



Armonía Pro Audio Suite User Guide

Table of contents

Introduction	4
Welcome	5
Getting help	6
Installing Armonía	7
System requirements	8
Installation	9
Auto-update	11
Connecting amplifiers and DSPs	13
Network topologies	14
Ethernet connectivity	14
IP Addressing	15
RS-485 connectivity	16
RJ45 pinout for RS-485	18
RS-485 to USB adapter	19
PowerControlHub	21
Kit RS-485 Powersoft	21
Setting network interface	23
Activate and deactivate Ethernet interfaces	25
Activate RS-485 serial communication	27
KAESOP	29
AESOP	30
Ethernet/AES3 combo box	31
Forwarder and Repeater	31
Network robustness	40
Armonía interface	46
Armonía button	46
Options	47
Windows	53
Workspace	55
Model list	61
Remote entities	61
Events / Event Console	64
Groups overview	66
Preset manager	68
System information	74
System list	75
Ribbon	78
Quick access toolbar	79
Statusbar	80
Working with Armonía	81
Presets	81
Active & Passive Loudspeakers	85
Setup	87
Off-line and On-line	88
Syncing	89
Entities	90
Components	91

Racks	91
Groups	96
Notes and images	100
Processing architecture	101
Source selection/routing	102
Input processing	103
Advanced processing	104
Speaker routing	106
Speaker processing	107
Output processing	107
Limiters	109
DampingControl	111
Alarms and GPO	112
Color codes	114
Channel Color Code	114
Amplifier Status Color Code	115
Alarm Color Code	115
Signal Status Color Code	116
Appendix	117
SmartCard	118
Updating the SmartCard	118
Firmware update	121
Step-Up	129
IP recovery M Series	133

Introduction


Armonía

Pro Audio Suite™

Armonía Pro Audio Suite is the software for remote control and monitoring of the full range of Powersoft products: amplifiers and DSP.

Armonía provides on-line and off-line system setup and tuning, real-time management and monitoring of all vital functions from a remote PC via a single intuitive graphical user interface.

With Armonía, sound system designers and operators have new and unique tools to significantly improve sonic performance and system reliability.

You can download Armonía Pro Audio Suite for free from Powersoft support forum: <http://www.powersoft-audio.com/armonia-forum> 

Armonía provides control and monitoring of a wide range of amplifier functions, such as attenuation, mute, internal temperature and voltage rail monitoring. Armonía implements easy to use interface to configure input and output equalizers, FIR filter, delays, limiters, load impedance monitoring and dumping control.

Armonía is scalable; it lets you control a single amplifier or configure a very large system containing many amplifiers.

For large fixed or touring installations, Armonía gives the operator the ability to monitor and control all amplifiers in the system from a single location, regardless of the amplifiers' positions.

Armonía is extensible, having been designed to accept software plug-ins to facilitate control of third-party products.

Summary

- [Welcome](#)
- [Getting Help](#)
- [Installing Armonía Pro Audio Suite](#)
- [Connecting amplifiers and DSPs](#)
- [Armonía of the interface](#)
- [Working with Armonía](#)
- [Appendix](#)

Armonía

Pro Audio Suite™

Thank you for using the Armonía Pro audio Suite application help.

Here we introduce all the features of the Armonía software application, basic system setup and application examples.


Every feature is presented in a page that includes usage steps, screenshots and how-to.

Armonía

Pro Audio Suite™

The [Armonía Support Forum](http://www.powersoft-audio.com/armonia-forum) is the main resource for getting info, making requests and staying up to date about Armonía Pro Audio Suite and third-party software.

Register to the [Armonía Support Forum](http://www.powersoft-audio.com/armonia-forum) at <http://www.powersoft-audio.com/armonia-forum> to access a comprehensive resource, FAQ and solutions.



[hi user, log out](#)
[Italiano](#)
[Português](#)
[English](#)

[f](#)
[t](#)
[v](#)
[in](#)

[FORUM](#)
[CONTACT](#)
[NEWSLETTER](#)
[RESTRICTED AREA](#)
[MOBILITY BU](#)
[CAREERS](#)

[CORPORATE](#)
[TOURING](#)
[INSTALLATION](#)
[OEM SOLUTIONS](#)
[MULTIMEDIA](#)
[SOFTWARE](#)
[SOLUTIONS](#)
[TECHNOLOGIES](#)
[EDUCATIONAL](#)
[SUPPORT](#)


SUPPORT FORUM


[HOME](#)
[FORUM](#)
[SEARCH](#)

HOME




This is the forum index page




[Board index](#) » You are here









 Welcome, user

It is currently February 18th, 2015, 11:22 am
 Last visit was: February 16th, 2015, 10:52 am

DOWNLOADS	STATISTICS	LAST POST
 Armonía Pro Audio Suite Download the latest version here!	11 Topics 11 Posts	 by marco  September 24th, 2014, 3:38 pm

TRAINING	STATISTICS	LAST POST
 Armonía Tutorial Videos Check here for the latest training videos	1 Topics 4 Posts	 by marco  January 25th, 2015, 1:59 pm

SOFTWARE	STATISTICS	LAST POST
 Armonía installation & setup Anything software installation or PC setup...	25 Topics 145 Posts	 by mojopin  February 16th, 2015, 2:04 pm
 Armonía system configuration Anything general audio system setup & configuration... Subforums: Configuring 2/3/4/5-way systems, Presets, Groups, Everything else "system configuration"	28 Topics 147 Posts	 by luigichelli  January 8th, 2015, 11:27 am

Armonía

Pro Audio Suite™

- [How to get Armonía](#)
- [System requirements](#)
- [Installation](#)
- [Auto-update](#)

How to get Armonía

Armonía Pro Audio Suite is freely available for download from the Powersoft Support Forum: <http://www.powersoft-audio.com/armonia-forum>

To download a copy of Armonía Pro Audio Suite:

1. Go to Powersoft's website: www.powersoft-audio.com
2. Access the Forum by clicking on the link in the upper menu
3. If not already logged in, you will be asked to log in or register before continuing
4. Once registered, open the topic DOWNLOAD > Armonía Pro Audio Suite > Download the newest Armonía Pro Audio Suite version here!
5. Download the latest version of Armonía Pro Audio Suite.

This will download a ZIP archive containing the Armonía Pro Audio Suite installer file.

Starting from Armonía Pro Audio Suite version 2.5.2, the software implements an [Auto-update](#) system that detects newly available updates on Powersoft website.

In order for the auto-update feature to work, an Internet connection must be available.



System requirements

Armonía can work fluently on Windows platforms which meet or exceed the following specifications:

- System architecture: x86 or x64, at least Pentium IV processor and 1 GB RAM, 3 GB hard disk space.
- Networking: Fast Ethernet (100 Mbps) or RS-485 serial adapter.
- Operating system: either Windows XP SP3, Windows Vista SP1 or Windows 7, all with Microsoft .NET Framework 4 already installed.

Obtain the Microsoft .NET Framework directly from Microsoft website. Please refer to Microsoft .NET documentation for installation.

Armonía

Pro Audio Suite™

Installation

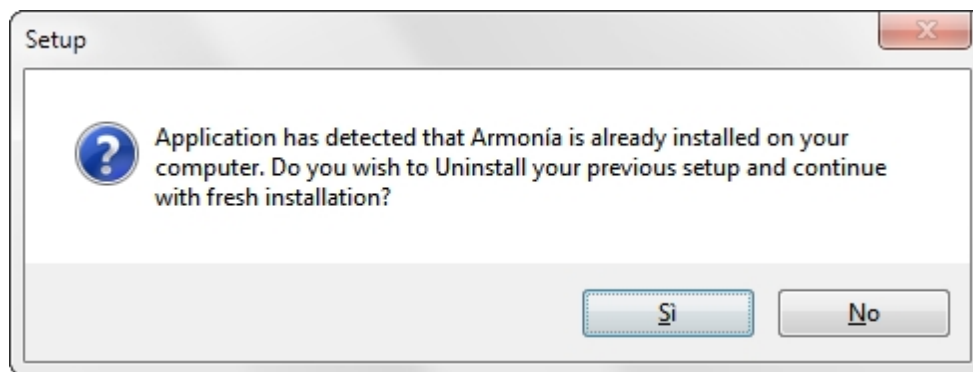
Download Armonía Pro Audio Suite for free from the Powersoft Support Forum: <http://www.powersoft-audio.com/armonia-forum>

Open the ZIP package and extract the setup files whose name is formatted as Armonia-[releaseNumber].[buildNumber]_setup.exe

Run the setup file: a wizard will guide you during the installation.

In case Armonía Pro Audio Suite is already installed in your system, the setup wizard detects the previous installation and purposes to remove it.

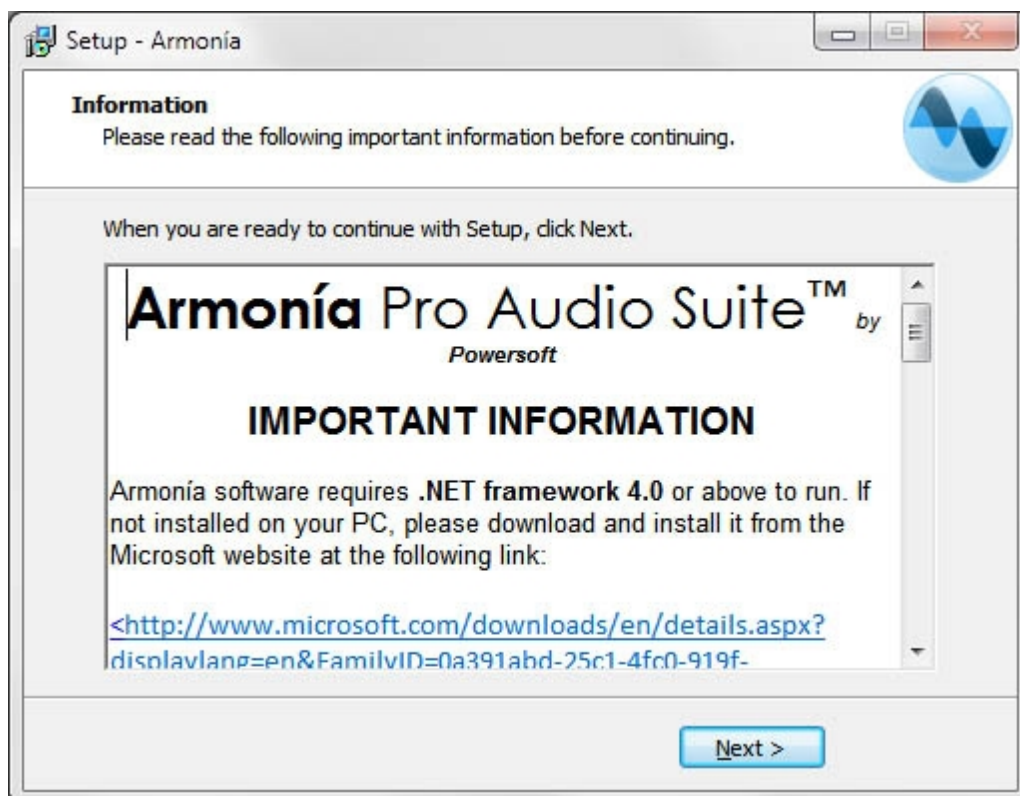
Note: the setup wizard removes just the application: custom settings and plugins will be imported in the new installation.



