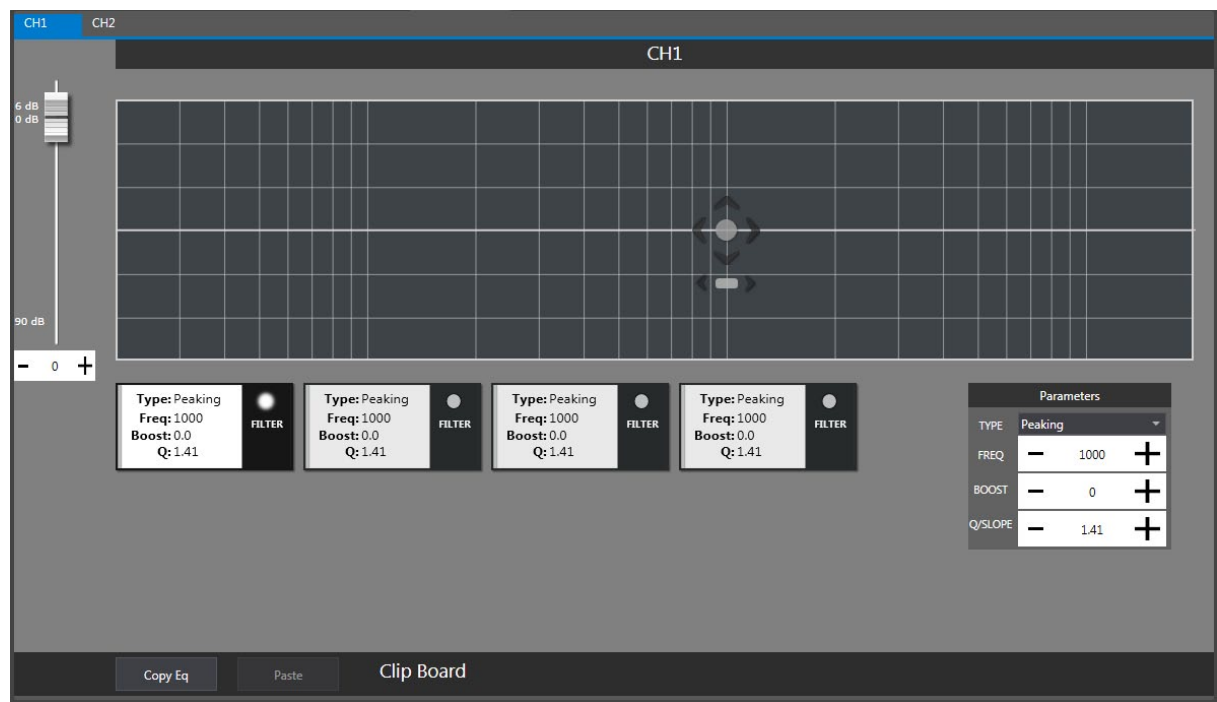
The KA14 features two independent input processing channels (CH1 and CH2) and four independent output processing channels (A1, A2, B1, B2).

The physical inputs (XLR IN1, XLR IN2, RCA L and RCA R) can be assigned to any input processing channel thanks to the Input Patch. In the Input Patch, it is also possible to assign any physical input to any RCA output (RCA OUT L or RCA OUT R). The two processing channels can be routed to any output channel (A1, A2, B1, B2) thanks to the Output Patch.



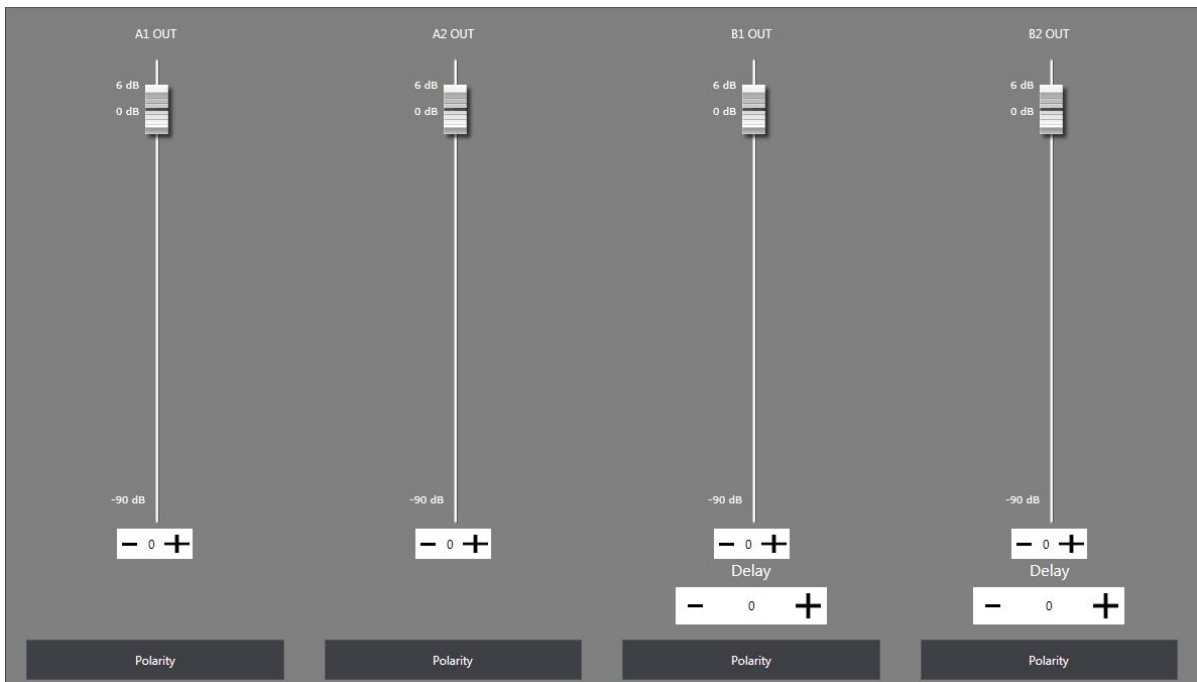
3.3 INPUT

The Input page allows users to manage the EQ and the gain of the two input channels independently. Four parametric EQ are available on each channel. All changes can be copied and pasted to other channels.



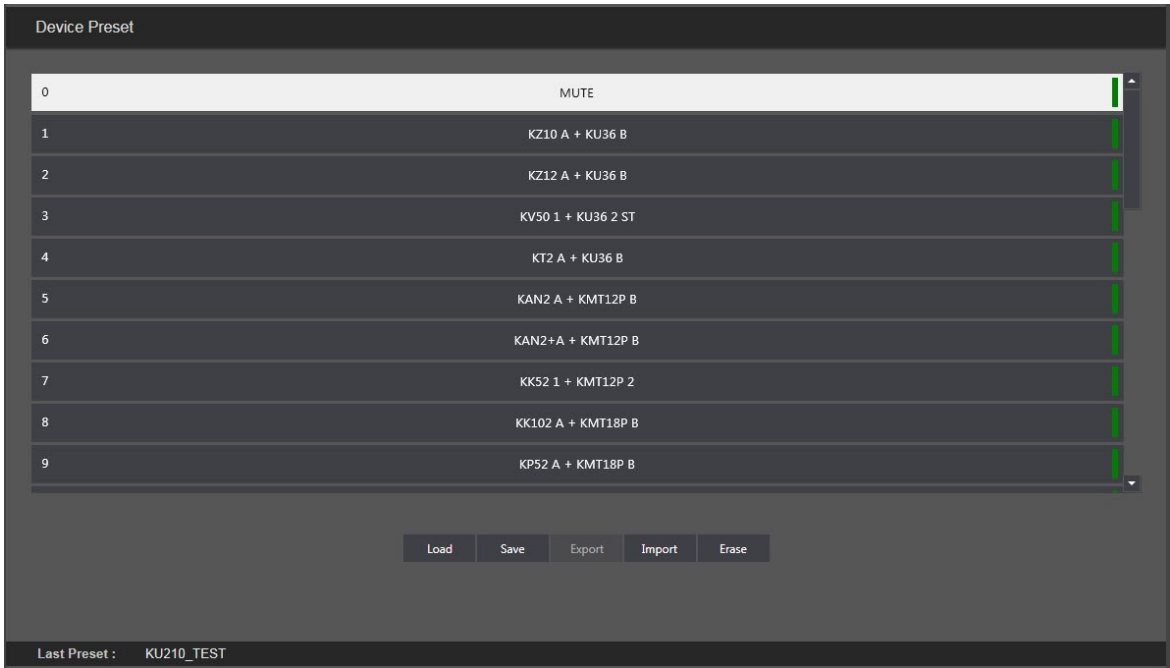
3.4 OUTPUT

The Output page allows users to adjust the level of the four output channels. It's also possible to reverse the polarity of a channel and add a delay on the outputs B1 and B2.



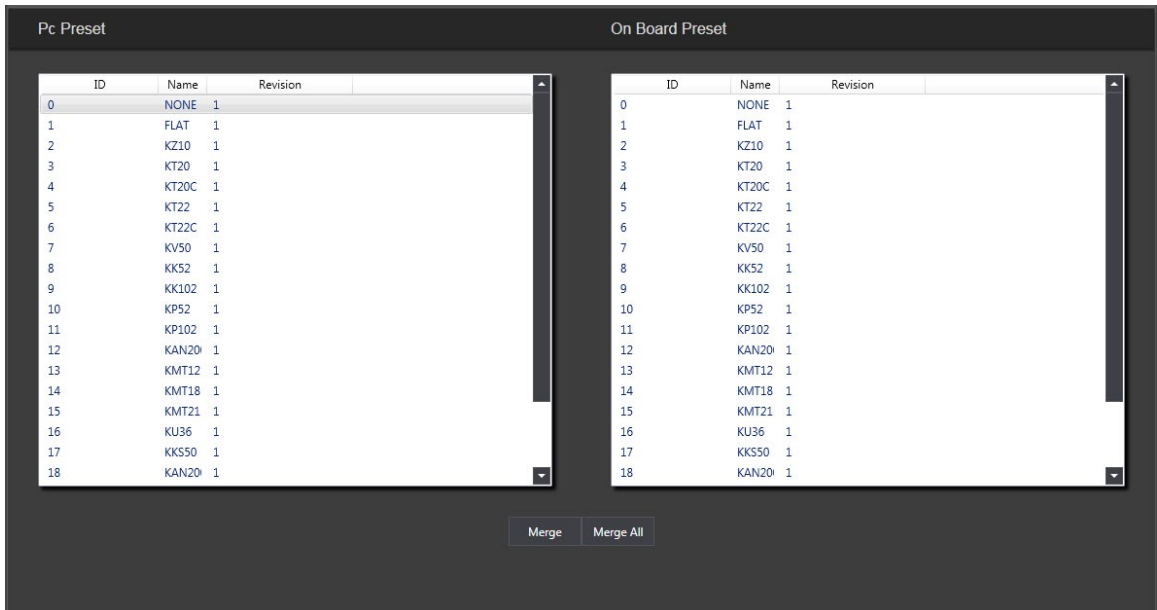
3.5 DEVICE PRESETS

The Device Presets page allows users to manage the available presets stored on board. Users can save their own presets in the empty slots.



3.6 CHANNEL PRESETS

As shown in Paragraph 2.1, users must fill out the Configuration page with the number and the model of all the speakers connected to each output channel. If a new K-array model is introduced to the market, a new version of the K-framework, including the new model which will appear in the *PC Preset* window of the Channel Presets page, will be released. On that page, select the new model and click *Merge*. This way, the new model will be loaded on board and it will be available also in the *Configuration page* accessible from the onboard touch screen.



3.7 CONFIGURATION

The Configuration page allows users to change the name of the device, change the ID number, check the status of the amplifier, update the firmware and manage the LCD screen of the amplifier.

3.7.1 ID SETTING

To change the ID number of the device, choose one of the available IDs in the drop down menu. Make sure there are no units in the network that share the same ID.

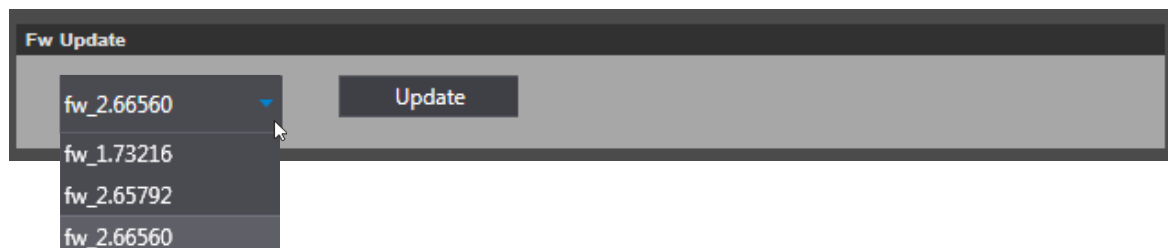


The screenshot shows the 'INFO' configuration page. It includes a 'Device Name' field with the value 'KA84' and a 'Set Name' button. Below this, there is a table of device information:

ID :	0
Firmware Version :	2.66560
Serial Number :	K056MQOGBZ
Device Status :	Demo
Temp :	A1/A2 (00 °) B1/B2 (00 °)
Out Protection :	● A1 ● A2 ● B1 ● B2

3.7.2 FIRMWARE UPDATE

To update the firmware, choose the desired option to load from the menu and press *Update*. We recommend to always be updated with the latest release.

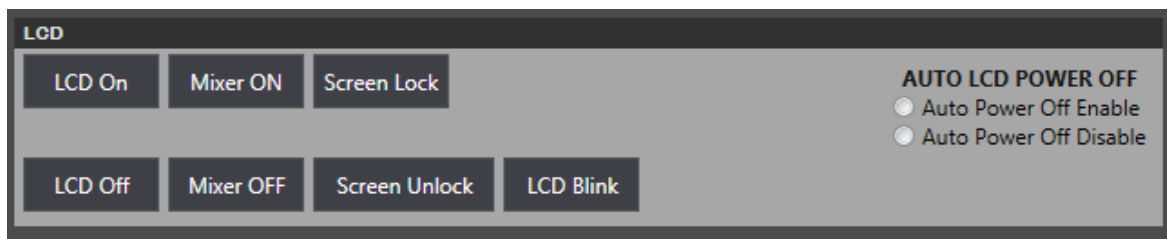


The screenshot shows the 'Fw Update' configuration page. It features a dropdown menu with the following options: 'fw_2.66560', 'fw_1.73216', 'fw_2.65792', and 'fw_2.66560'. An 'Update' button is located to the right of the dropdown menu.

WARNING: Do not send any audio signals while the firmware is updating!

3.7.3 LCD SETTINGS

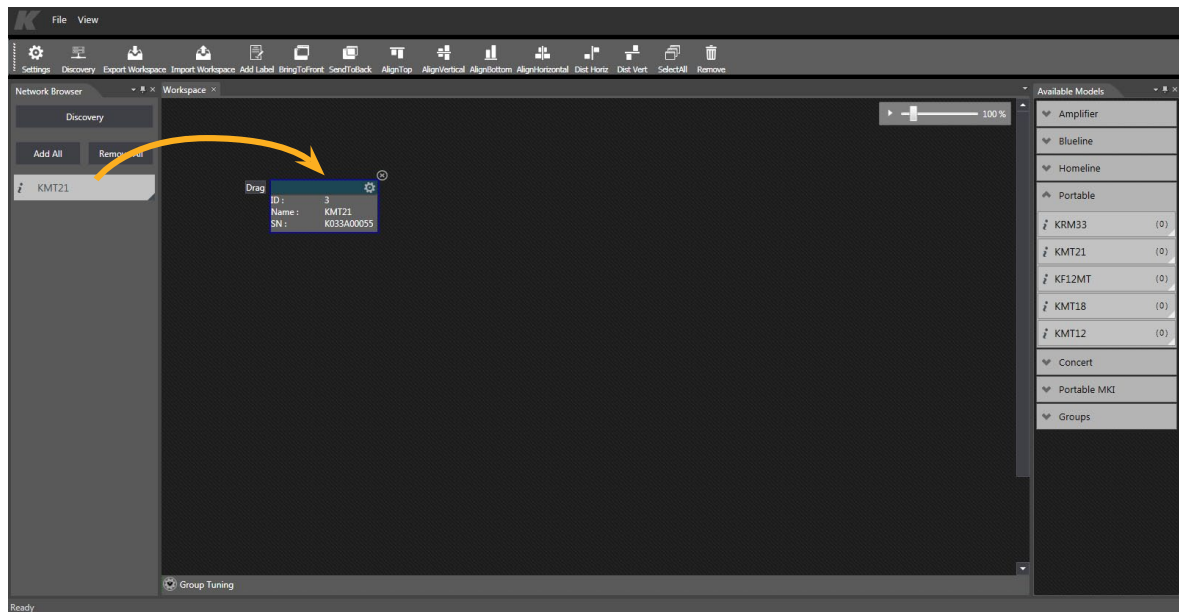
- LCD On/Off:** When LCD Off is selected, the LCD is switched off and can be reactivated only by connecting a computer and selecting LCD On on this page.
- Mixer On/Off:** When Mixer On is selected, the LCD will show the Gain section where users can adjust the four input gains. No other functions are accessible to the end user when Mixer On is selected. To go back to the Home page in the LCD, connect a computer and select Mixer Off on this page.
- Screen Lock/Unlock:** When Screen Lock is enabled, the LCD screen turns black and no functions are accessible to the user until the screen is unlocked by connecting a computer and selecting Screen Unlock on this page. The name of the device is shown on the black LCD screen when locked.
- LCD Blink:** When this option is enabled, the LCD will start blinking.
- Auto Power Off:** The *Auto Power Off Enable* box toggles the LCD auto-dim. When auto-dim is active, the LCD on the device will automatically turn off 60 seconds after the last touch. Touching the LCD will reactivate it.