The installation process goes on:



In case the .NET framework is not already installed in your operating system, the installation wizard will guide you during the installation of the framework: an Internet connection must be active. In any case you can obtain the Microsoft .NET Framework directly from Microsoft website. Please refer to Microsoft .NET documentation for installation.



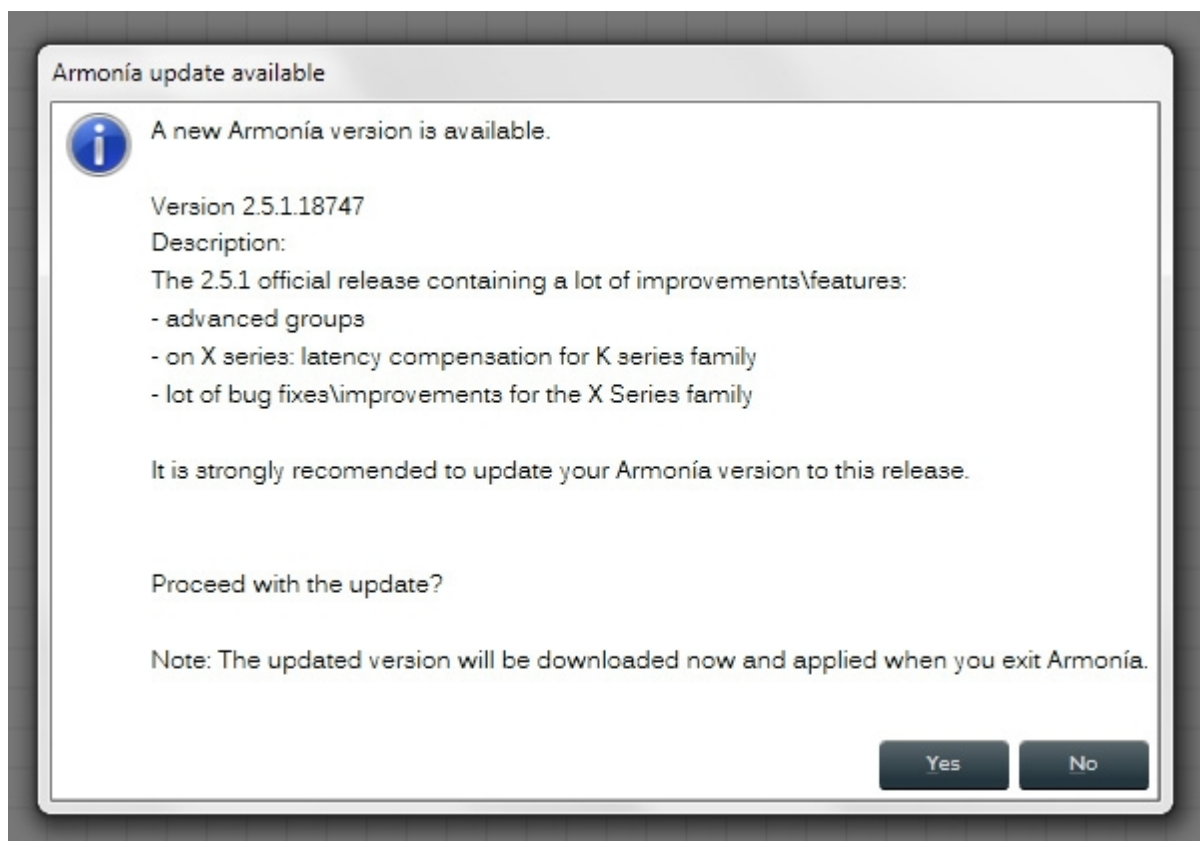
Usually, Armonía Pro Audio Suite will install in the following location: C:\Program Files\Powersoft\Armonía and create an Armonía Start Menu folder.

Armonía

Pro Audio Suite™

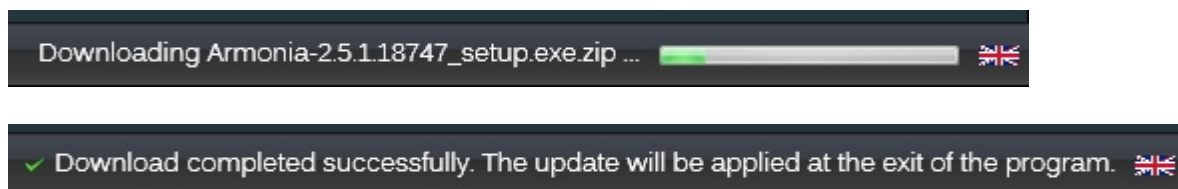
Auto-update

Starting from version 2.5.1. built 18729 Armonía Pro Audio Suite implements an auto-update system: if the Internet connection is on, Armonía Pro Audio Suite can detect newly available updates of the software and inform the user. A pop-up window will appear on start-up if an updated version of Armonía Pro Audio Suite is available.



The user may allow or deny the installation of the updated version.

Once allowed, the updated version will be downloaded in background and applied while exiting Armonía.





Connecting amplifiers and DSPs

Armonía can connect amplifiers and DSPs supporting two connecting protocols: either [Ethernet](#) or [RS-485](#).

Ethernet is a faster communications protocol than serial RS-485, and should be used by default. Systems employing earlier Powersoft remotely-controllable amplifiers will need to use RS-485. Systems employing both categories of amplifiers may use both methods simultaneously.

- [Network topologies](#)
- [Ethernet connectivity](#)
- [RS-485 connectivity](#)
- [Setting network interface](#)
- [KAESOP](#)

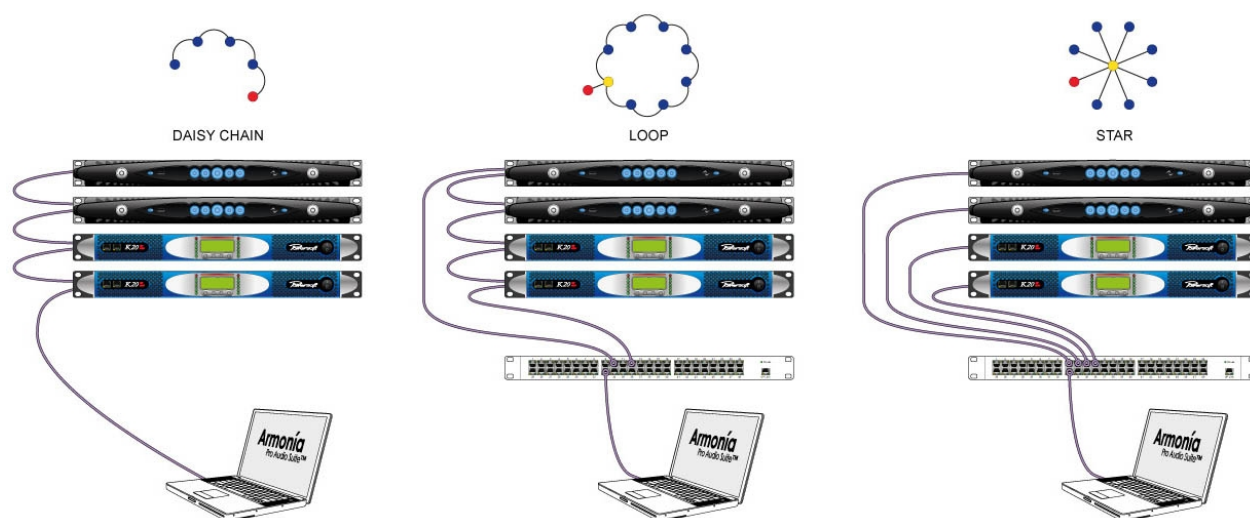
Network topologies

Armonía supports a range of network topologies with different levels of reliability and ease of implementation:

- daisy-chain;
- loop (not supported by RS-485);
- star.

See some examples in the next picture.

● Armonía client; ● Amplifier or DSP; ● Ethernet Switch.



In a daisy-chained network the PC with Armonía Pro Audio Suite must always be at one end of the chain.

Be aware that daisy-chaining does not guarantee reliability in production environment, since any fault may yield to network sectioning and lost of system control.

RS-485 network with star topology can be established by using a RS-485 hub such as Powersoft [PowerControlHub](#).

When efficiency and reliability are paramount, a redundant network topology is advisable.

While management and control of system configuration and performance via Armonía Pro Audio Suite can be achieved with any of the supported topologies, audio signal routing has more strict requirement:

- Signal routing via AESOP protocol is allowed in star, open daisy-chain and loop network topologies.
- Signal routing via Dante™ protocol is allowed only in star and open daisy-chain network topologies.

Ethernet connectivity









- [Ethernet specification](#)
- [IP addressing](#)
- [Setting network interface](#)

Ethernet specification

Ethernet equipped amplifiers and DSPs can connect to Armonía Pro Audio Suite via standard CAT5e UTP cables with RJ45 plugs.

Powersoft recommends the use of Ethernet CAT5e UTP straight through – patch – cables with pin/pair assignments TIA/EIA-568-B, i.e. T568B.



	Color code (TIA/EIA-568-B)	Pin
	ORANGE / WHITE	1
	ORANGE	2
	GREEN / WHITE	3
	BLUE	4
	BLUE / WHITE	5
	GREEN	6
	BROWN / WHITE	7
	BROWN	8

Daisy-chain, loop and star [topologies](#) are allowed; be aware that daisy-chaining does not guarantee reliability in production environment, since any fault may yield to network sectioning and lost of system control.

If more than 10 devices are to be connected, Powersoft recommends to use Ethernet switches and star topology.

IP addressing

Ethernet communication relies on the [Internet Protocol Suite](#)TM (TCP/IP) and requires IP addressing to be set correctly on the computer running Armonía Pro Audio Suite and on every device in the network.

Powersoft Armonía Pro Audio Suite support three addressing strategies:

- [Auto IP \(Zeroconf\)](#)
- [DHCP](#)
- [Static IP](#)

Auto IP

Auto IP addressing relies on the [Zero-configuration networking](#)TM (zeroconf) protocol.

Zeroconf is a protocol that automatically set IP addressing on every networked device when computers or network peripherals are interconnected. It does not require manual operator intervention or special configuration servers.

Auto IP addressing is set by default on Powersoft amplifiers and DSPs and allows to direct connect the computer with Armonía to the device (peer-to-peer connection). In Auto IP addressing each device in the network sets its own IP address in the range 169.254.0.0/16 (i.e. from 169.254.0.0 to 169.254.254.254) and subnet mask 255.255.0.0 (i.e. the IP of all the devices in the network have the common prefix 169.254).

DHCP

The [Dynamic Host Configuration Protocol](#) (DHCP) is a network protocol for dynamically distributing network configuration parameters.

With DHCP, each networked device retrieves its IP address and networking parameters automatically from a DHCP server, reducing the need for a network administrator or a user to configure these settings manually.

When a DHCP server is present, by default Armonía as well as any Powersoft Amplifier and DSPs automatically import the networking parameters from the server.

In order to reduce addressing mismatch, Powersoft suggests to switch the amplifiers and DSPs on AFTER the DHCP becomes completely operating within the network. Differently the system could set its own IP address in Auto IP mode ignoring the DHCP: this may rule out the device from the network.

Static IP

[Static IP](#) addressing gives to the user the complete control over device addressing on the network. In order to account a device on the network, a network administrator or a user must manually configure the IP address and network parameters of the apparatus.

Please refer to your operating system documentation for manual setting of network parameters and static IP.

RS-485 connectivity

- [RS-485 specification](#)
- [Setting the ID](#)
- [Setting serial communication in Armonía](#)
- [RJ45 pinout for RS-485](#)
- [RS-485 to USB adapter](#)
- [PowerControlHub](#)
- [Kit RS-485 Powersoft](#)

RS-485 specification

The RS-485 specification (officially called TIA/EIA-485-A) provides some guidelines about RS-485 networking.

The RS-485 connection is balances twisted pair, i.e. there are two wires, other than ground, that are used to carry the signal, and must be terminated with a terminating resistor.



The RS-485 specification recommends to use 120Ω nominal impedance cables and 120Ω terminating resistor (Note: the terminating resistance is already included into the Powersoft RS-485 interface).

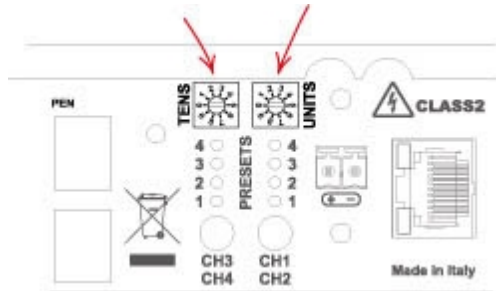
With good quality Cat5e UTC cables, maximum cable run can reach 500 m (1640 ft) length.

The RS-485 permits multiple receivers and transmitters on a single twisted pair, as well as daisy chain and star topologies.

Each device in a RS-485 network must be identified by a unique ID: up to 98 IDs (from 01 to 99) are allowed.

Setting the ID

Powersoft amplifiers and DSPs that implement the RS-485 communication protocol are provided with two miniature rotary switches located near the RS-485 port.

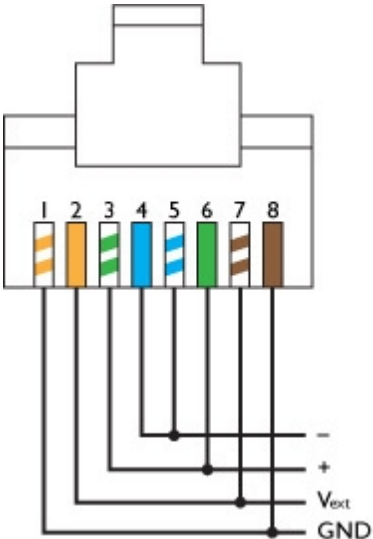


The switches can each be set to a number from 0 to 9, permitting IDs from 01 to 99. Each device in the RS-485 network shall own a unique ID.

NOTE: the ID 00 is reserved: do not use this ID in production environment.

RJ45 pinout for RS-485

The RS-485 pinout for the RJ45 plug is the following:



Pin	Color	Pinout
1		GND
2		Vext
3		POSITIVE +
4		NEGATIVE -
5		NEGATIVE -
6		POSITIVE +
7		Vext
8		GND

RS-485 to USB adapter

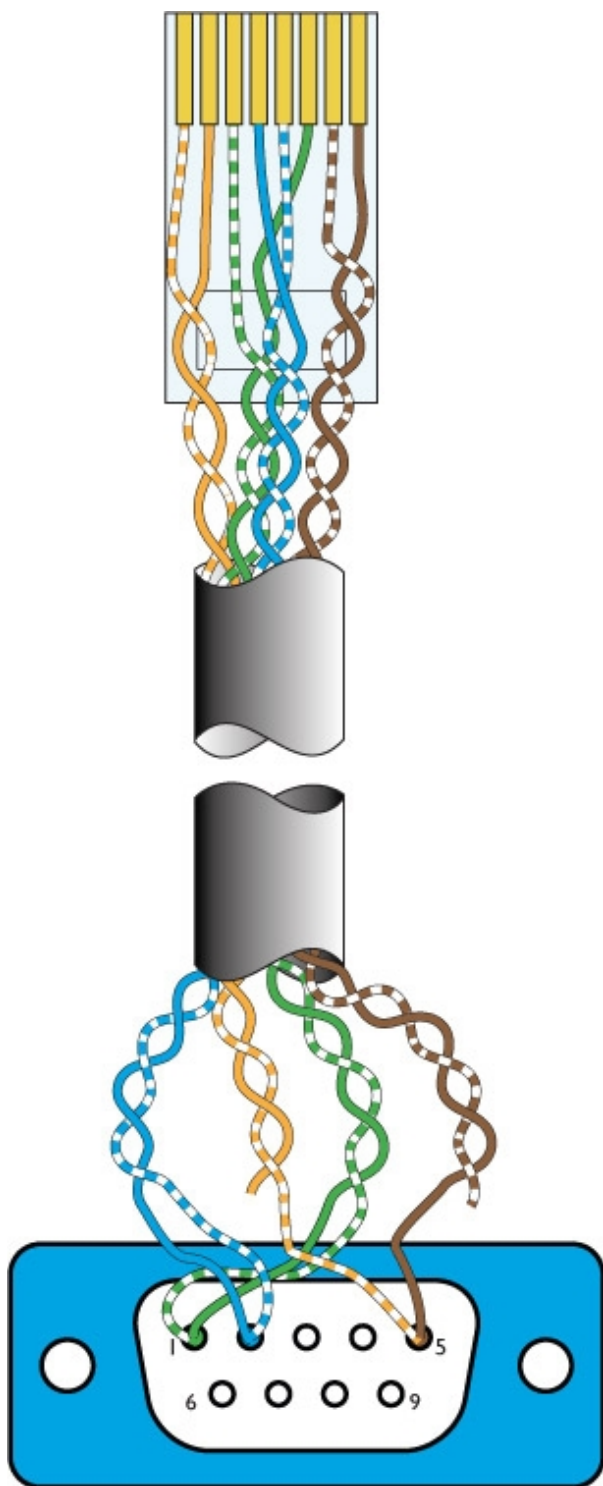
Very few computers provide a native RS-485 port. In order to manage a RS-485 network of amplifiers and DSPs with Armonía Pro Audio Suite a USB to RS-485 adapter will be required.

Powersoft provides a [kit of adapter](#) based on:

- The **SPECTRA USB 2.0 to RS-485 converter** (browse the SPECTRA website www.spectra.ch for further information).
For operating system driver installation, please refer to the manufacturer documentation.



- A DB9 to RJ45 adapter;



- The Powersoft ProNet 485;

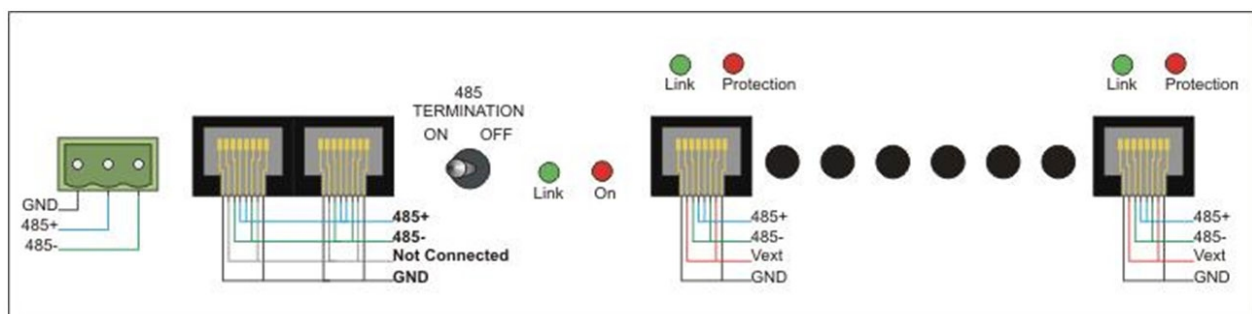


PowerControlHub



The Powersoft PowerControlHub can provide [RS-485](#) and power distribution up to 16 devices (transmitters/receivers).