4. PORTABLE SECTION

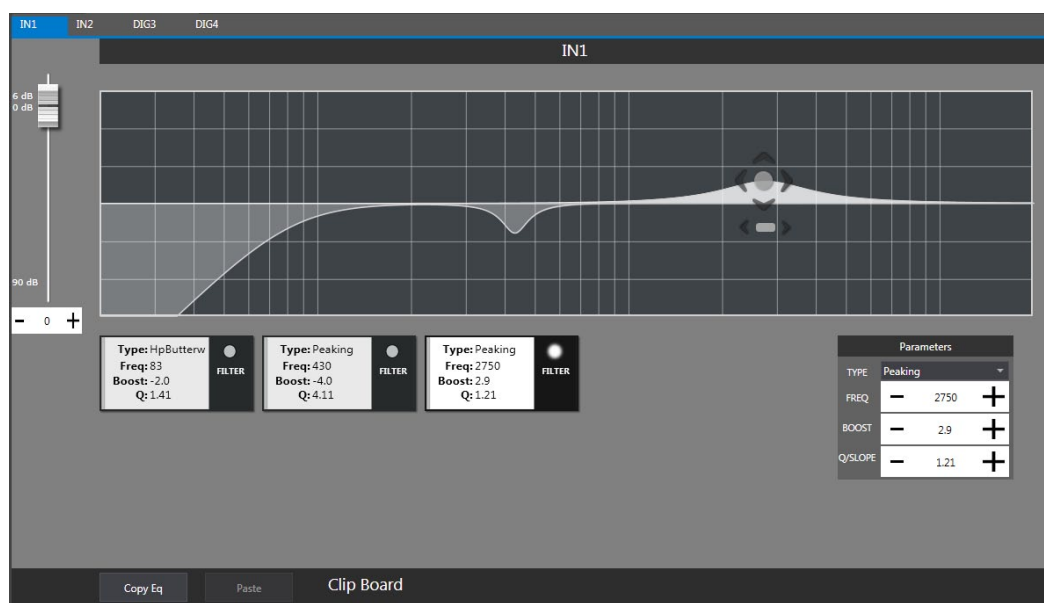
This section is relevant to all discontinued Portable Systems that can be managed by the K-Framework software: KMT12, KMT18, KMT21, KF12MT and KRM33. If you own a new product within the Portable Systems family (KMT12 I, KMT18 I, KMT21 I) please refer to Chapter 4.

Follow the instructions in Chapter 1 to load your devices into the *Network Browser* window then drag and drop the devices from the *Network Browser* window to the workspace. Click on the wheel symbol to access the device's settings.



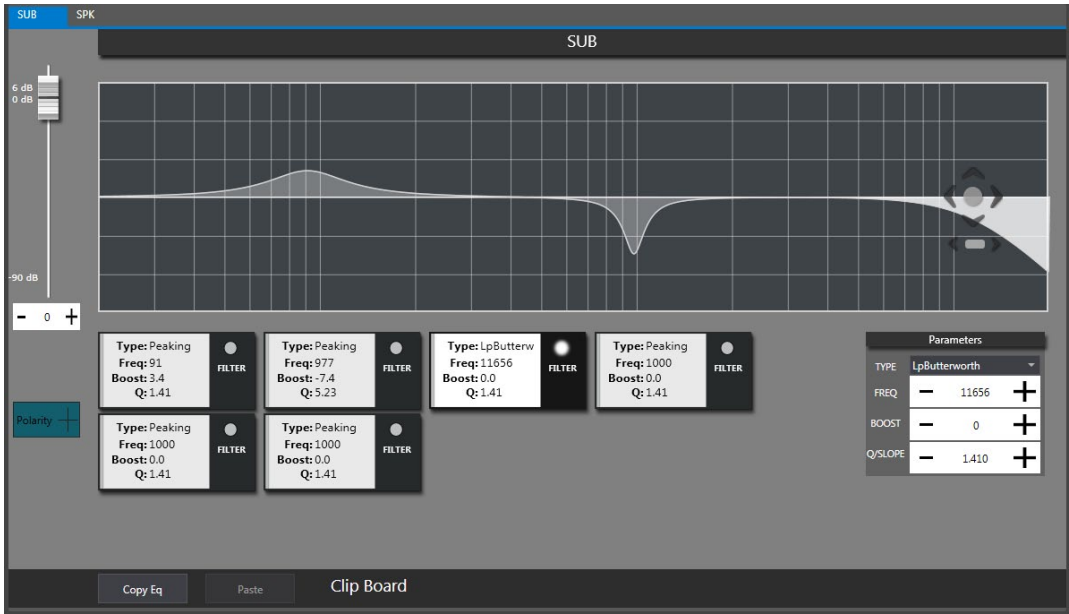
4.1 INPUT

The Input page allows users to manage the EQ and the gain of the four input channels (IN1 and IN2 are analog inputs while DIG3 and DIG4 are AES/EBU digital signal inputs). Three parametric EQs are available on each channel.



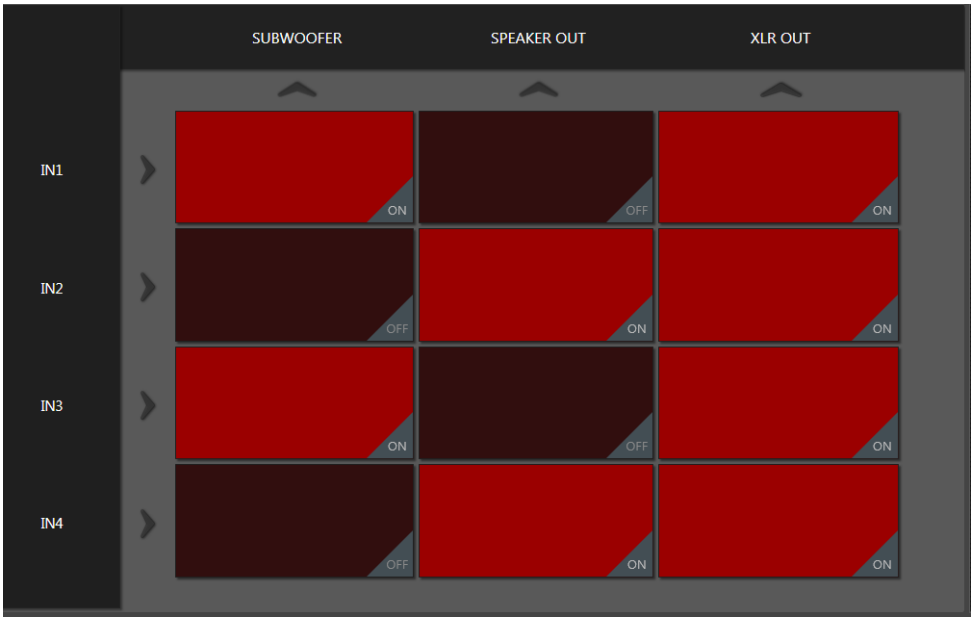
4.2 OUTPUT

The Output page allows users to independently manage the EQ and the gain of the available output channels. Six parametric EQs are available on each channel. The *Polarity* button in the bottom left corner allows users to invert the channel polarity.



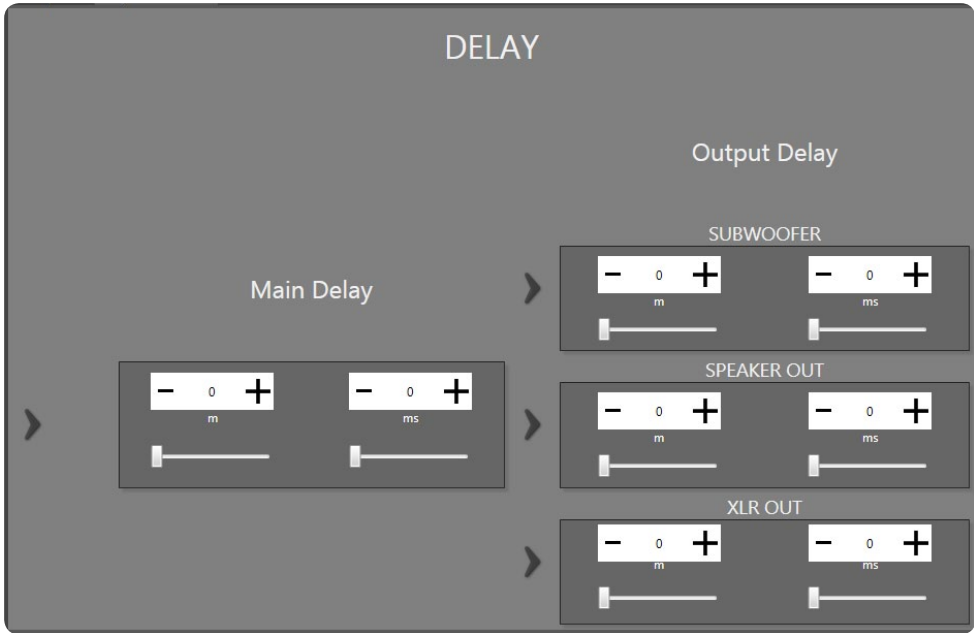
4.3 ROUTING

The Routing page allows users to manage the routing of the four input channels to the subwoofer, the speaker output and the XLR output (labeled *DSP Out* on the amplifier panel).



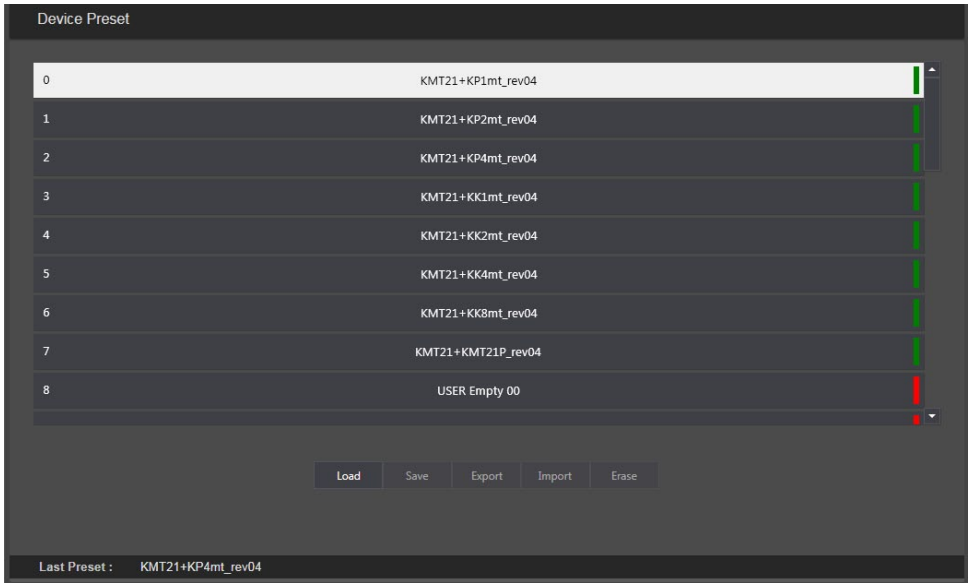
4.4 DELAY

The Delay page allows users to set the delays (up to 3.5m) on the available output channels independently. A main delay (up to 114m) is also available, affecting all output channels.



4.5 DEVICE PRESETS

The Device Presets page allows users to manage the available presets stored on board. Users can save their own presets in the empty slots.



4.6 CONFIGURATION

The Configuration page allows users to change the name of the device, update the firmware and switch the LCD screen on and off (Blink Mode is also available).

To update the firmware, choose the desired option to load from the menu and press *Update*.

The *Auto Power Off Enable* box toggles the LCD auto-dim. When auto-dim is active, the LCD on the device will automatically turn off 60 seconds after the last touch. Touching the LCD will reactivate it.

The screenshot displays the Configuration page of the K-framework 2 device. It is divided into three main sections: INFO, Fw Update, and LCD.

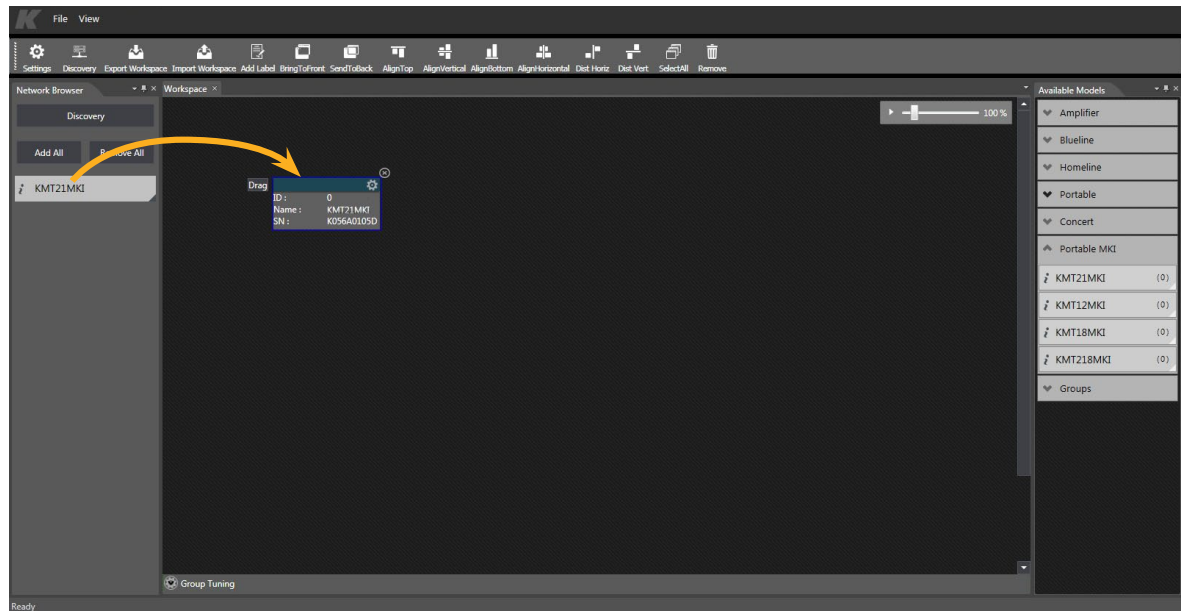
- INFO Section:** Contains fields for Device Name (KMT21-L), Set Name, Firmware Version (1.74547), Serial Number (12345678910), Device Status (Online), and ID (2).
- Fw Update Section:** Features a dropdown menu showing 'fw_1.74547' and an 'Update' button.
- LCD Section:** Includes three buttons: 'LCD On', 'LCD Off', and 'LCD Blink'. To the right, under the heading 'AUTO LCD POWER OFF', there are two radio buttons: 'Auto Power Off Enable' (selected) and 'Auto Power Off Disable'.

WARNING: Do not send any audio signals while the firmware is updating!

5. PORTABLE MARK I SECTION

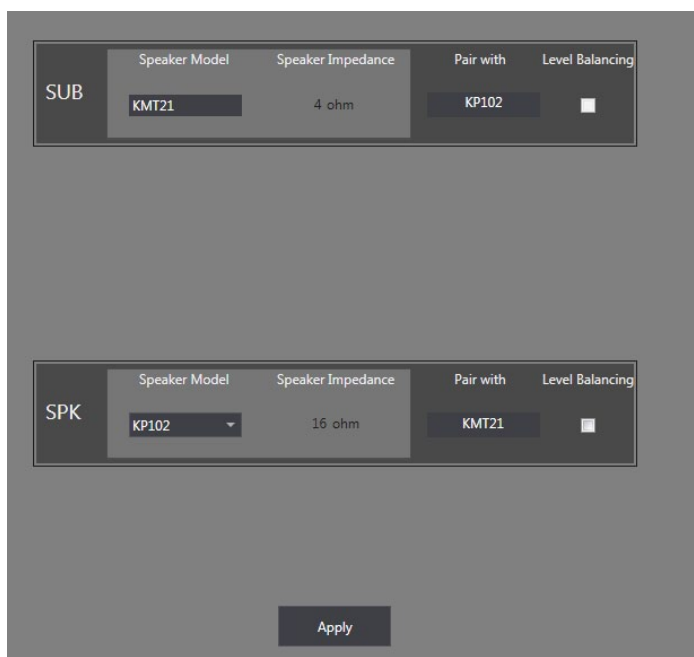
This section is relevant to all the devices in the new Portable Systems family which can be managed by the K-Framework software: KMT12 Mark I, KMT18 Mark I, KMT21 Mark I and KMT218.

Follow the instructions in Chapter 1 to load your devices into the *Network Browser* window then drag and drop the devices from the *Network Browser* window to the workspace. Click on the wheel symbol to access the device's settings.



5.1 OUTPUT CONFIGURATION

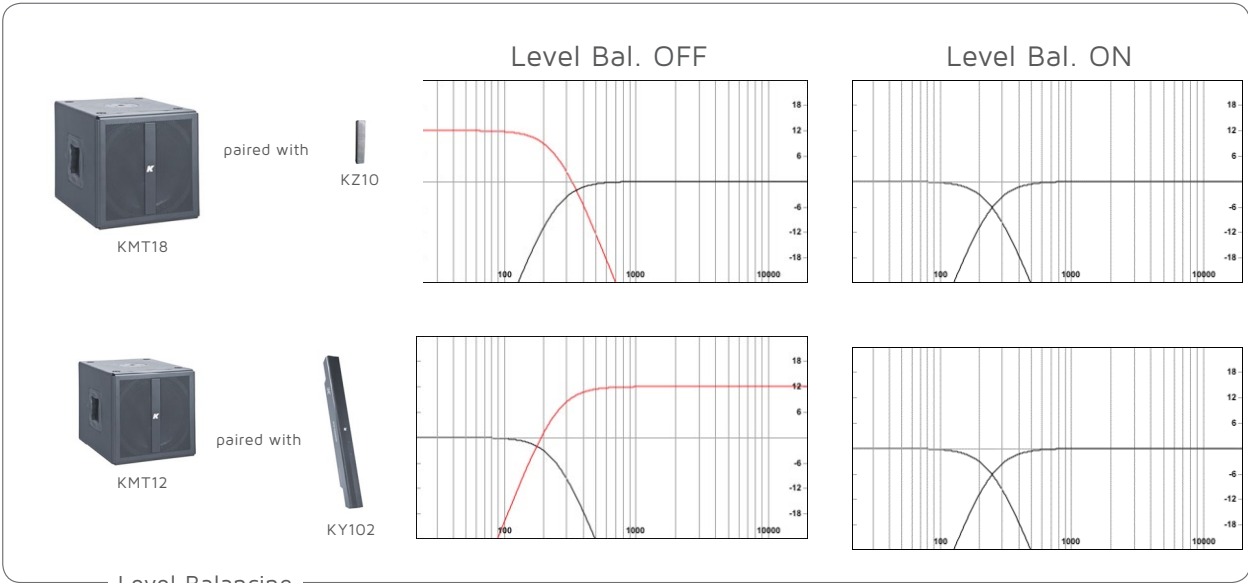
First, click on *Output Conf* to set the speaker model connected to the speaker output. This step is extremely important because the DSP will automatically adjust all settings (limiters, crossover, equalization) to match the requirements for the speakers connected.



NOTE:

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

To obtain a perfect volume balance between the paired speakers, select *Level Balancing*. This function aligns the output volume of the paired speakers, offering the possibility for balanced equalization even when loudspeaker models differ in power.



TIP: The *Level Balancing* option is not always the best choice. Sometimes a perfect level balance between the lows and the mid-highs is not needed. In this case, leave the *Level Balancing* option unchecked.

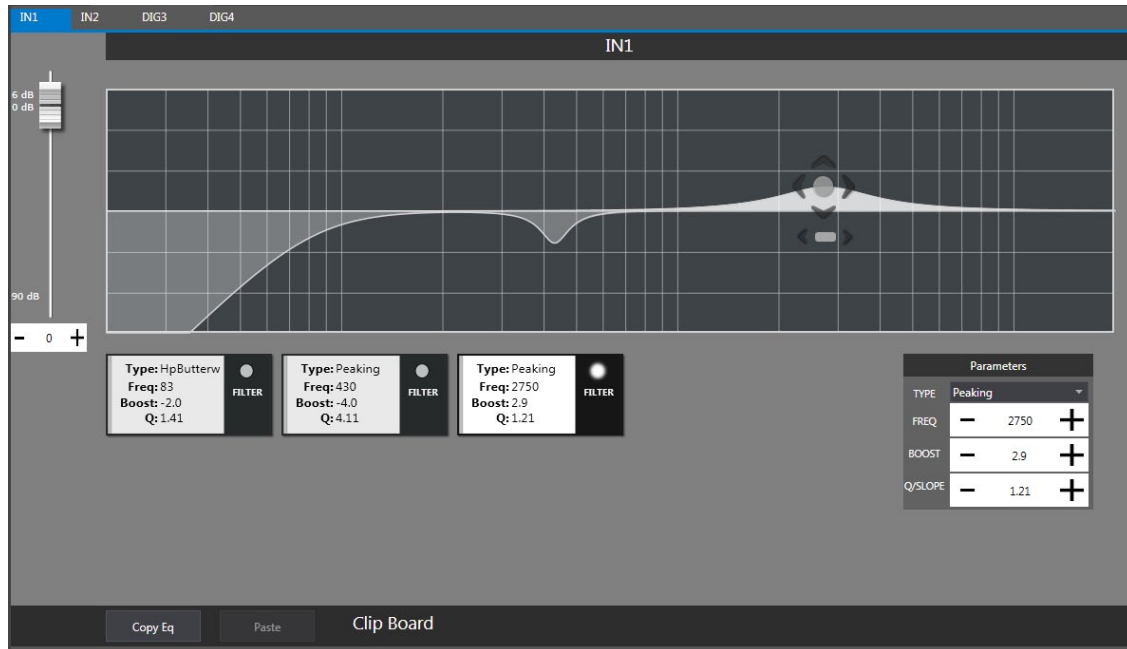
5.2 ROUTING

The Routing page allows users to manage the routing of the four input channels to the subwoofer, the speaker output and the XLR output (labeled *DSP Out* on the amplifier panel).



5.3 INPUT

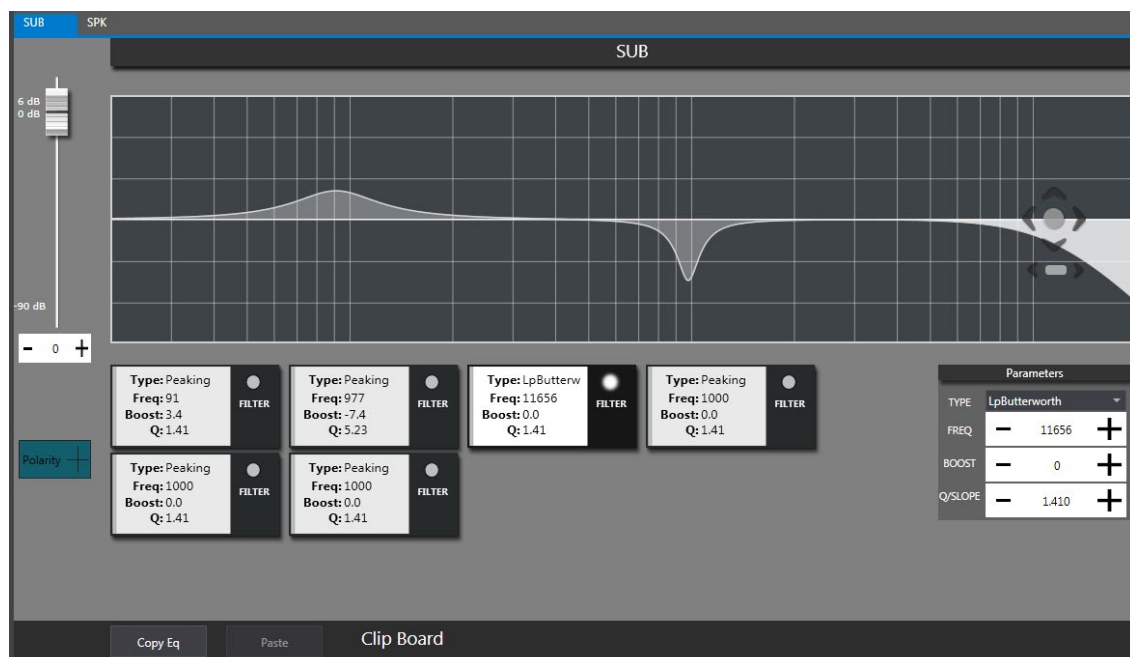
The Input page allows users to manage the EQ and the gain of the four input channels independently (IN1 and IN2 are analog inputs while DIG1 and DIG2 are AES/EBU digital signal inputs). Three parametric EQ are available on each channel. All changes can be copied and pasted to other channels.



5.4 OUTPUT

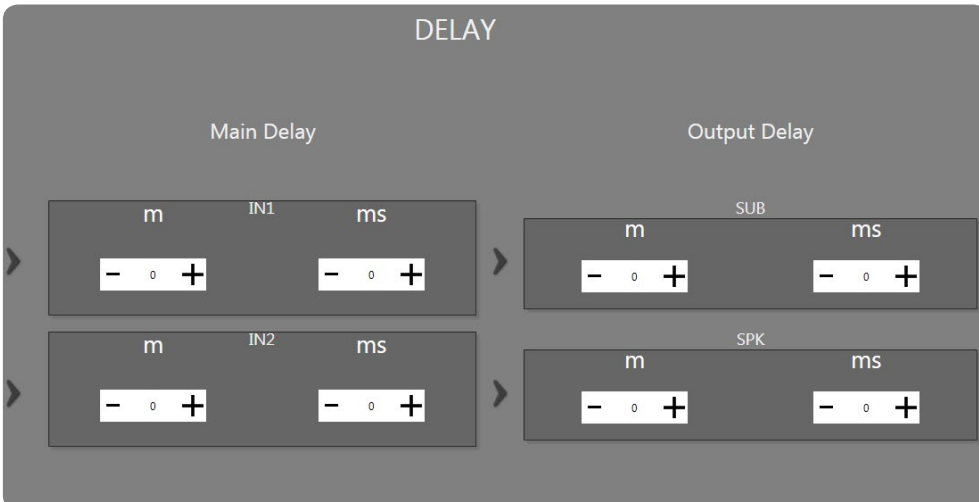
The Output page allows users to manage the EQ and the gain of the subwoofer and the speakers connected to the speaker output independently. Six parametric EQ are available on each channel.

It's also possible to reverse the polarity of a channel. All changes can be copied and pasted to other channels.



5.5 DELAY

The Delay page allows users to set delays (up to 3.5m) for the subwoofer and the speaker output independently. An additional delay (up to 114m) can be set on the analog inputs.

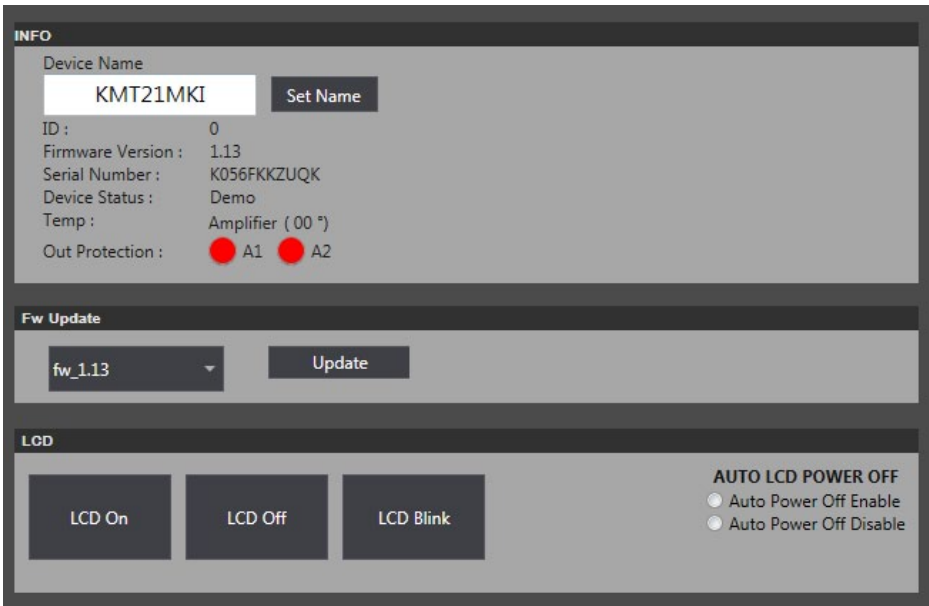


5.6 CONFIGURATION

The Configuration page allows users to change the name of the device, update the firmware and switch on and off the LCD screen situated on the amplifier panel (Blink Mode is also available).

To update the firmware, choose the desired option to load from the menu and press *Update*.

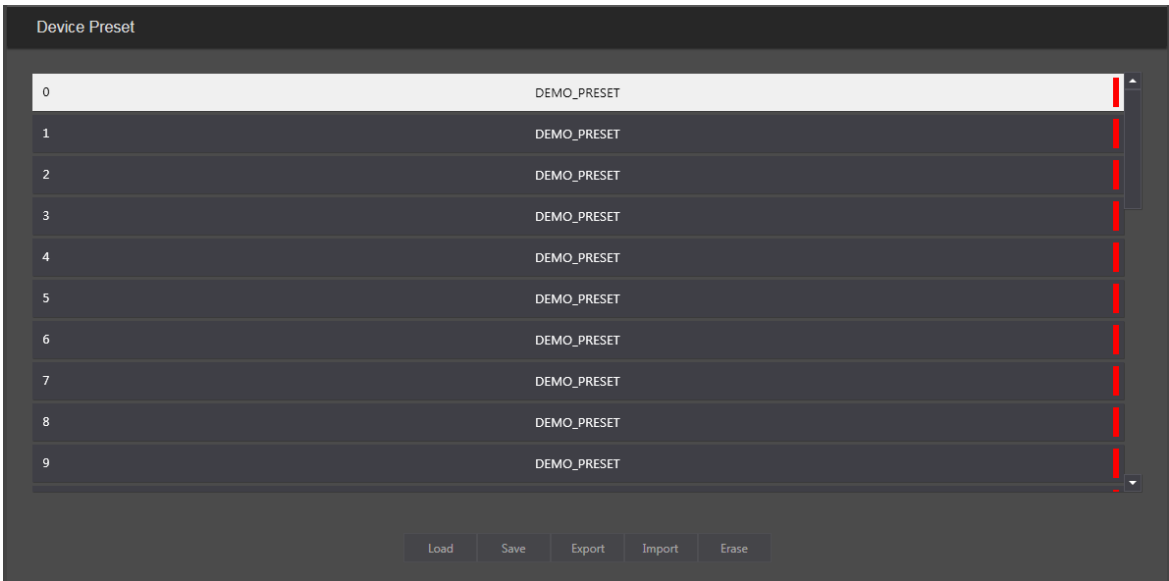
The *Auto Power Off Enable* box toggles the LCD auto-dim. When auto-dim is active, the LCD on the device will automatically turn off 60 seconds after the last touch. Touching the LCD will reactivate it.



WARNING: Do not send any audio signals while the firmware is updating!

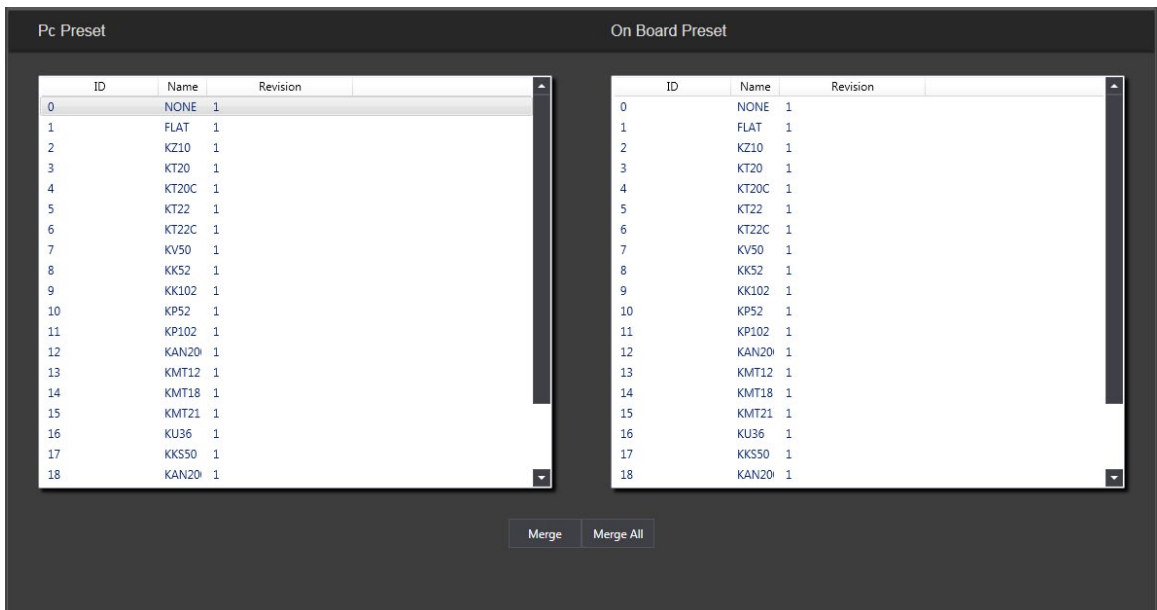
5.7 DEVICE PRESETS

The Device Presets page allows users to manage the available presets stored on board. Users can save their own presets in the empty slots.