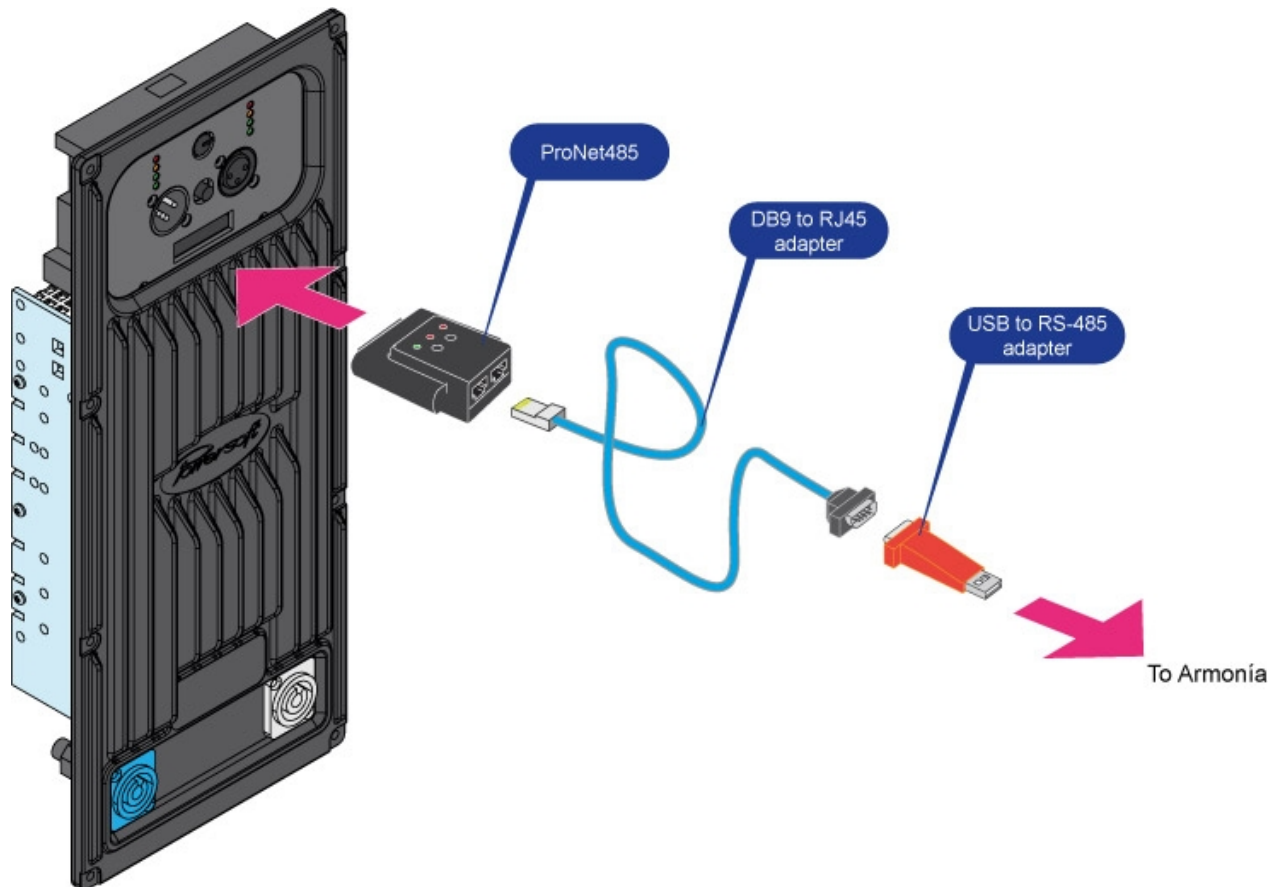
- Universal power supply for use on the 95-250V AC range.
- Front panel RS-485 input via 3 pole EuroBlock connector for Phoenix MSTB 2,5/3-ST-5,08 or similar plug.
- Two front panel RJ45 connectors for daisy chain of several Power Control Hubs.
- Front panel switch for RS-485 chain termination.
- Two banks of 8 RJ45 connectors each for RS-485 distribution to amplifiers and DSPs.
- Front panel red led for power monitoring.
- Front panel green led for RS-485 signal presence monitoring.
- Green led on each of the 16 RJ45 outputs for system status (lighted when an amplifier is connected in power off status).
- Red led on each of the 16 RJ45 outputs for overload error (lighted when is detected a short circuit on the cable to the amplifier).
- Detachable AC mains cable with IEC 14 inlet.



Kit RS-485 Powersoft

Powersoft provides an optional kit for RS-485 networking composed by:

PC000096	RS-485 to USB adapter
CB000214	DB9 to RJ45 adapter
PF000287	ProNet485



NOTE: for seek of clarity, in the illustration the ProNet485 is flipped top-down.

Setting network interface

At first run Armonía Pro Audio Suite looks for all available network interfaces and waits for communication signals from each active interface.

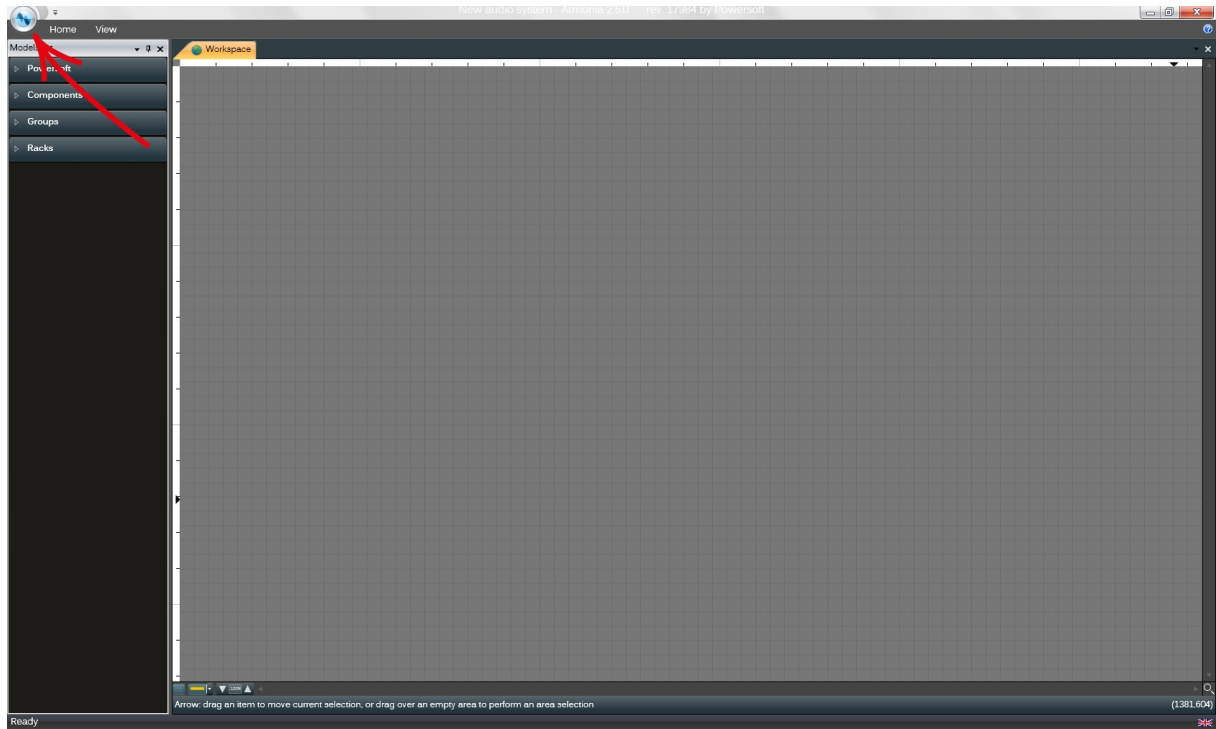
NOTE: Armonía communication feature relies on the operating system network settings. Refer to your operating system documentation for setting network parameters.

- [Managing network interfaces: the Communication Manager](#)
- [Activate and deactivate Ethernet interfaces](#)
- [Activate RS-485 serial communication](#)

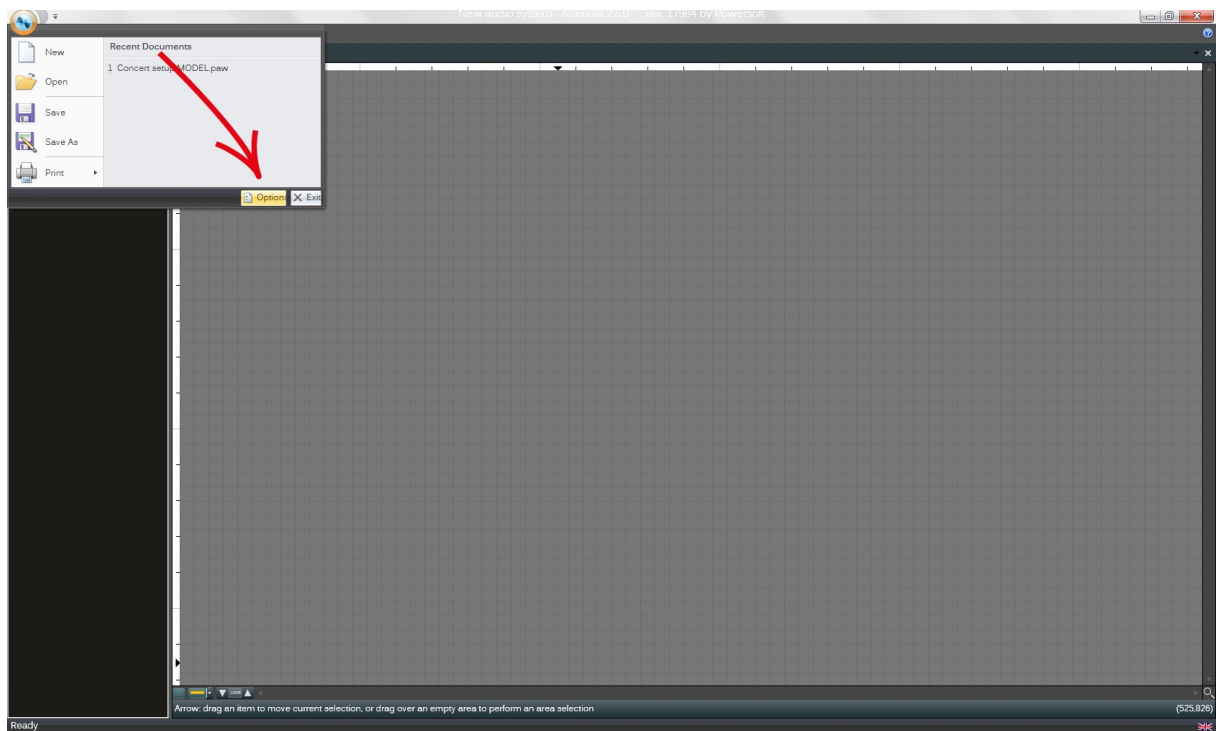
Managing network interfaces: the Communication Manager

The *Communication Manager* built in Armonía Pro Audio Suite allows to manage all available network interfaces.

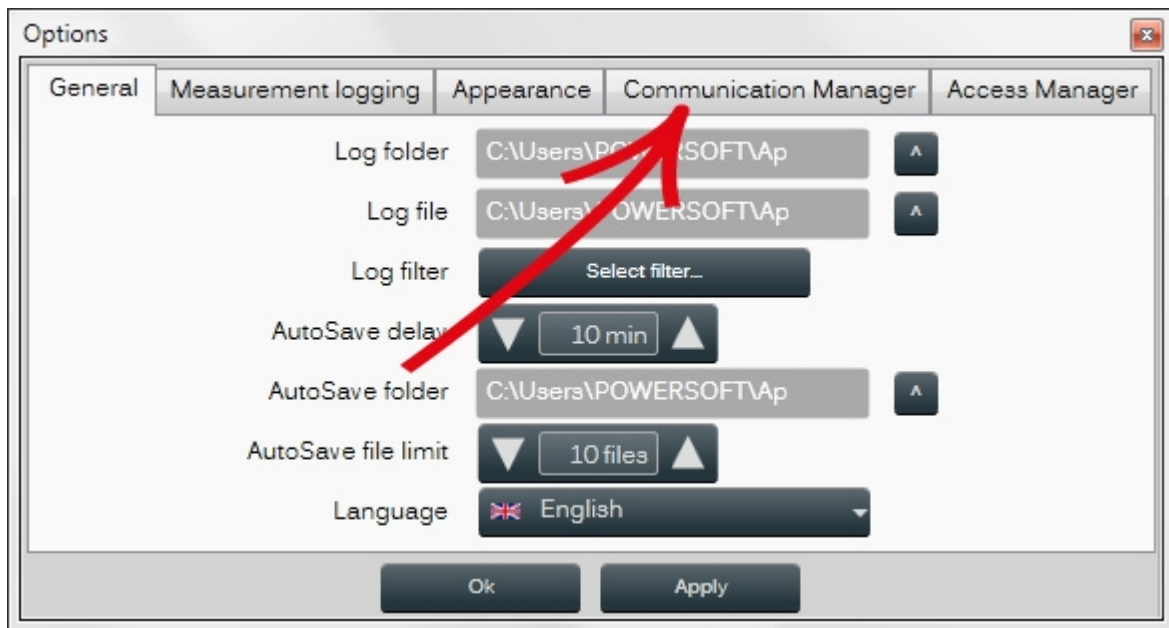
1. Click on the [Armonía button](#) in the upper left corner of the Armonía interface



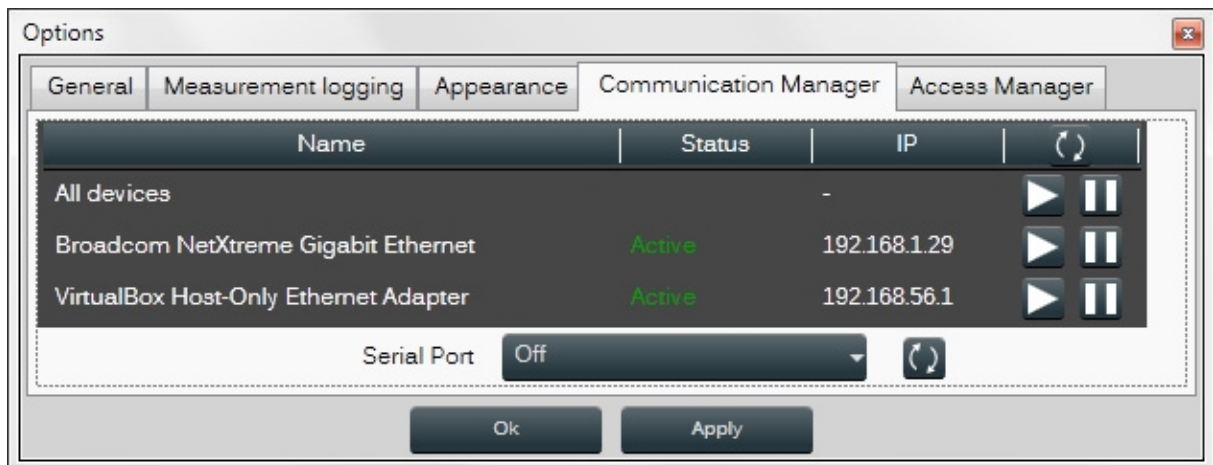
2. Click on the *Option* button




3. The Option dialog windows will open. Click on the *Communication Manager* tab

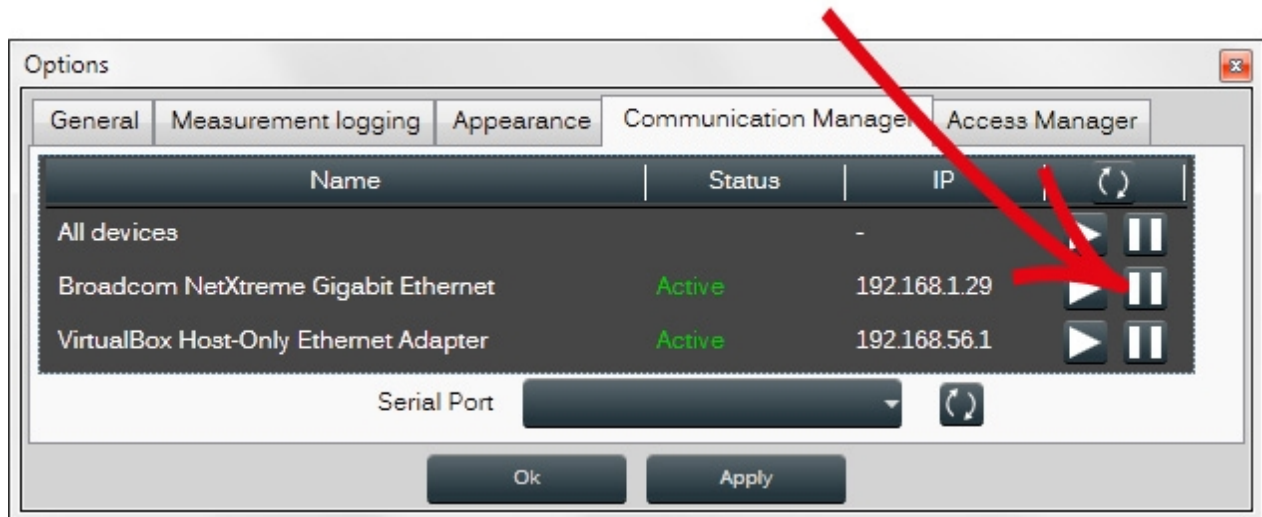



4. The Communicatio Manager will show all available Ethernet interfaces and their IP address

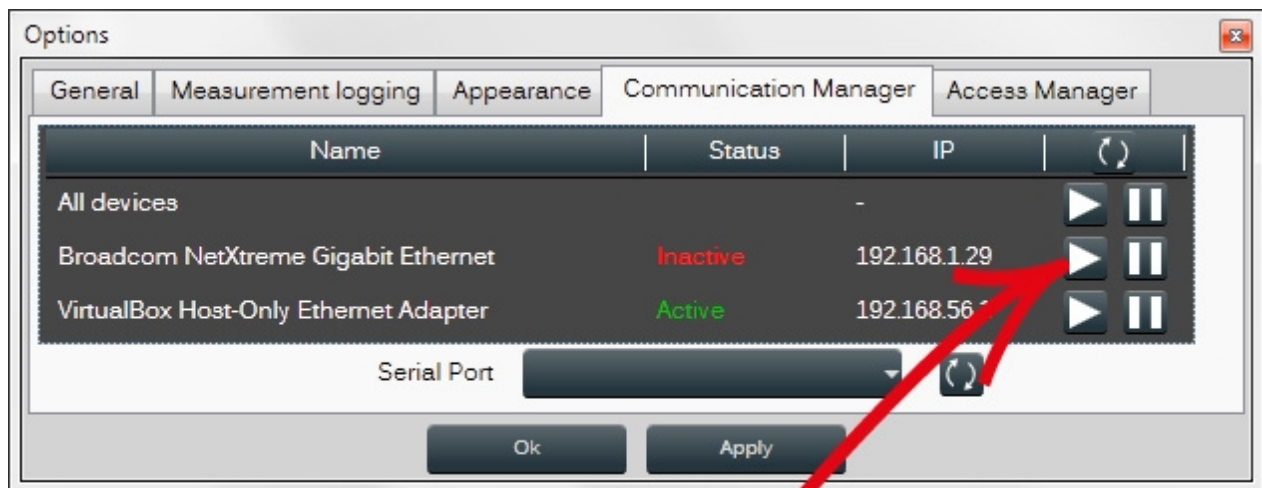


Activate and deactivate Ethernet interfaces

By default all available interface are active: you can deactivate unused (or unwanted) interfaces by clicking on the  button




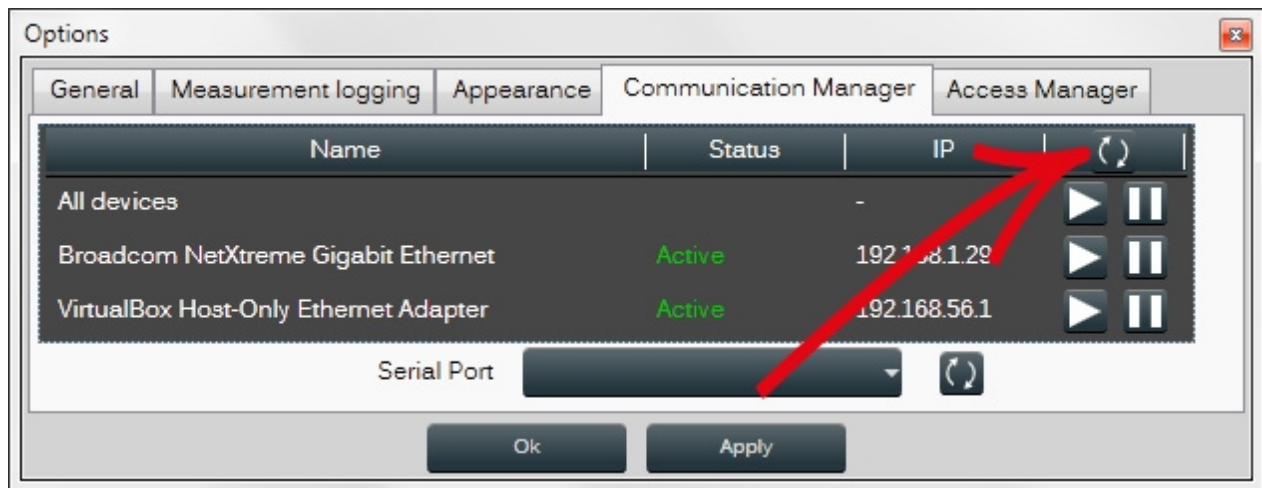
In order to activate an inactive interface click on the  button



By toggling the activation of an interface forces Armonía to reinitialize the communication in the selected interface.

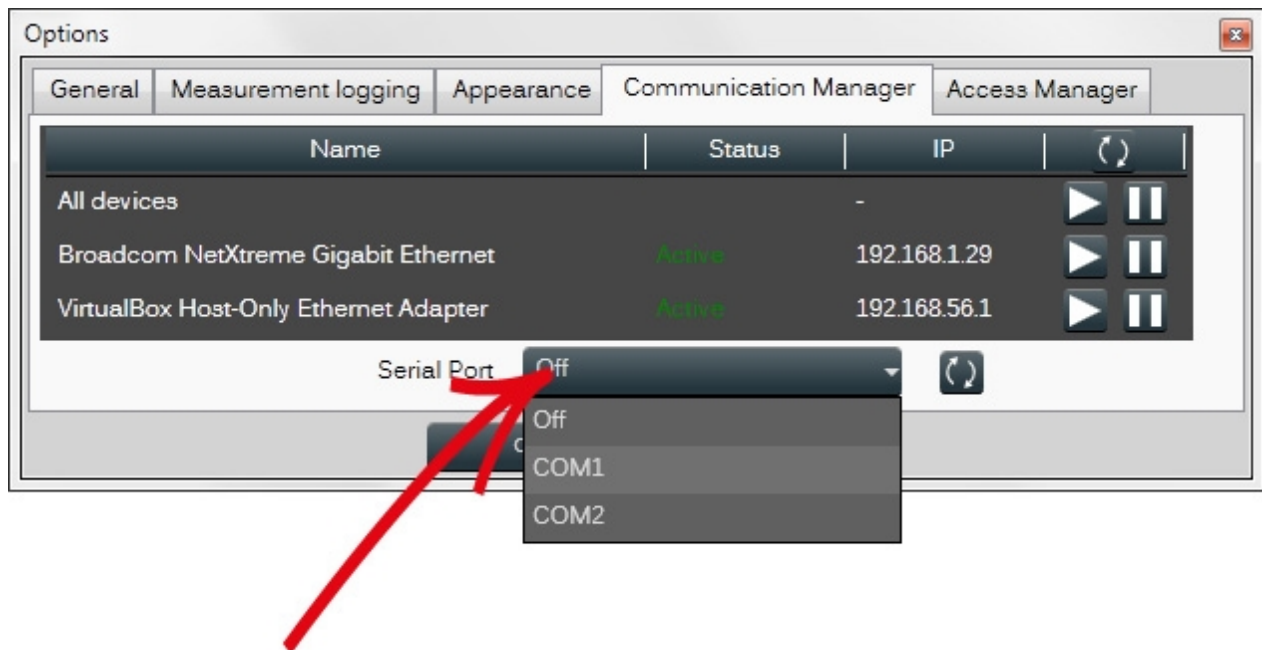
Furthermore, this feature allows to restrict the detection of amplifiers and DSPs to certain network among the available ones.