5.8 CHANNEL PRESETS

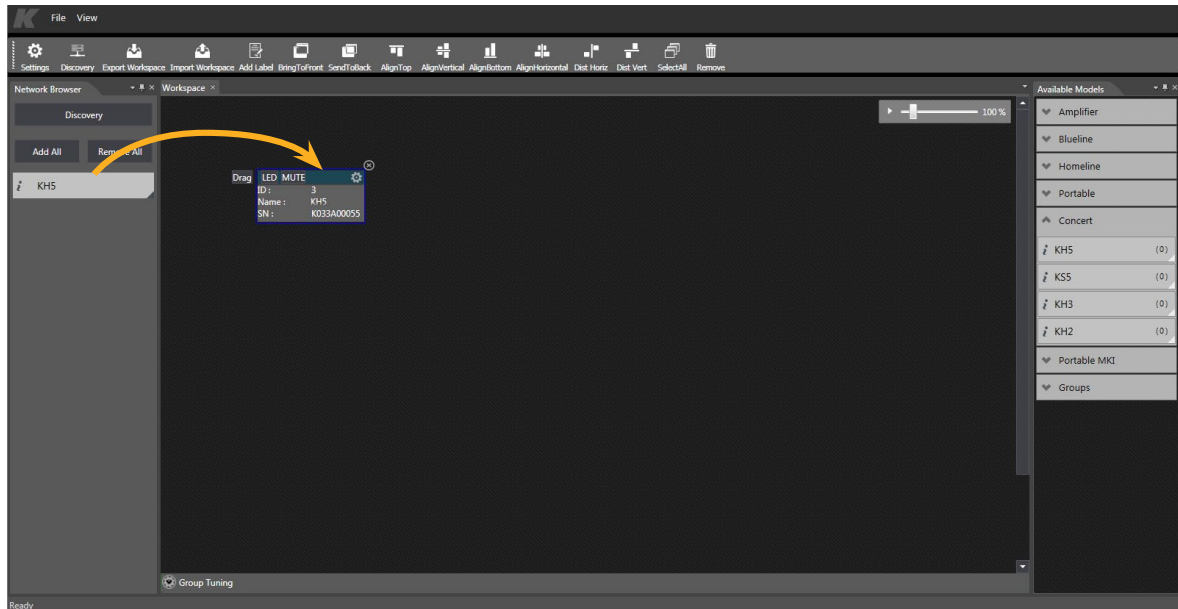
As shown in Paragraph 4.1, users must fill out the Configuration page with the model of the speakers connected to the Speaker Output. If a new K-array model is introduced to the market, a new version of the Framework, including the new model which will appear in the *PC Preset* window of the Channel Presets page, will be released. On that page, select the new model and click *Merge*. This way, the new model will be loaded on board and it will be available also in the Configuration page accessible from the onboard touch screen.



6. CONCERT SECTION

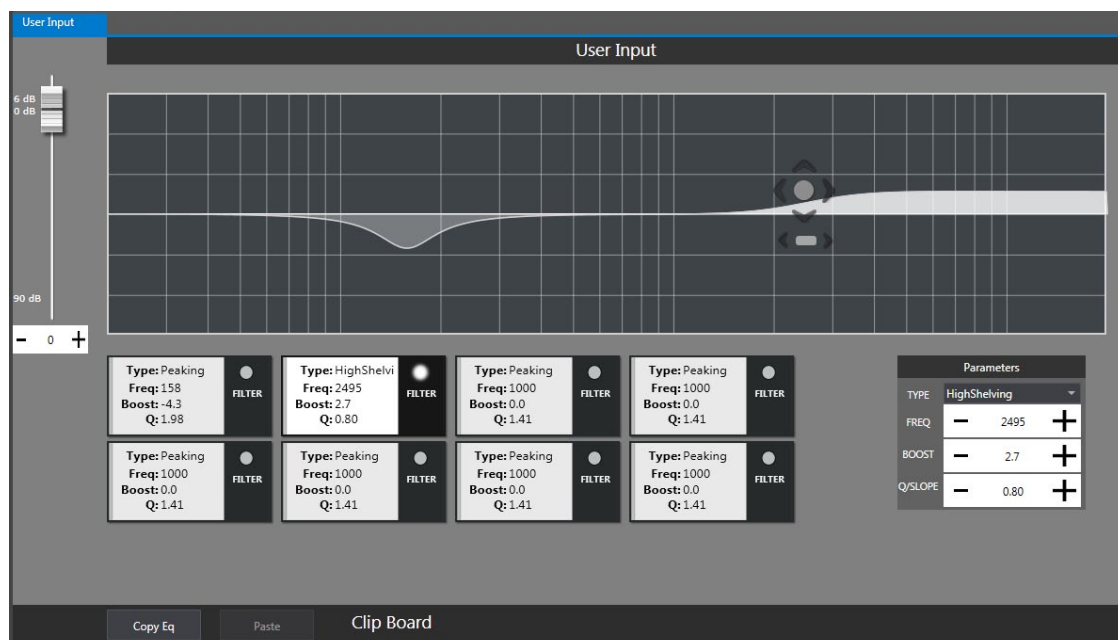
This section is relevant to all the devices in the Concert Series family which can be managed by the K-Framework software: KH5, KH3, KH2, KS5.

Follow the instructions in Chapter 1 to load your devices into the *Network Browser* window then drag and drop the devices from the *Network Browser* window to the workspace. Click on the wheel symbol to access the device's settings.



6.1 INPUT

The Input page allows users to manage the EQ and the gain of the input signal. Height parametric EQ are available. When you are working with a cluster composed of more then one unit, we recommend to not tune the speakers individually. Use the *Group* function to tune the whole cluster at once (see Chapter 8).



6.2 GENERAL

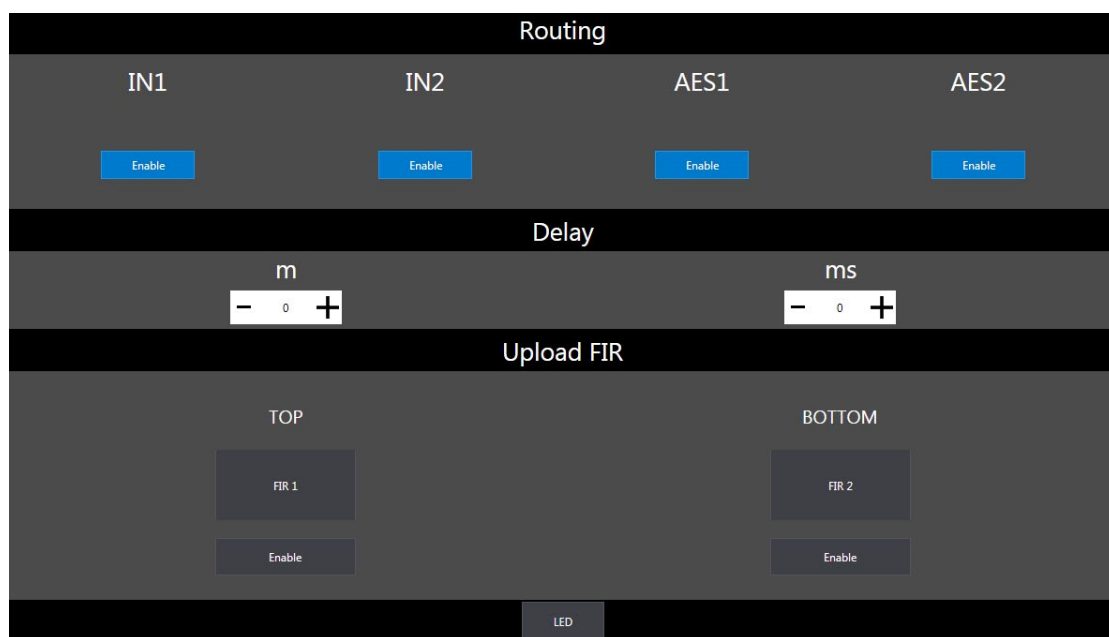
The General page allows users to manage the routing of the four inputs channels, to add a delay, to load the FIR filters calculated with the EASE Focus software and to switch ON/OFF the LED situated at the front of the speakers.

In the *Routing* section, press *Enable* to activate the corresponding audio input. IN1 and IN2 are the analog inputs while AES1 and AES2 are the AES/EBU digital signal inputs.

In the *Delay* section, users can insert a delay up to 114m.

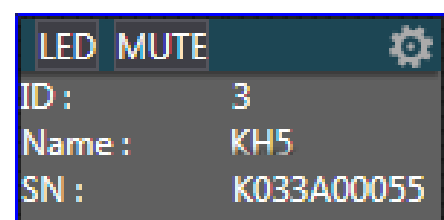
In the *Upload FIR* section (not available for the KS5), select FIR1 or FIR2 (KH5 only) to load a FIR filter calculated by EASE Focus and saved on your computer. Please note that the KH2 and the KH3 can load only one FIR filter per device while the KH5 can load two FIR filters per device. Press *Enable* to upload the filter into the device.

In the next Paragraph we explain in detail how to export the FIR filters from the EASE Focus software.



TIP

Did you notice the LED and MUTE buttons situated at the top of the device's icon in the Workspace? You can use them to switch on/off the LED and to mute/unmute the speaker.



6.3 FROM EASE FOCUS TO THE K-FRAMEWORK

EASE Focus 3 is an advanced acoustic simulation software which calculates the optimal FIR filters to load into our products to get the best results in terms of flat frequency response, even coverage and maximum SPL on the whole audience area.

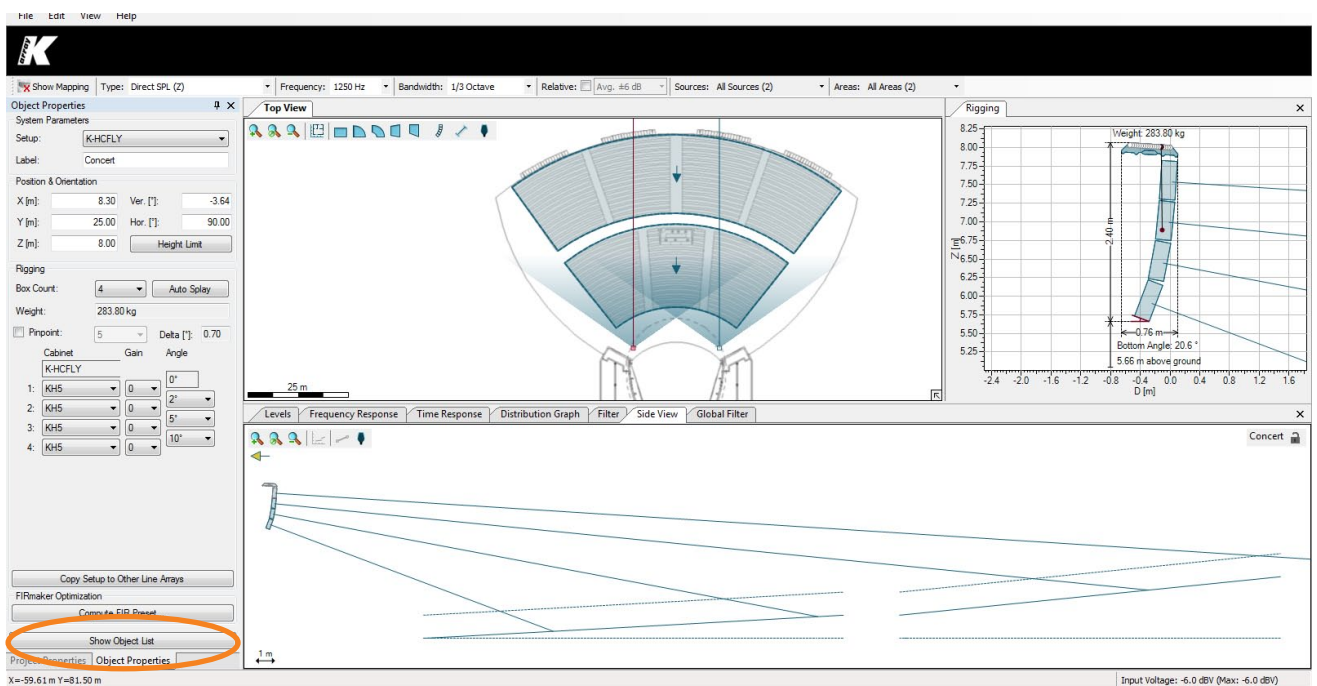
To download your free EASE Focus 3 software, visit the K-array *Software Download* page located at: http://www.k-array.com/software_download.

We recommend to carefully read the EASE Focus's User Guide. Open the software and press F1 or go to *Help > User Guide* to open the guide.

In this paragraph we explain briefly how to calculate and export the FIR Filters to load into the KH5, KH3 and KH2 units.

6.3.1 FIR CALCULATION

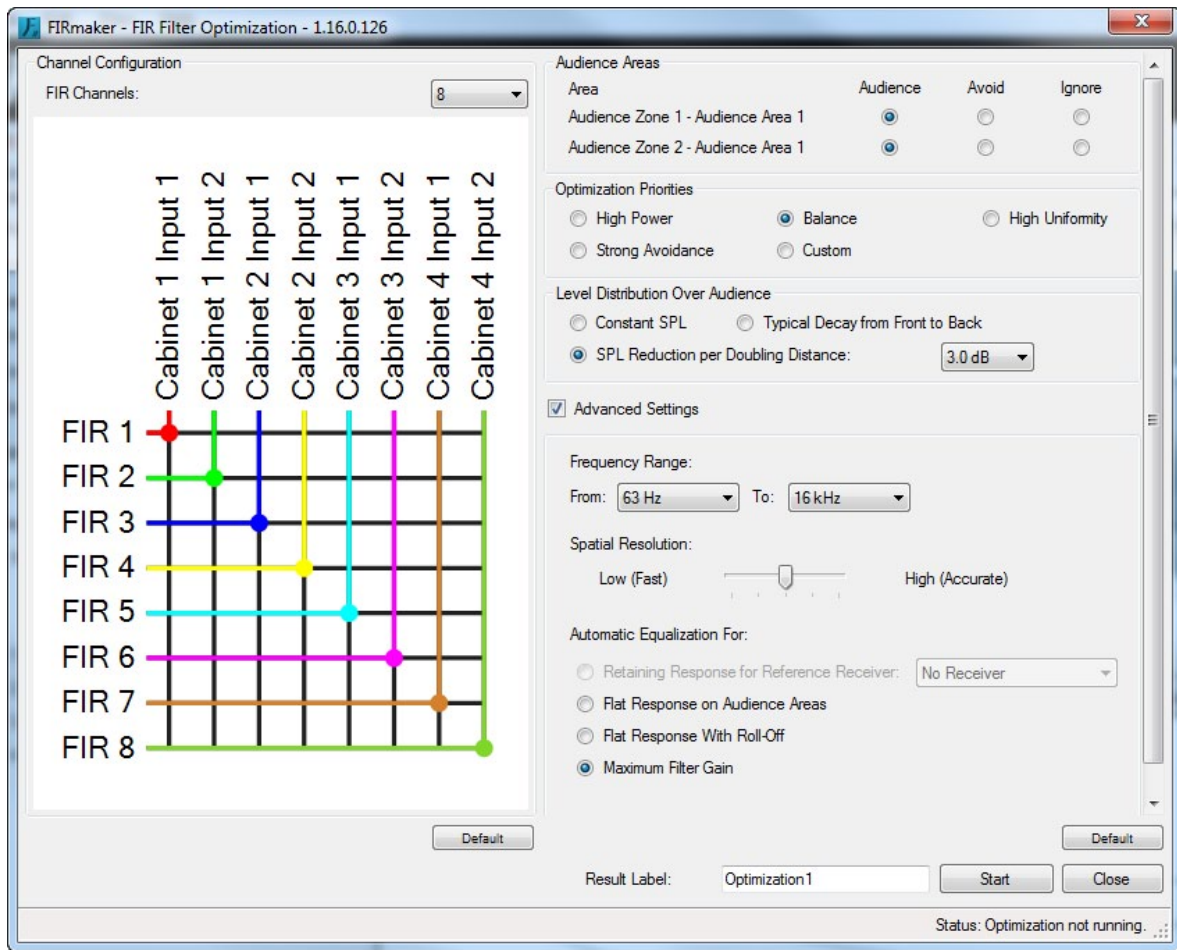
1. First design your venue and insert the cluster of speakers.