It is possible to refresh the list of available interfaces (for instance because of a new network interface added to the system) by clicking on the  button on the header bar

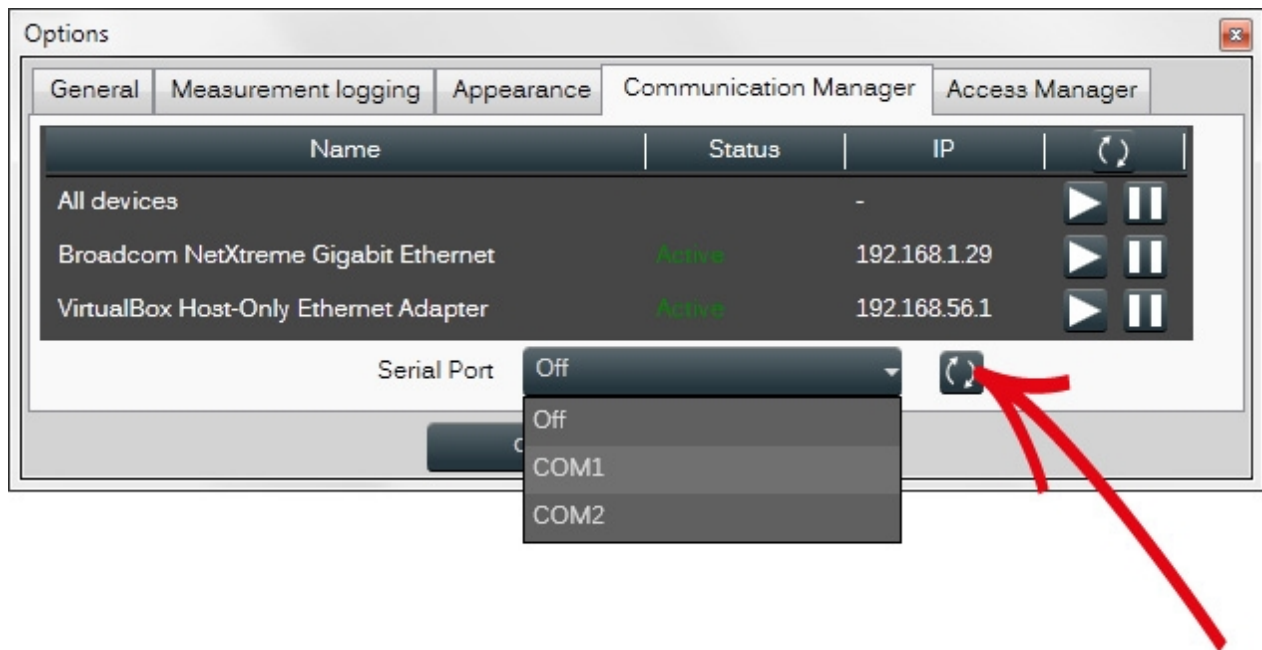


Activate RS-485 serial communication

In order to activate RS-485 serial communication select the available COM port



It is possible to refresh the list of available serial interfaces (for instance because of a new network interface added to the system) by clicking on the  button located near the button of the serial ports drop down list.

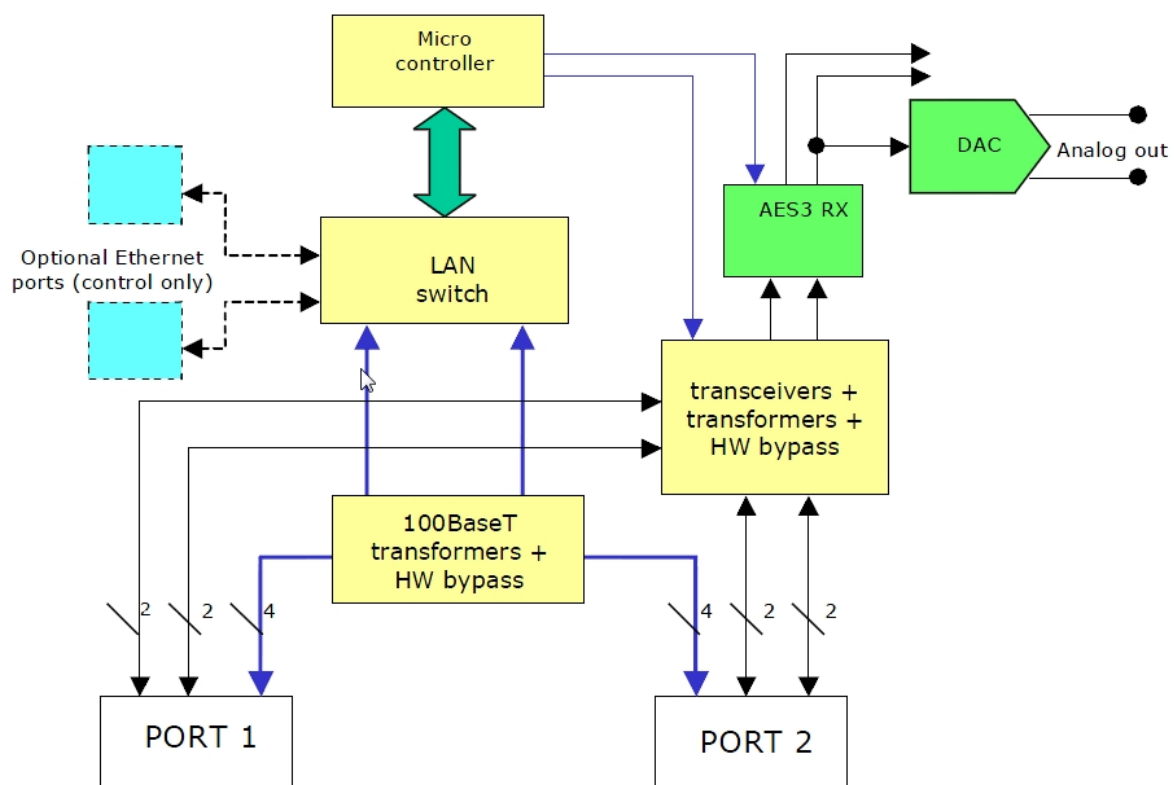


KAESOP

KAESOP stands for K (as in Powersoft's K Series) AES3 and Ethernet Simple Open Protocol – [AESOP](#).

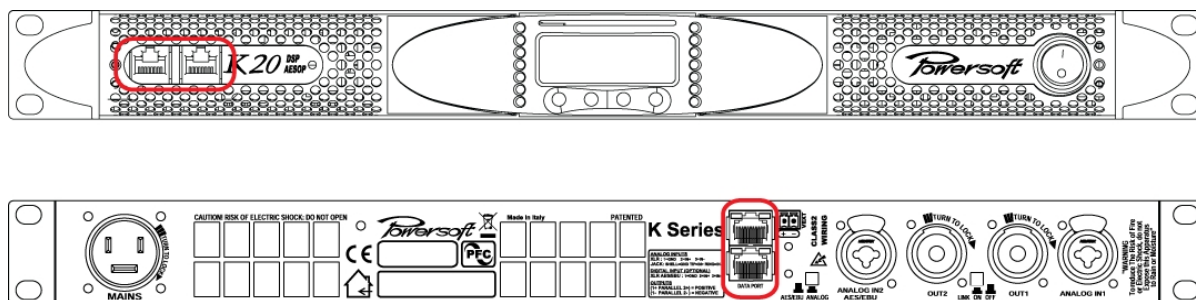
- [AESOP](#)
- [Ethernet/AES3 combo box](#)
- [Forwarder and Repeater mode](#)
- [Network robustness](#)

Powersoft's KAESOP is designed to provide high reliability to live applications in harsh environments where Quality of Service must be guaranteed. Electromagnetic and radio frequency interference (EMI and RFI) originating from a high power audio and light system must not degrade audio quality or cause a control link interruption. Moreover, a single cable or device failure should not affect the overall system performance.



All K Series amplifier with the optional KAESOP board installed are equipped with at least two RJ45 connectors, each of them being a single AESOP port, capable of sending and/or receiving data and audio. If the amplifier has only two RJ45 plugs, these will be on the front panel. If four plugs are present, the rear two will be “primary” ports, while the two on the front panel are “secondary” ports.

Primary ports allow both data and AES3 streams; secondary ports, on the other hand, are data-only ports, allowing Ethernet connections only.



Data stream

The data stream in the AESOP is implemented by a 100 Mbit Ethernet connectivity with auto-sense. Each device can use a static IP address assigned by the user. Alternatively, it can be set to automatically configure itself without user intervention following the [Zeroconf](#) protocol.

The dual port design in K Series amplifiers allows for daisy chain and redundant ring [topologies](#). A fault-bypass built-in feature takes into account the possibility of losing an intermediate device or having a faulty cable link without compromising the ring integrity.

The KAESOP board detects bad quality connections by counting errors on the Ethernet control. Faulty connections are automatically switched from 100 Mbit/s to 10 Mbit/s to attempt to keep the link active even in the worst case scenarios.

Audio

Audio is distributed to devices via the AESOP protocol via 2 independent and separate AES3 streams labeled **AES3-A** stream, **AES3-B** stream. These are carried by two Cat5 wire pairs unused in the 100 Mbit Ethernet protocol.

When a K Series amplifier is powered off or if it is unavailable, a passive high frequency relay circuit allows the audio signal to pass through, preserving the network chain connection integrity.

When the device is powered up, the internal circuits automatically select the most appropriate AES3 stream direction and bypass the relay, re-buffering actively the AES3 signal. The direction is maintained until errors are detected on the AES3 receiver circuit. When errors or link failure are detected, the direction is swapped, to build-up a new path for the audio. In a fraction of a second (no more than 50ms), some of the devices in a ring will swap to the other direction, restoring the audio streaming.

Ethernet internal switch

All control data streams in the KAESOP system are transported via an Ethernet protocol. Inside all K Series amplifiers is an Ethernet switch connected to each RJ45.

This means that the bidirectional data stream can enter/exit one port and exit/enter any other port, either alongside AES3 streams or on its own.

Internal routing of Ethernet networking is automatic and not user controllable. An internal switch provides packet flooding block services in order to allow building networks with a ring topology.

AESOP

The AESOP – AES3 and Ethernet Simple Open Protocol, formerly AES-X182, AES/Ethernet Simple Open Protocol – is an approved project assigned to the working group SC-02-02 on digital input/output interfaces of the AES Standards Committee (AESSC). The project is intended "to specify a means for transmission over category 5 data cable of unidirectional digital audio and bidirectional control data. Intended applications are active loudspeakers and amplifiers for live performance and for installations." (see <http://www.aes.org/standards/meetings/init-projects/aes-x182-init.cfm>)

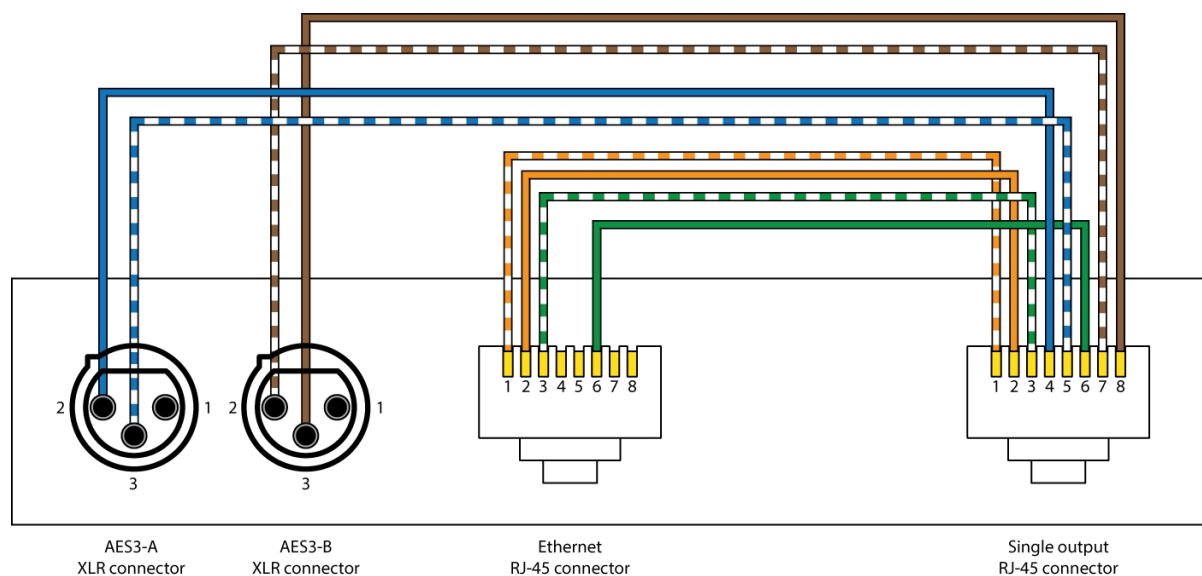
The AESOP can transport a single bidirectional Ethernet 100 Mbps control data stream and two separate AES3 digital audio monodirectional streams using one Cat5 cable. Cat5 standard twisted pair cables shall be used for connections up to 100 meters (328 ft). RJ45 pinout must comply to [TIA/EIA-568-B](#) and adopt the T568B scheme pinout.

AES3 is license free and guarantees low-latency, high reliability and excellent audio quality. A single AES3 stream can carry a stereo audio signal. The AESOP protocol can therefore handle four audio channels.

Ethernet/AES3 combo box

It is possible to build a custom box to combine the Ethernet signal and AES3 signal/s in a single RJ45 connector that makes it possible to avoid using the amplifiers in forwarding mode within the network. This increases the system robustness: when an amplifier in forward mode, it can receive input only from the rear panel XLR; on the other hand, the repeater mode allows the amplifier to reroute its incoming signal automatically from either one of two primary ports.

Following the [AESOP](#) standard, the following diagram shows the pin-out of the adapter box.



Forwarding and repeater modes

Each K Series amplifier can be configured to handle the pair of AES3 streams embedded in the AESOP protocol in one of two basic network modes: repeater and forwarder.

- [KAESOP repeater mode](#)
- [KEASOP forwarder mode](#)

These are true connection “building blocks”; it is therefore important to understand these two modes thoroughly before attempting to create or modify larger and more complex amplifier networks.

The following are definitions of the terms used in this section:

- **AES3-A stream:** AESOP digital audio stream A (two channels)
- **AES3-B stream:** AESOP digital audio stream B (two channels)
- **AES3-XLR stream:** AES3 digital audio stream via the rear panel XLR connector.
- **PORT 1, PORT 2:** primary RJ45 AESOP ports

- **PORT 3, PORT 4:** secondary RJ45 Ethernet ports

KAESOP repeater mode

In the Repeater mode, any AES3 stream received on PORT 1 will be repeated on PORT 2 and vice-versa: if the AES3 stream is received on PORT 2 it will be repeated on PORT 1.

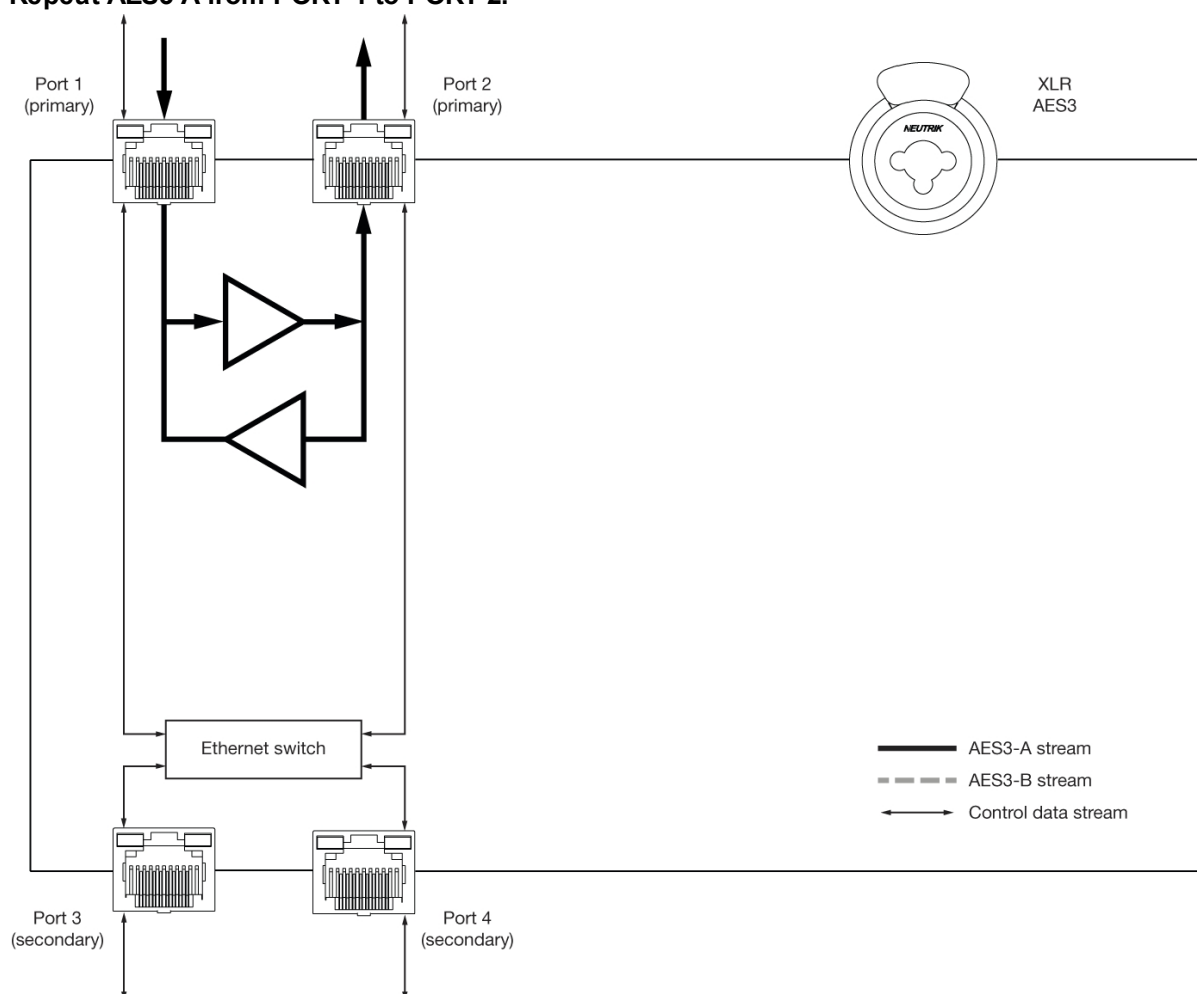
The Repeater mode is the default device mode setting.

This applies to both AES3-A stream and AES-B stream independently. If an AES3 stream (A or B) is present as input at both RJ45 ports (this can happen when a ring network topology is used), the internal AESOP repeater feeds only one of the two identical streams keeping the second stream in standby.