IMPORTANT

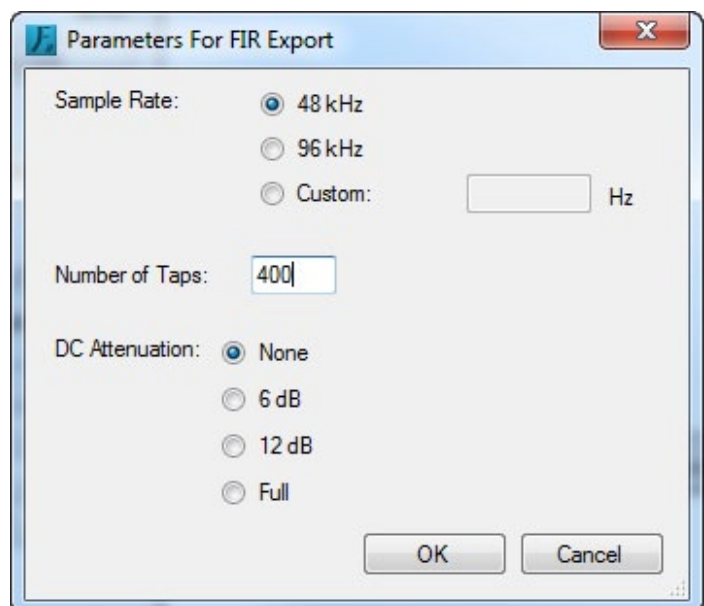
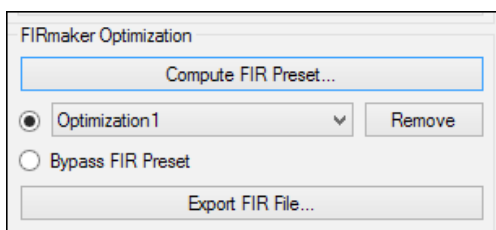
Make sure to download the latest System Definition files (.gll) from our website and import them into the EASE Focus Library.

- Click on the *Calculate FIR Preset* window. Set your preferences and click *Start*. The preferences shown in the picture below are a good starting point.



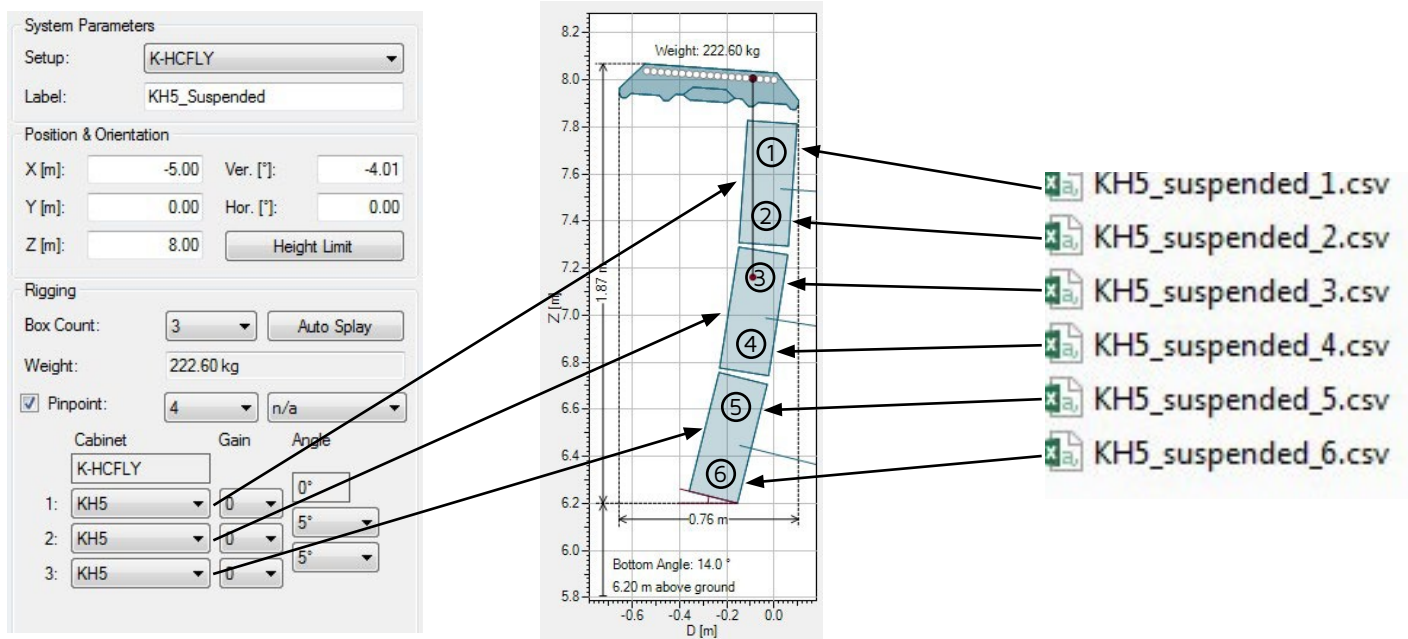
- Select *Export FIR File* to save the FIR Filters to your computer. A pop-up window will ask for parameters. Make sure to set them as shown in the picture below:

Sample Rate: 48 kHz, Number of Taps: 400 and DC Attenuation: None. Press Ok.

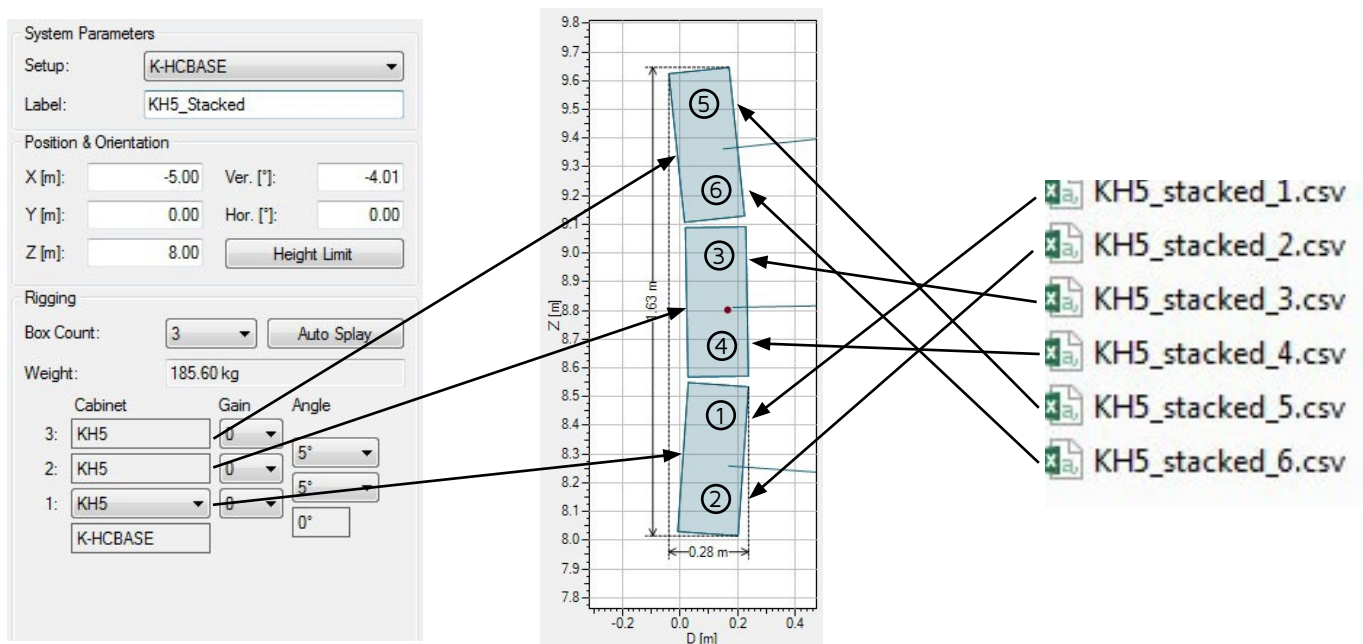


4. Choose a base name for the files. All FIR files will be saved with a nomenclature composed of the base name and a number. When a cluster of KH5 units is **suspended**, Number 1 refers to the top part of the first KH5 unit in the cluster, Number 2 refers to the bottom part of the first KH5 unit in the cluster, Number 3 refers to the top part of the second KH5 unit in the cluster and so on. When the KH5 cluster is **stacked** instead, Number 1 refers to the top part of the first KH5 unit in the stack, i.e. the closest unit to the base. Number 2 refers to the bottom part of the same unit and so on for the next ones. For KH3 and KH2, only one FIR is generated per unit. Again, when the cluster is suspended, Number 1 refers to the closest speaker to the fly-bar (the top one) instead when the cluster is stacked, Number 1 refers to the closest unit to the base (the bottom one)

6.3.2 FIR ORDER - KH5 SUSPENDED



6.3.3 FIR ORDER - KH5 STACKED



6.3.4 FIR ORDER - KH3/KH2 SUSPENDED

System Parameters

Setup: **K-HCFLY**

Label: **KH3_Suspended**

Position & Orientation

X [m]: **-5.00** Ver. [°]: **-2.65**

Y [m]: **0.00** Hor. [°]: **0.00**

Z [m]: **8.00** **Height Limit**

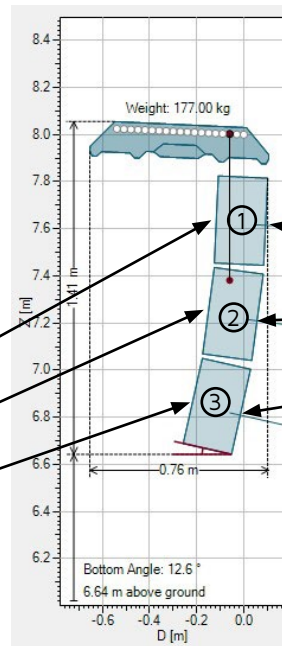
Rigging

Box Count: **3** **Auto Splay**

Weight: **222.60 kg**

☒ Pinpoint: **3** **n/a**

Cabinet	Gain	Angle
1: KH3	0	0°
2: KH3	0	5°
3: KH3	0	5°



KH3_suspended_1.csv

KH3_suspended_2.csv

KH3_suspended_3.csv

6.3.5 FIR ORDER - KH3/KH2 STACKED

System Parameters

Setup: **K-HCBASE**

Label: **KH3_Suspended**

Position & Orientation

X [m]: **-5.00** Ver. [°]: **-2.65**

Y [m]: **0.00** Hor. [°]: **0.00**

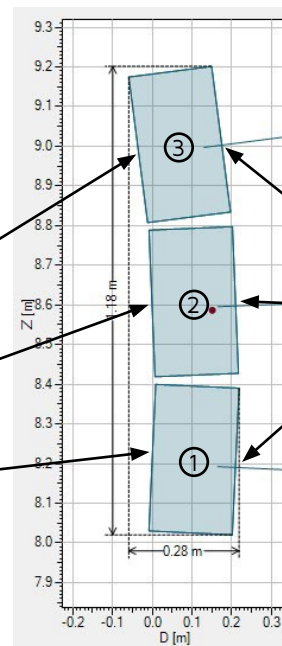
Z [m]: **8.00** **Height Limit**

Rigging

Box Count: **3** **Auto Splay**

Weight: **140.00 kg**

Cabinet	Gain	Angle
3: KH3	0	0°
2: KH3	0	5°
1: KH3	0	5°
K-HCBASE		0°



KH3_stacked_1.csv

KH3_stacked_2.csv

KH3_stacked_3.csv

- Follow the instructions in the previous paragraph to import the files into the K-Framework and upload them onto the devices.

6.4 CONFIGURATION

The Configuration page allows users to change the name of the device, change the ID number, check the status of the amplifier, update the firmware and manage the LCD screen of the amplifier.

6.4.1 ID SETTING


To change the ID number of the device, choose one of the available IDs in the drop down menu. Make sure there are no units in the network that share the same ID.



The screenshot shows the 'INFO' configuration page. At the top, there is a 'Device Name' field containing 'KH5' and a 'Set Name' button. Below this, a list of device information is displayed: ID: 0, Firmware Version: 1.89, Serial Number: K031VHVNSLE, Device Status: Demo, Temp: Amplifier (20°), and Out Protection: A1 and A2 (both indicated by green circles).

6.4.2 FIRMWARE UPDATE

To update the firmware, choose the desired option to load from the menu and press *Update*. We recommend to always be updated with the latest release.



The screenshot shows the 'Fw Update' configuration page. It features a dropdown menu with four options: fw_2.66560, fw_1.73216, fw_2.65792, and fw_2.66560. An 'Update' button is located to the right of the dropdown menu.

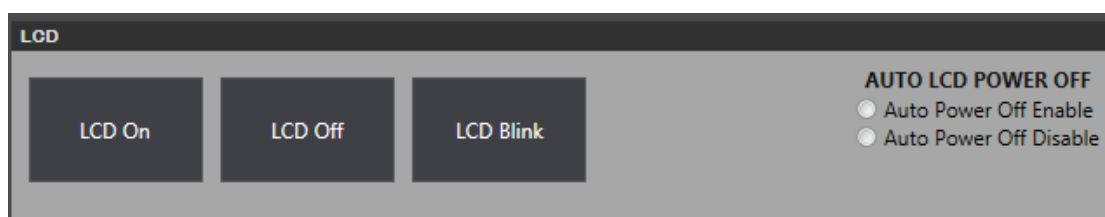
WARNING: Do not send any audio signals while the firmware is updating!

6.4.3 LCD SETTINGS

LCD On/Off: When LCD Off is selected, the LCD is switched off and can be reactivated only by connecting a computer and selecting LCD On on this page.

LCD Blink: When this option is enabled, the LCD will start blinking.

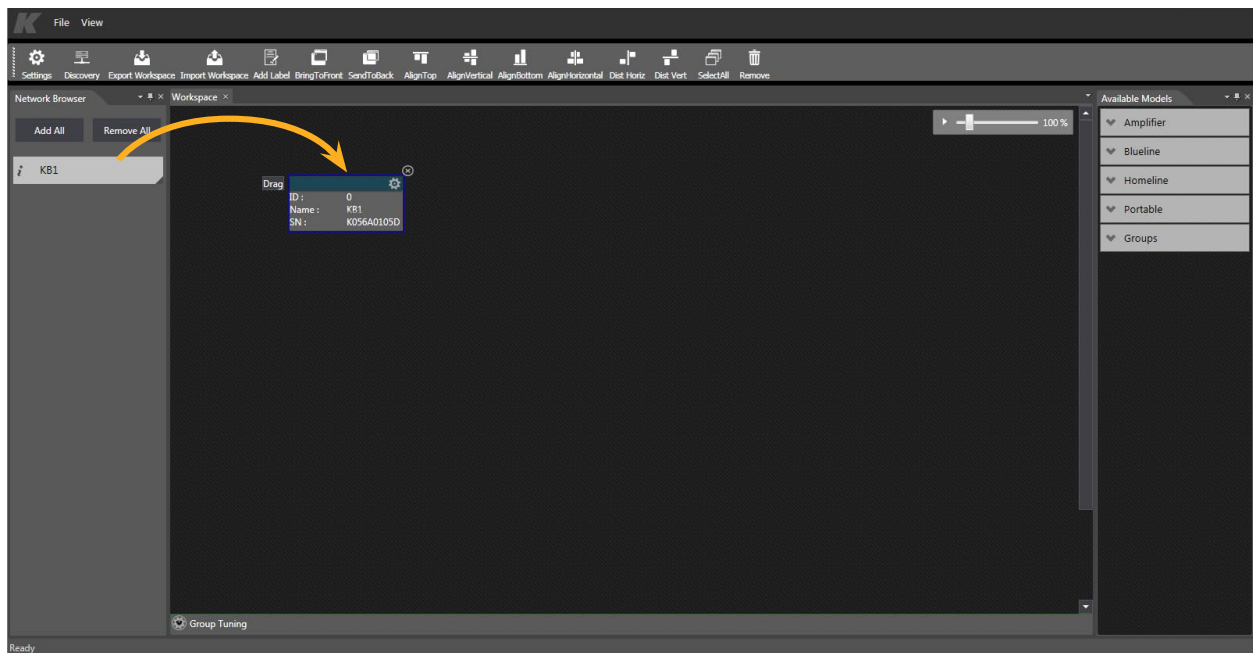
Auto Power Off: The *Auto Power Off Enable* box toggles the LCD auto-dim. When auto-dim is active, the LCD on the device will automatically turn off 60 seconds after the last touch. Touching the LCD will reactivate it.



7. BLUELINE SECTION

This section is relevant to all the products in the BlueLine family: KB1 and KB1R. The KB1R features only the Configuration and the Output pages while the KB1 features more functions, described in detail in the following pages.

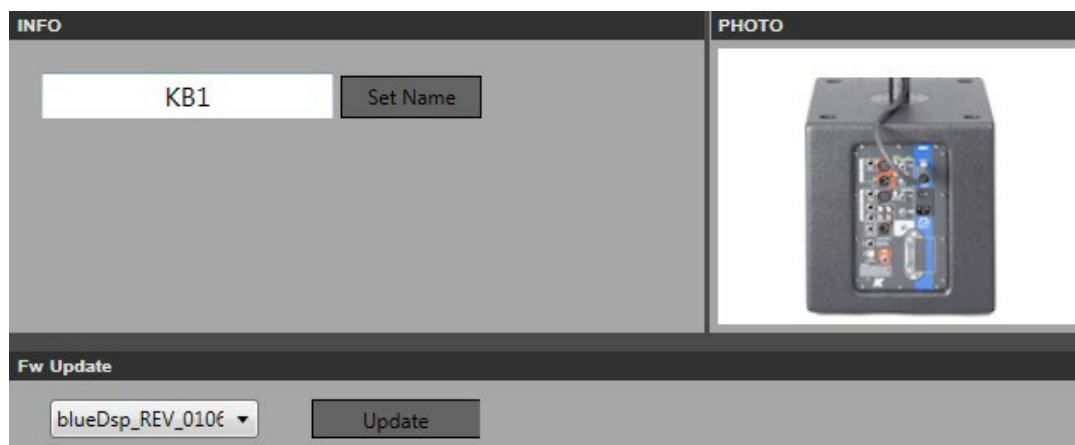
Follow the instructions in Chapter 1 to load your devices into the *Network Browser* window then drag and drop the devices from the *Network Browser* window to the workspace. Click on the wheel symbol to access the device's settings.



7.1 CONFIGURATION

The Configuration page allows users to change the name of the device, update the firmware and switch the LCD screen on and off (Blink Mode is also available).

To update the firmware, choose the desired option to load from the menu and press *Update*.



WARNING: Do not send any audio signals while the firmware is updating!

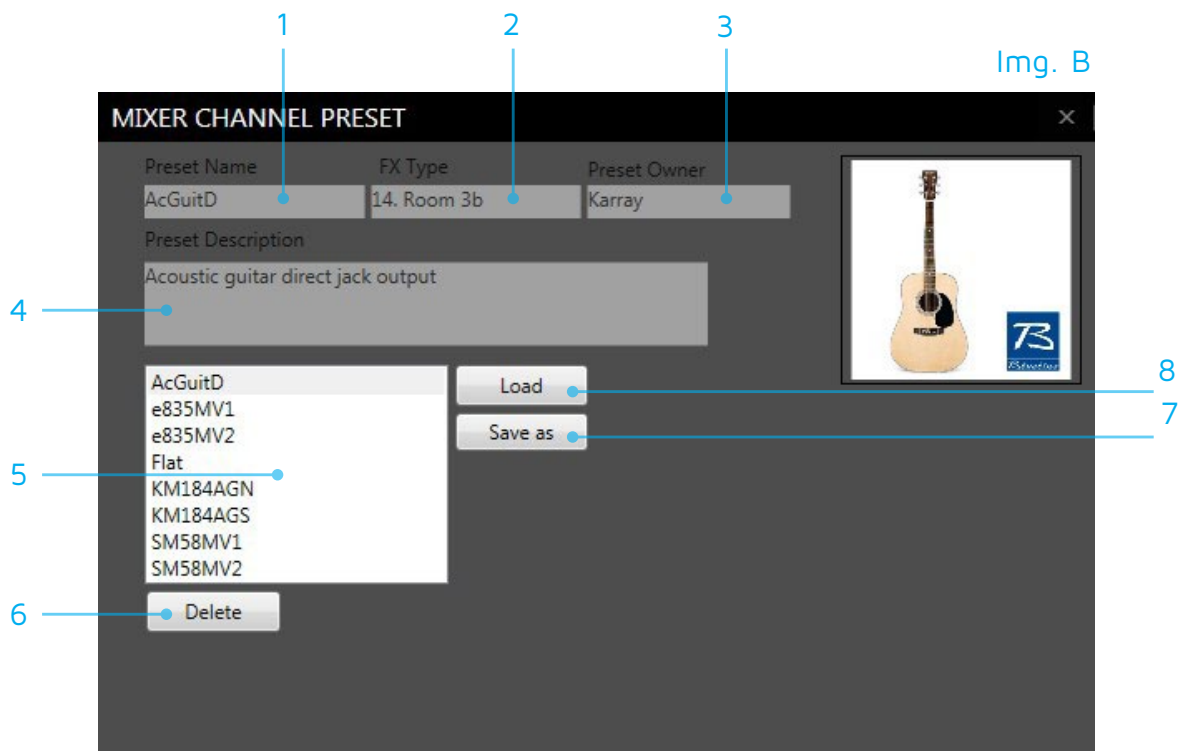
7.2 MIXER WINDOW



- 1) Channel Preset Name displays the name of the preset currently loaded on the channel.
- 2) Channel Preset Selector opens and closes the *Channel Preset* window (img. B).
- 3) EQ Window Button opens and closes the *Channel EQ* window (img. D).
- 4) Basic EQ allows users to set a basic equalization on the channel. Click the EQ Window Button to access a more advanced parametric EQ.
- 5) Pan Knob locates the channel in the stereo field.
- 6) Aux Send Knob regulates the amount of pre-fader, post-EQ and post-compression signal sent to the auxiliary output.
- 7) Fx Send Knob regulates the amount of post-fader signal sent to the effects processor.
- 8) Channel Volume Fader regulates the channel volume.
- 9) Compressor Window Button opens and closes the *Channel Compressor* window (see img. E).
- 10) PFL Switch Button activates and deactivates Pre-Fader Listening. When PFL is on, headphones will only output the signals entering the channels where PFL is turned on, pre-fader, post-EQ and post-compression.
- 11) Mute Button. When Mute is on, signals from that channel are not sent to output.
- 12) Channel Note displays an editable 8 characters text.
- 13) Mute All Button. When selected, no signal is sent to the output.
- 14) Headphones Volume Knob regulates the headphones output volume.
- 15) Speaker OFF Button enables and disables the master output.
- 16) Mono Button switches between stereo and mono mode. In mono mode, the same signal is sent to the unit's speakers and the Out R / D.I Out XLR output. Note: if D.I. Out is selected in the Output tab, there is no difference between stereo or mono mode.

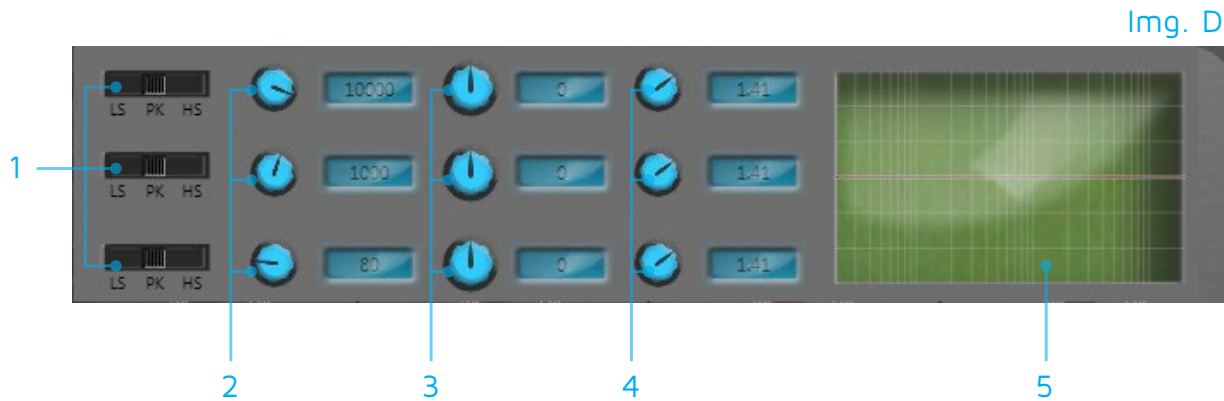
- 17) FX to AUX Output Knob regulates the amount of effect to be sent to the auxillary output.
- 18) FX to Master Output Knob regulates the overall amount of effect to be sent to the master output.
- 19) FX OFF Switch button enables and disables the effect sent to the master output. When the button is pressed, the FX to Master Output Knob is set to minimum.

7.3 CHANNEL PRESET POP UP WINDOW



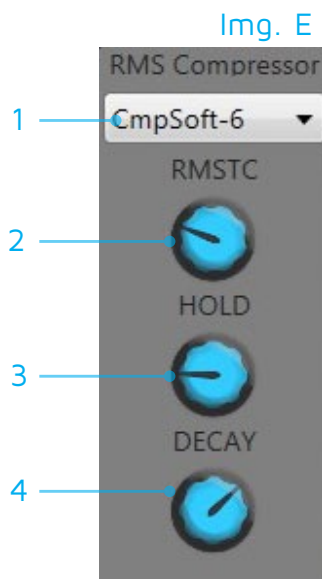
- 1) Channel Preset Name displays the preset currently selected in the *Channel Preset List*.
- 2) Channel FX Type displays the type of effect selected on the mixer panel to match the preset settings.
- 3) Channel Preset Owner displays the name of the author of the preset currently selected in the *Channel Preset List*.
- 4) Channel Preset Description describes the preset currently selected in the *Channel Preset List*.
- 5) Channel Preset List details the presets available.
- 6) Delete Preset Button deletes the preset that is currently selected in the *Channel Preset List*
- 7) Save As Button opens the *New Channel Preset* window ([img C](#)).
- 8) Load Preset Button loads the preset that is currently selected in the *Channel Preset List* to the selected channel.

7.4. CHANNEL EQ WINDOW



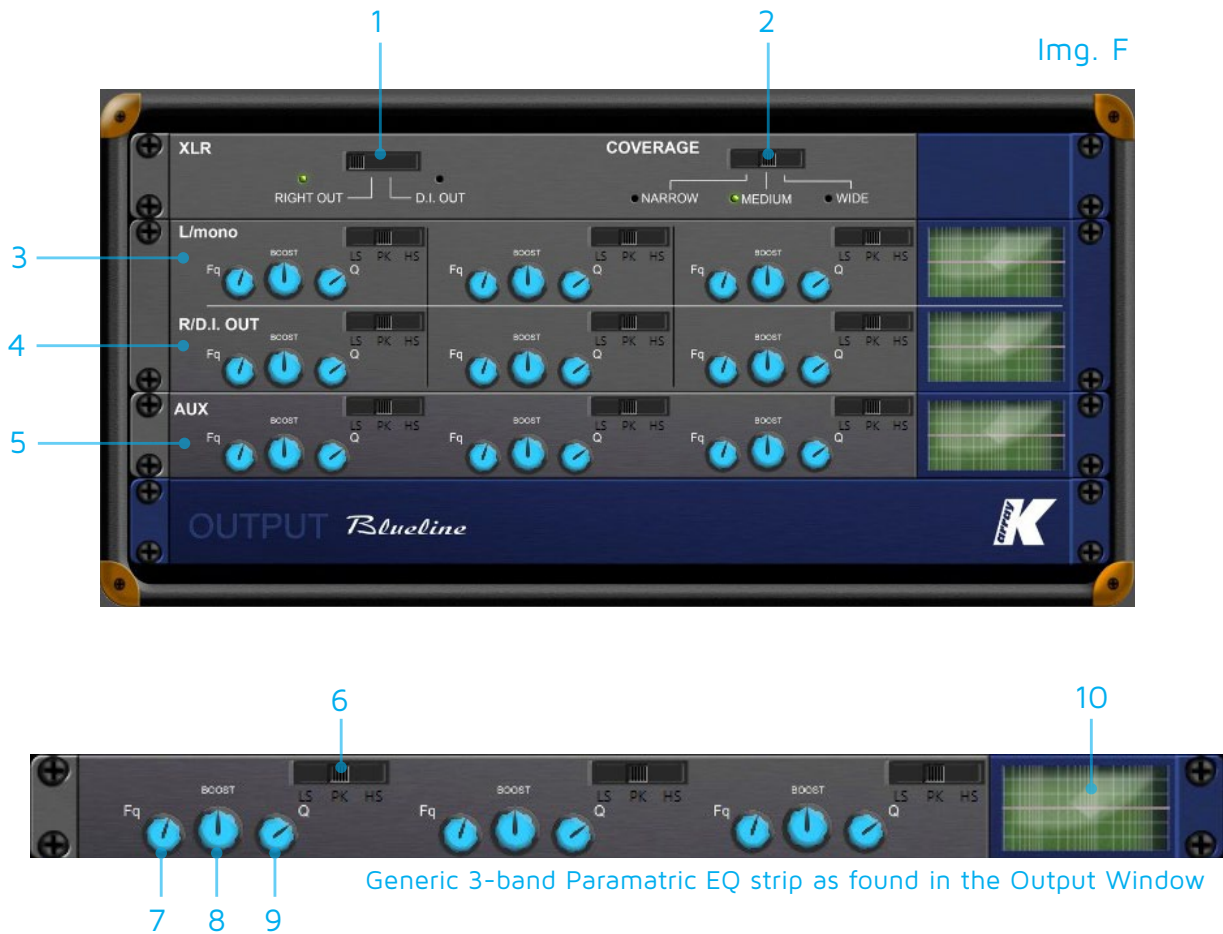
- 1) Filter Type Selectors select the type of filter from three options: Low Shelving, Peak/Notch and High Shelving.
- 2) Filter Frequency Knob sets the central or corner frequency of the corresponding filter.
- 3) Filter Gain Knob sets the gain (positive or negative) of the corresponding filter.
- 4) Filter Q/Slope Knob sets the "Q" or "Slope" value of the corresponding filter.
- 5) EQ Graph shows the effect of the equalization on the signal frequency spectrum.

7.5 CHANNEL COMPRESSOR WINDOW



- 1) Compressor Type Drop Down Menu displays all the compressing and limiting curves available on board for the user to chose from.
- 2) Compressor Attack Knob regulates the compressor attack time.
- 3) Compressor Hold Knob sets how long the compression will stay on once the signal has fallen below the threshold.
- 4) Compressor Decay Knob regulates the compressor decay time.

7.6 OUTPUT WINDOW

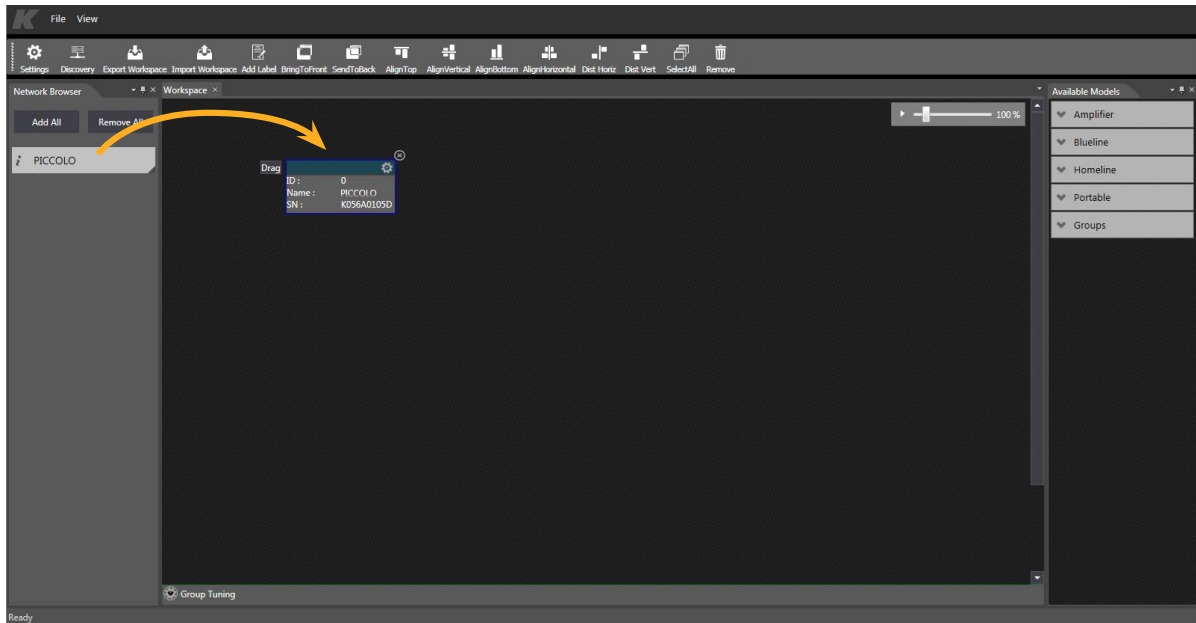


- 1) Out R / D.I OUT Mode Selector assigns the Right Channel or the pre-fader direct output of Channel 1 to the Out R / D.I Out XLR output on the mixer panel.
- 2) Coverage Selector sets the vertical coverage width of the system (10°-40°-60°).
- 3) L / Mono 3-band Parametric Equalizer allows user to equalize the speaker frequency response.
- 4) R / D.I Output 3-band Parametric Equalizer allows user to equalize the frequency response of R / D.I. output.
- 5) AUX Output 3-band Parametric Equalizer allows user to equalize the frequency response of auxillary output.
- 6) Filter Type Selector selects the type of filter from three options: Low Shelving, Peak/Notch and High Shelving.
- 7) Filter Frequency Knob sets the central or corner frequency of the corresponding filter.
- 8) Filter Gain Knob sets the gain (positive or negative) of the corresponding filter.
- 9) Filter Q / Slope Knob sets the "Q" or "Slope" value of the corresponding filter.
- 10) Filter Graph shows the effect of the corresponding filter on the signal frequency spectrum.

8. PICCOLO SECTION

This section is relevant to the Piccolo speaker.

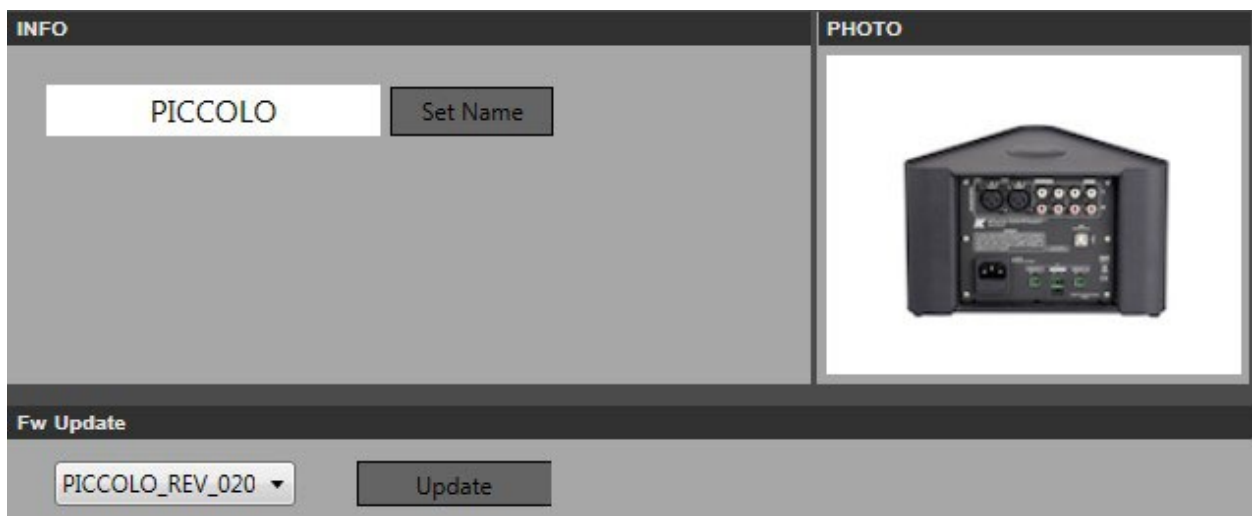
Follow the instructions in Chapter 1 to load your devices into the *Network Browser* window then drag and drop the devices from the *Network Browser* window to the workspace. Click on the wheel symbol to access the device's settings.



8.1 CONFIGURATION

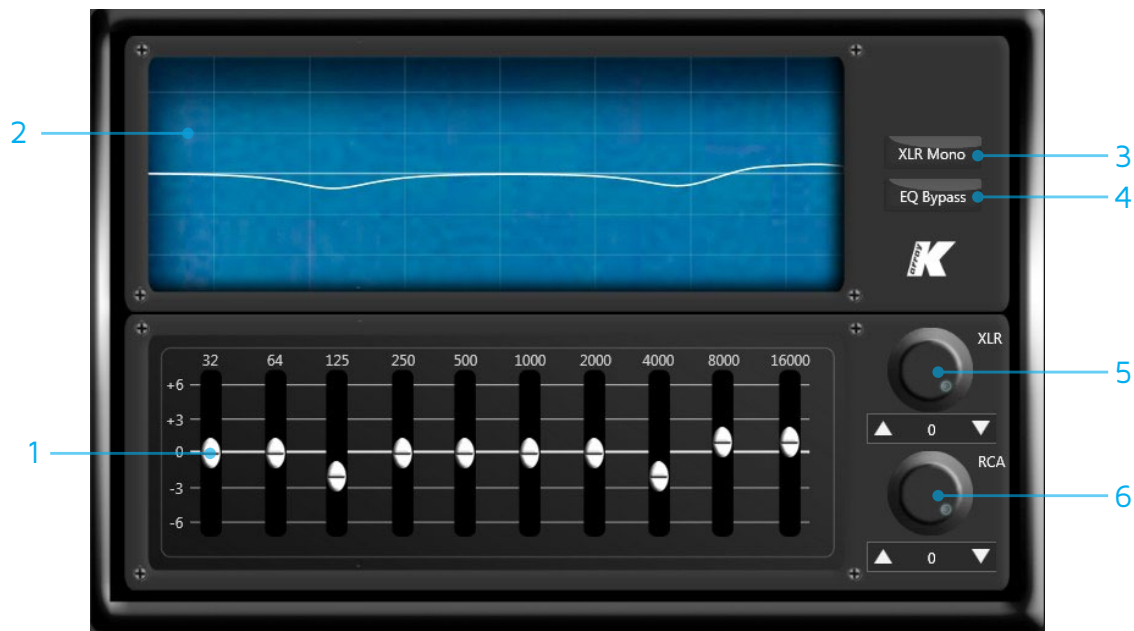
The Configuration Page allows users to change the name of the device, update the firmware and switch the LCD screen on and off (blink mode is also available).

To update the firmware, choose the desired option to load from the menu and press *Update*.



WARNING: Do not send any audio signals while the firmware is updating!

8.2 USER



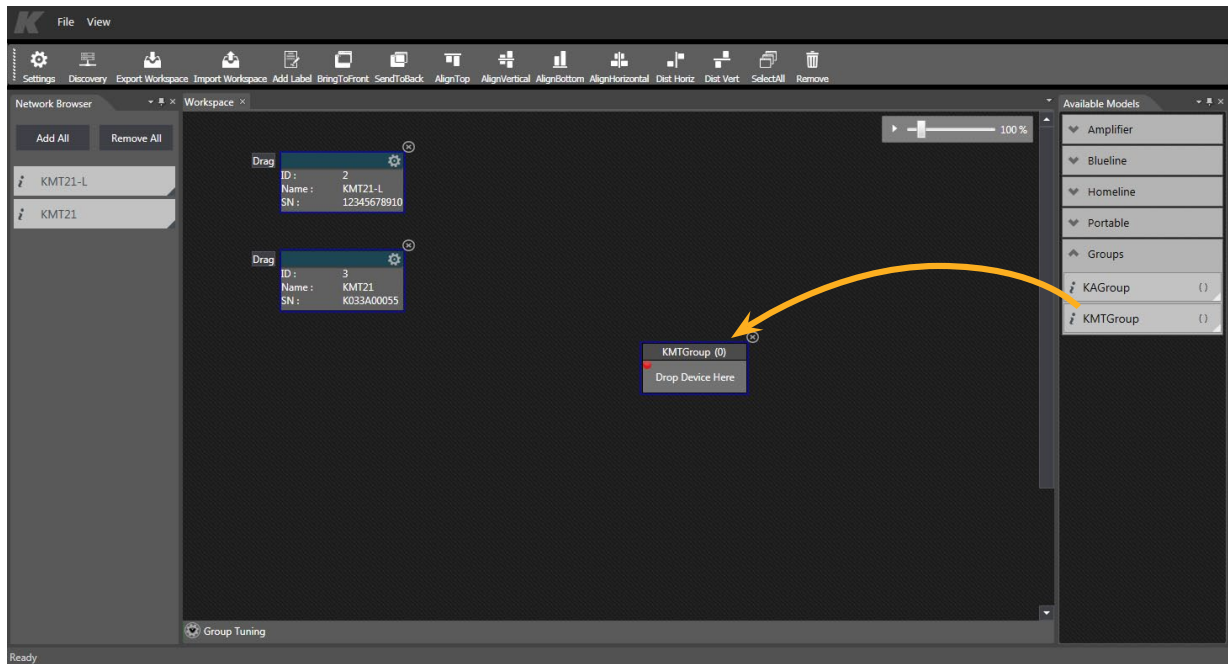
- 1) Filter Gain Fader sets the gain (positive or negative) of the corresponding filter.
- 2) EQ Graph shows the effect of the EQ on the signal frequency spectrum.
- 3) Mono Button switches between stereo and mono mode. In mono mode, the same signal is sent to the two mid-high speakers. That can be very useful when users connect only the right or the left XLR input: in stereo mode, only the right or the left mid-high speaker will play, while in mono mode both speakers work playing the same signal. If both XLR inputs are connected, mono mode causes both mid-high speakers playing a mix of the left and right channel.
- 4) EQ Bypass Button activates and deactivates the EQ. When the button is pressed, the EQ section is bypassed.
- 5) XLR Volume Knob regulates the volume of the XLR input channels.
- 6) RCA Volume Knob regulates the volume of the RCA input channels.

9. GROUPS

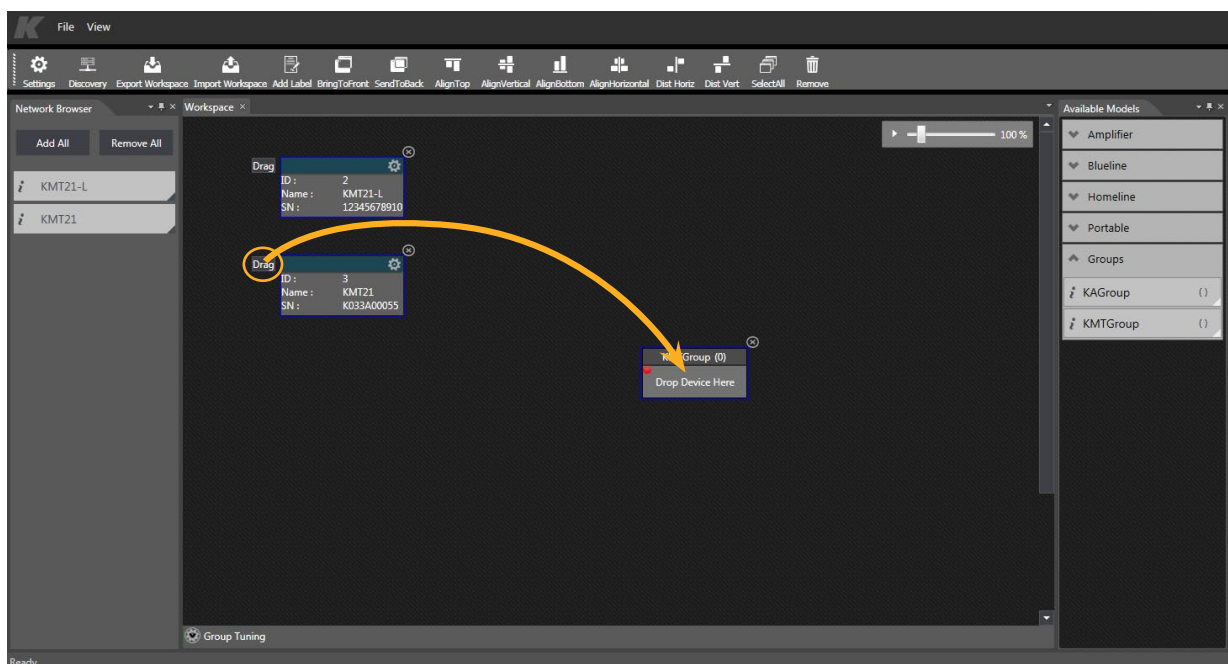
K-framework 2 features the possibility to manage a group of devices sharing the same channel settings (Eq and gain). Instead of setting all channels individually, users are able to group them and adjust their parameters at one time.

To group two or more devices loaded into the workspace together, follow the instructions below:

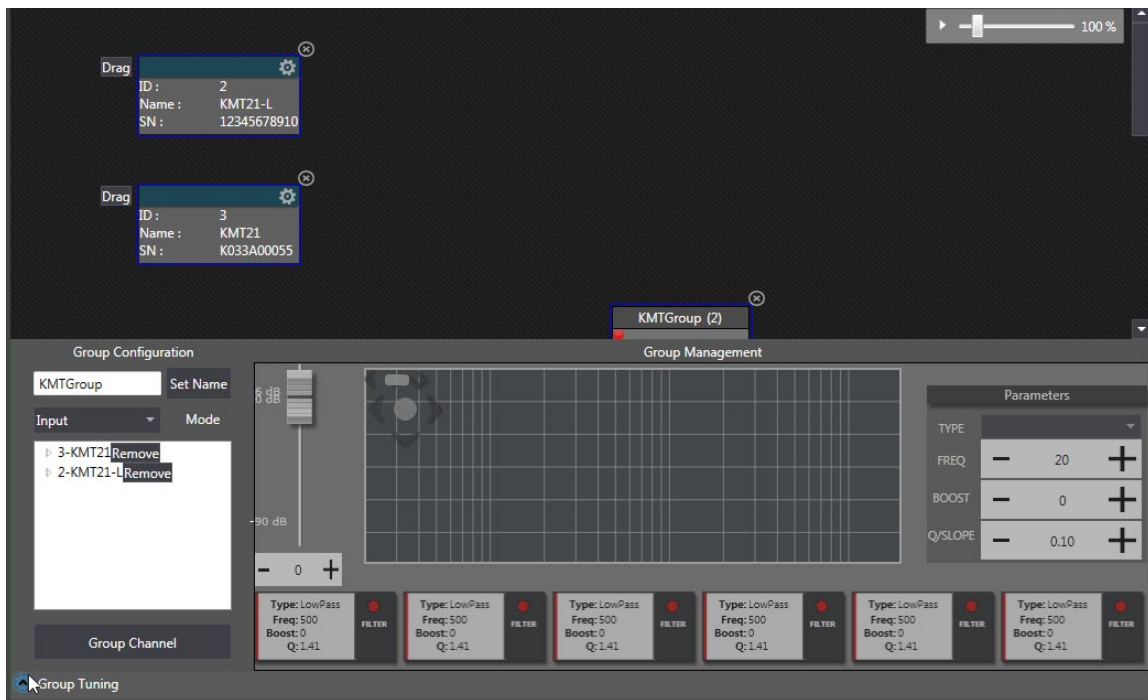
1. Click on the *Groups* icon under the *Available Models* window and select the group you want to create. Drag and drop it into the workspace.



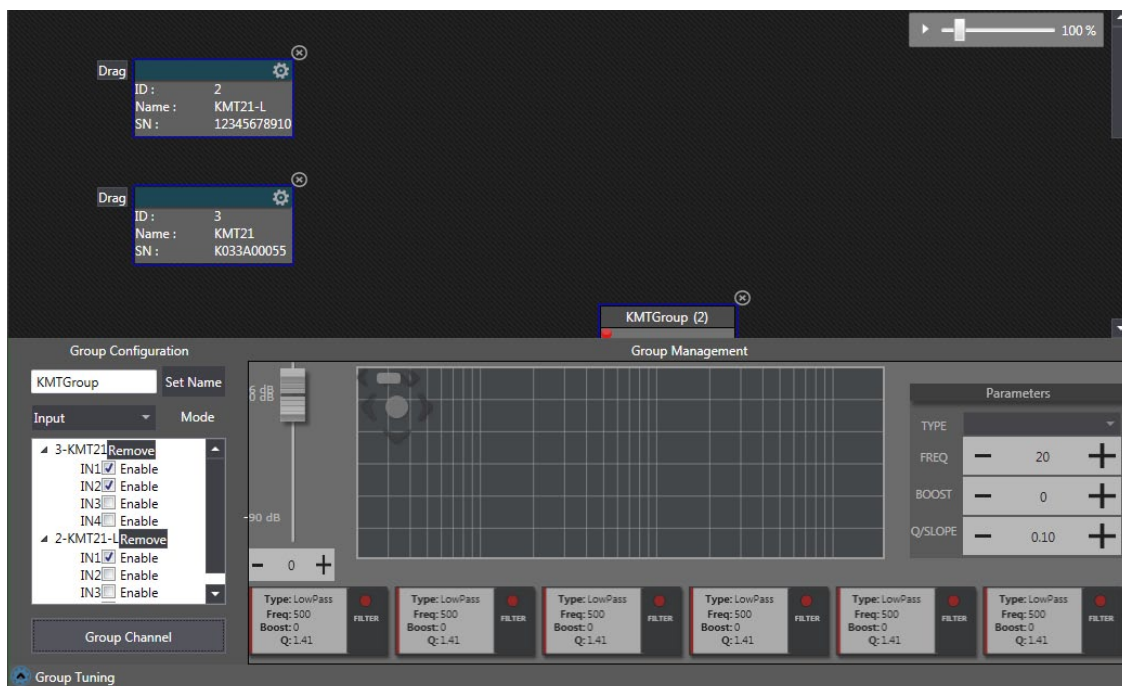
2. Drag the devices you want to include in the group and drop into the *Group* icon. Pay careful attention to drag the devices from the *Drag* label of the icon, as shown in the picture below.



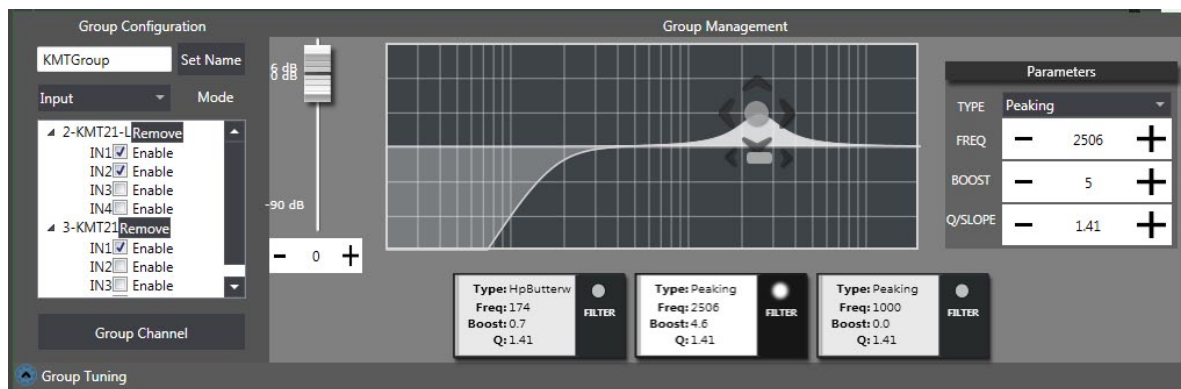
- Click on the *Group Tuning* button in the bottom left corner of the workspace to access the group's settings.



- Choose which input channels will share the same settings, then press the *Group Channel* button. A pop-up window will inform you that the selected channels will be reset to flat.



5. Adjust the Eq and the Gain settings. The changes will be applied to all the selected input channels. Repeat Steps 4 and 5 for the output channels.

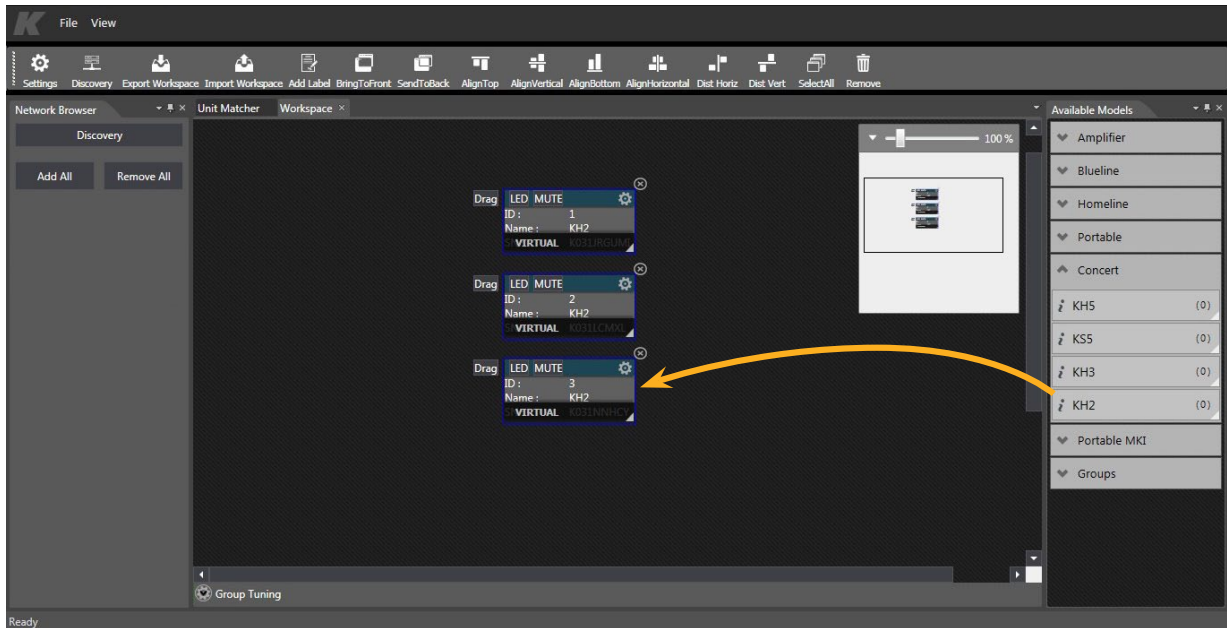


10. VIRTUAL WORKSPACE SYNC

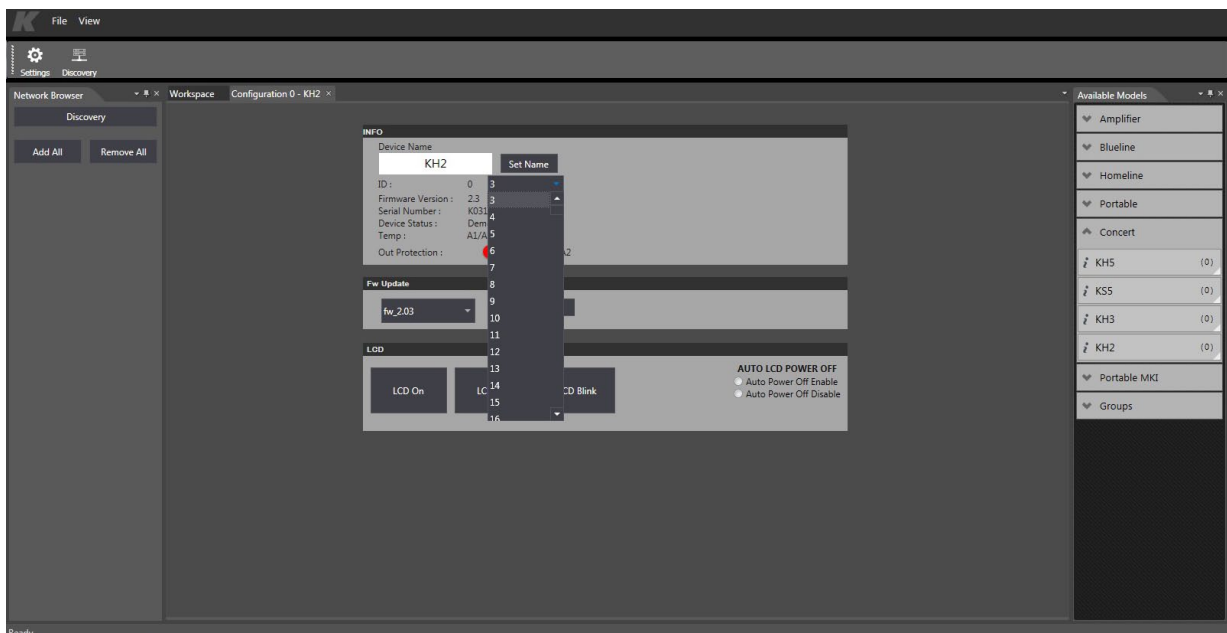
K-framework 2 features the possibility to create a virtual workspace offline and then sync the virtual machines with the physical ones. In order for the virtual and physical machines to sync, they must share the same firmware version. Make sure to have always the latest firmware version installed on the physical machines.

To prepare your workspace offline and then sync the virtual machines to the physical ones, proceed as follows:

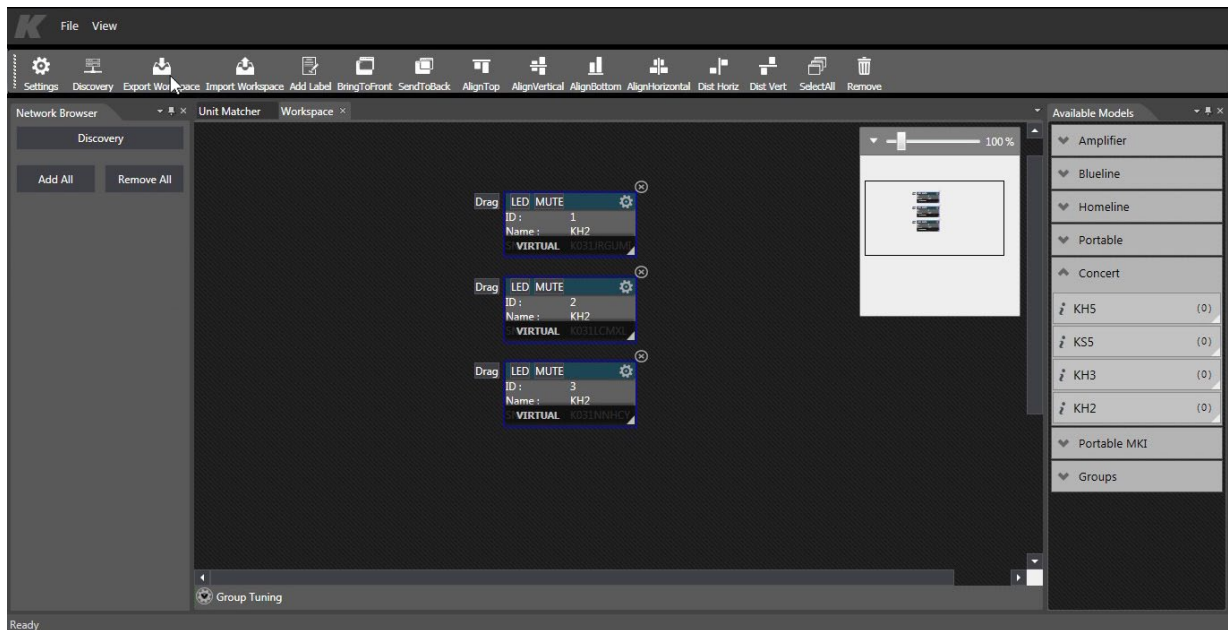
1. Drag and drop the virtual units from the *Available Models* list to the workspace.



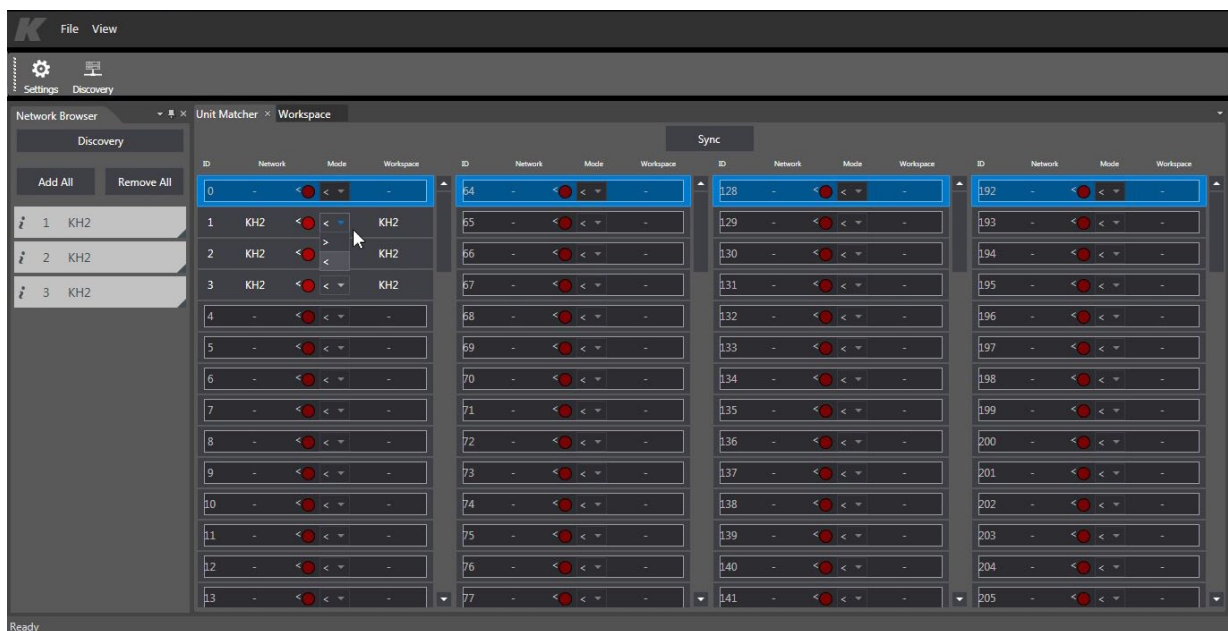
2. Set the ID number for each unit so that it matches the ID that you set on the real devices. To do so, click on the wheel symbol and go to the *Configuration* page.



- Adjust all the settings in the virtual device, including the loading of the FIR filters for the Concert Series and the creation of Groups, then export the workspace. You can import it back when you connect the physical devices to the computer.



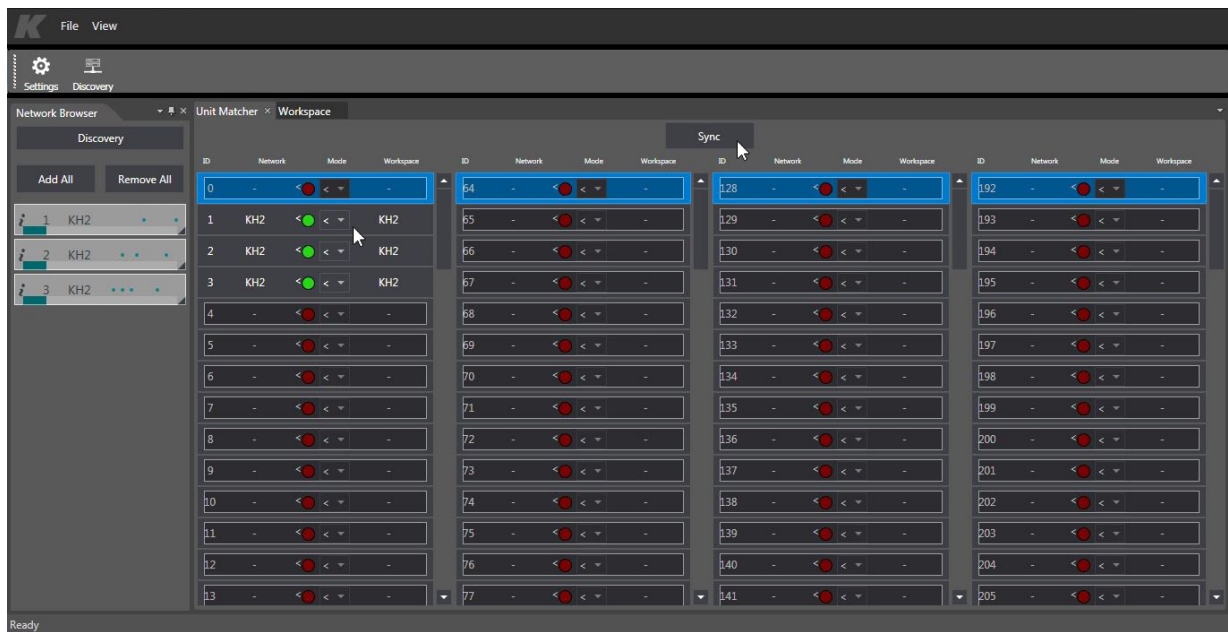
- Connect the physical devices to the computer. Go to the *Unit Matcher* page (if you are unable see that window, go to *View > Unit Matcher*). Here you can see which physical and virtual machines share the same ID number. In the *Mode* column, users can specify if they want to load the virtual settings into the physical machines (<) or if they want to import the settings from the physical machines to the virtual ones in the workspace (>).



IMPORTANT

Ensure that the virtual machines and the physical ones share the same firmware version.

5. Press sync to transfer the settings from the virtual machines to the physical ones or vice versa.



5. The machines have been synchronized and are ready to play.