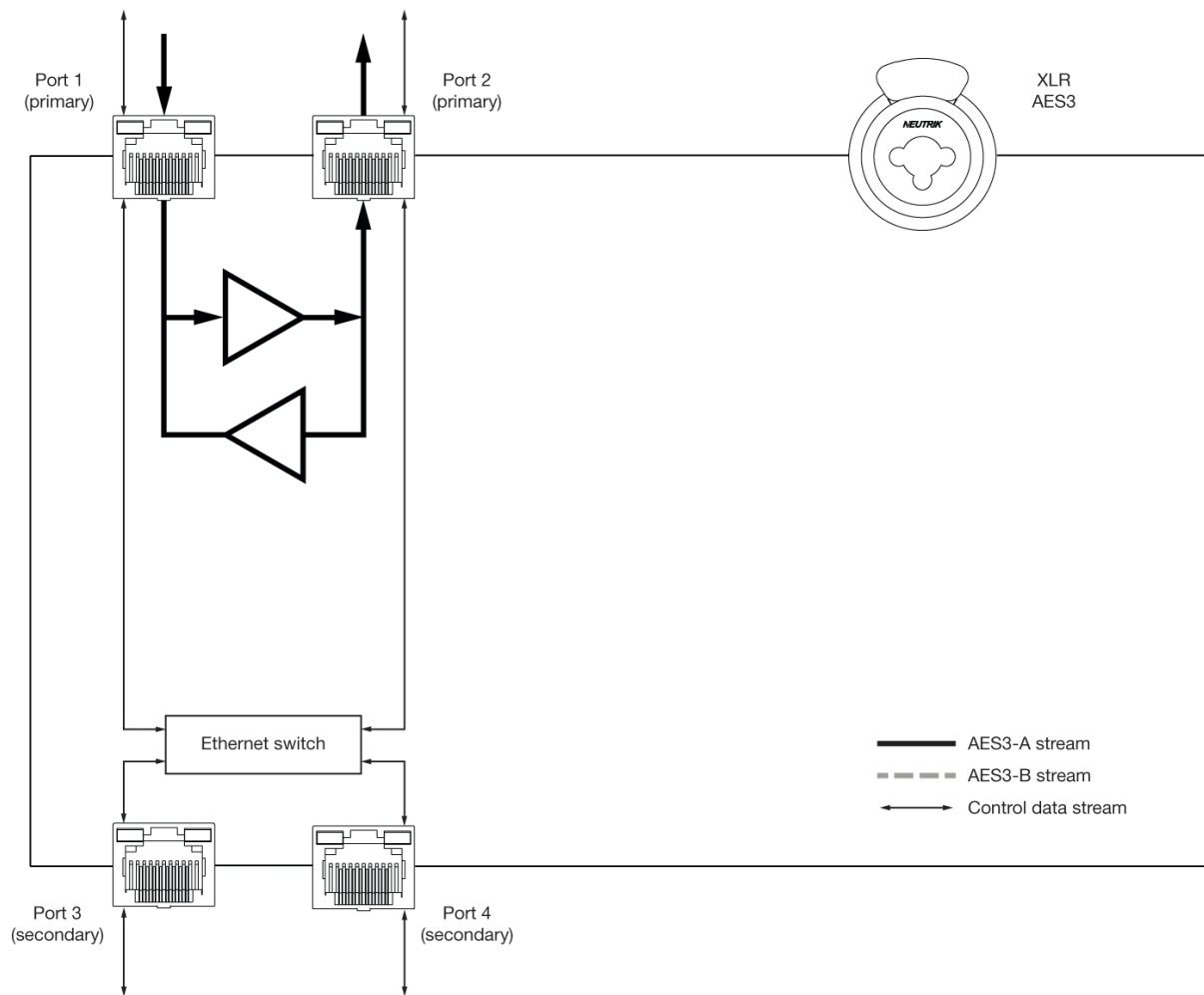
If for some reason the first stream fails the second stream is used as a backup audio source.

For seek of simplicity, in the next examples, primary ports are placed in the rear of the amp, while secondary ports are at the front. Notice that AES3 streams are monodirectional, while data stream is bidirectional.

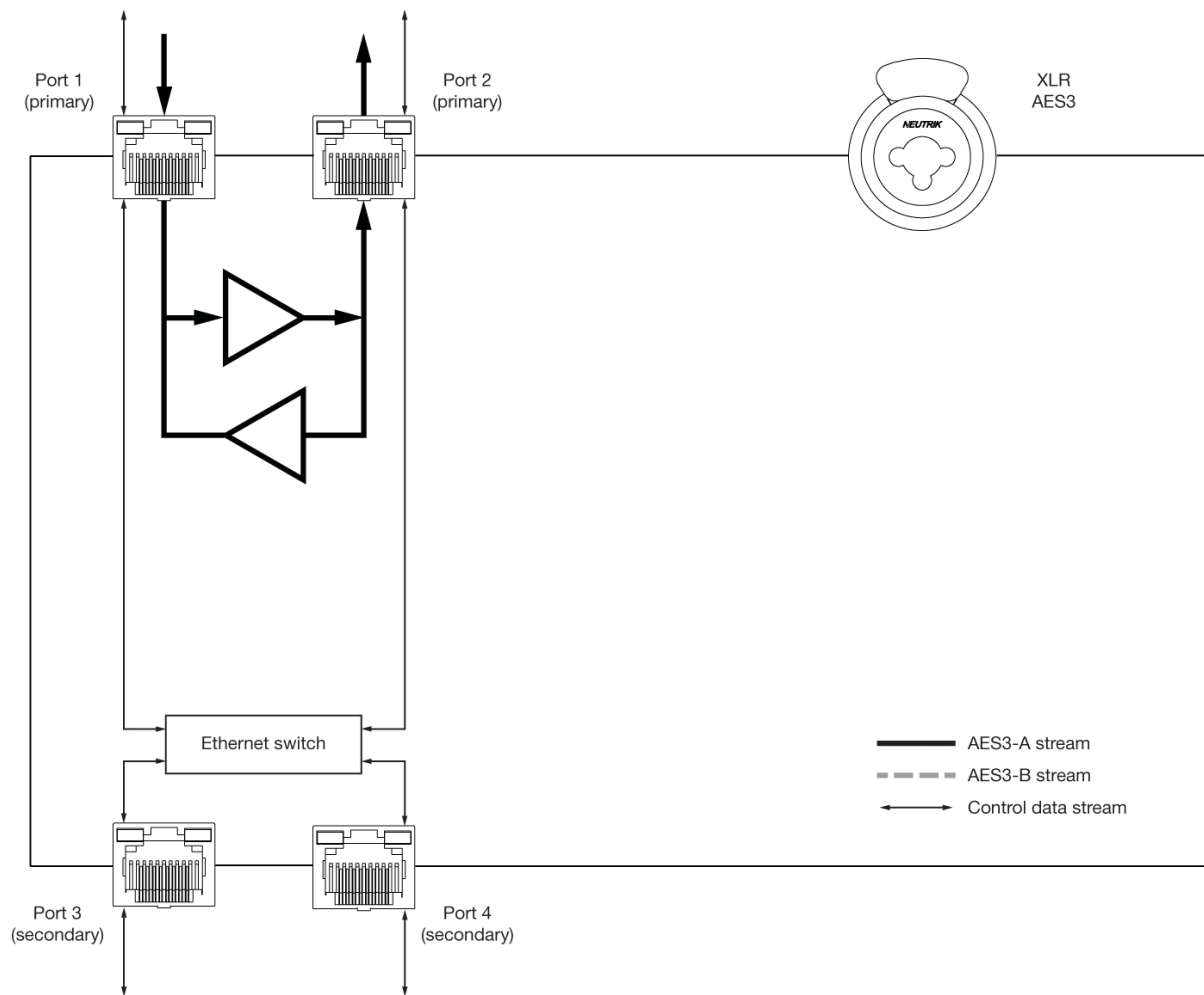
Repeat AES3-A from PORT 1 to PORT 2.



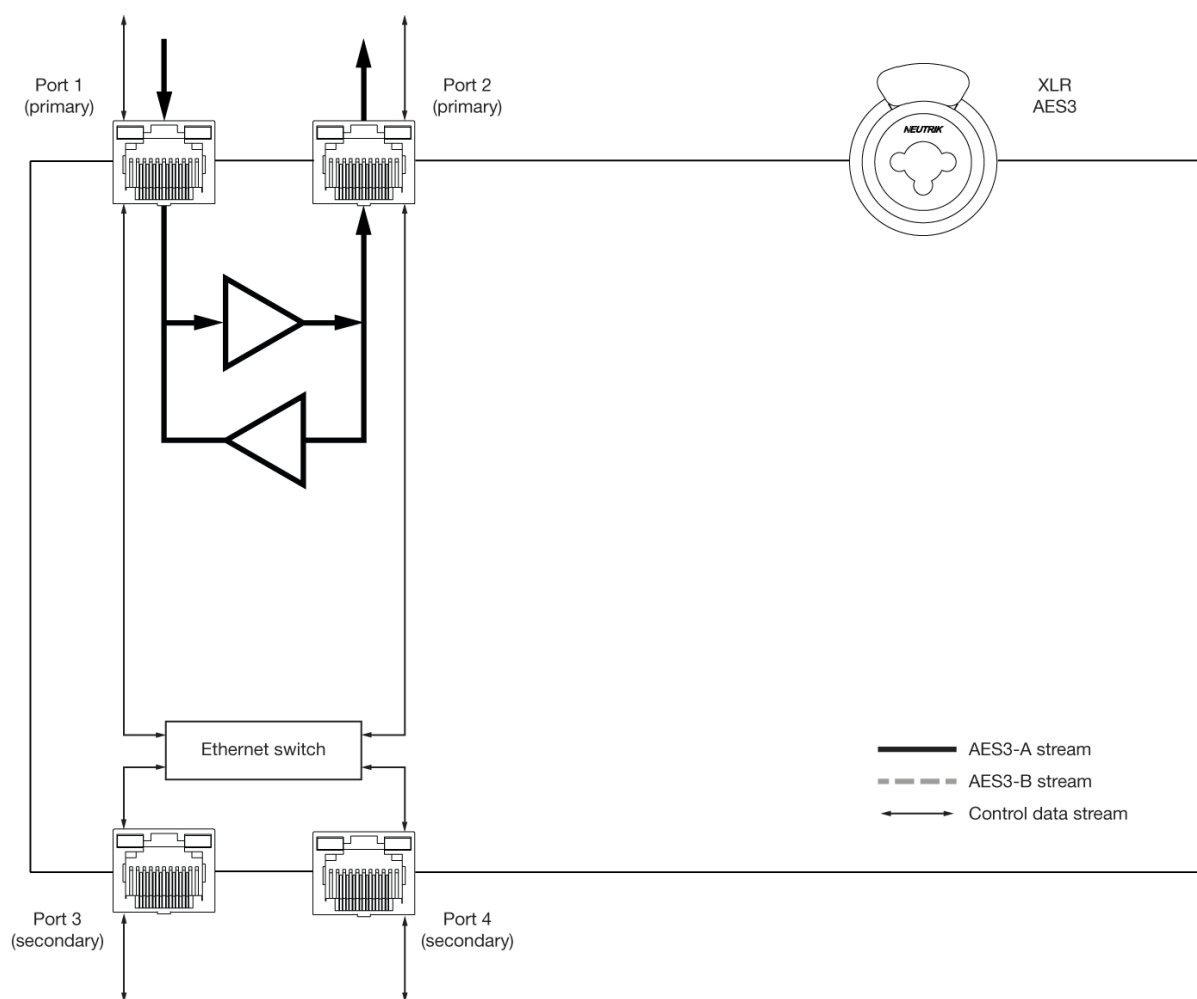
Repeat AES3-A from PORT 2 to PORT 1.



Repeat AES3-B from PORT 1 to PORT 2.



Repeat AES3-B from PORT 2 to PORT 1.



KEASOP forwarder mode

When the amplifier is set in Forwarder mode, the AES3 signal coming into the amplifier from the AES3-XLR connector is forwarded to both of the primary RJ45 ports.

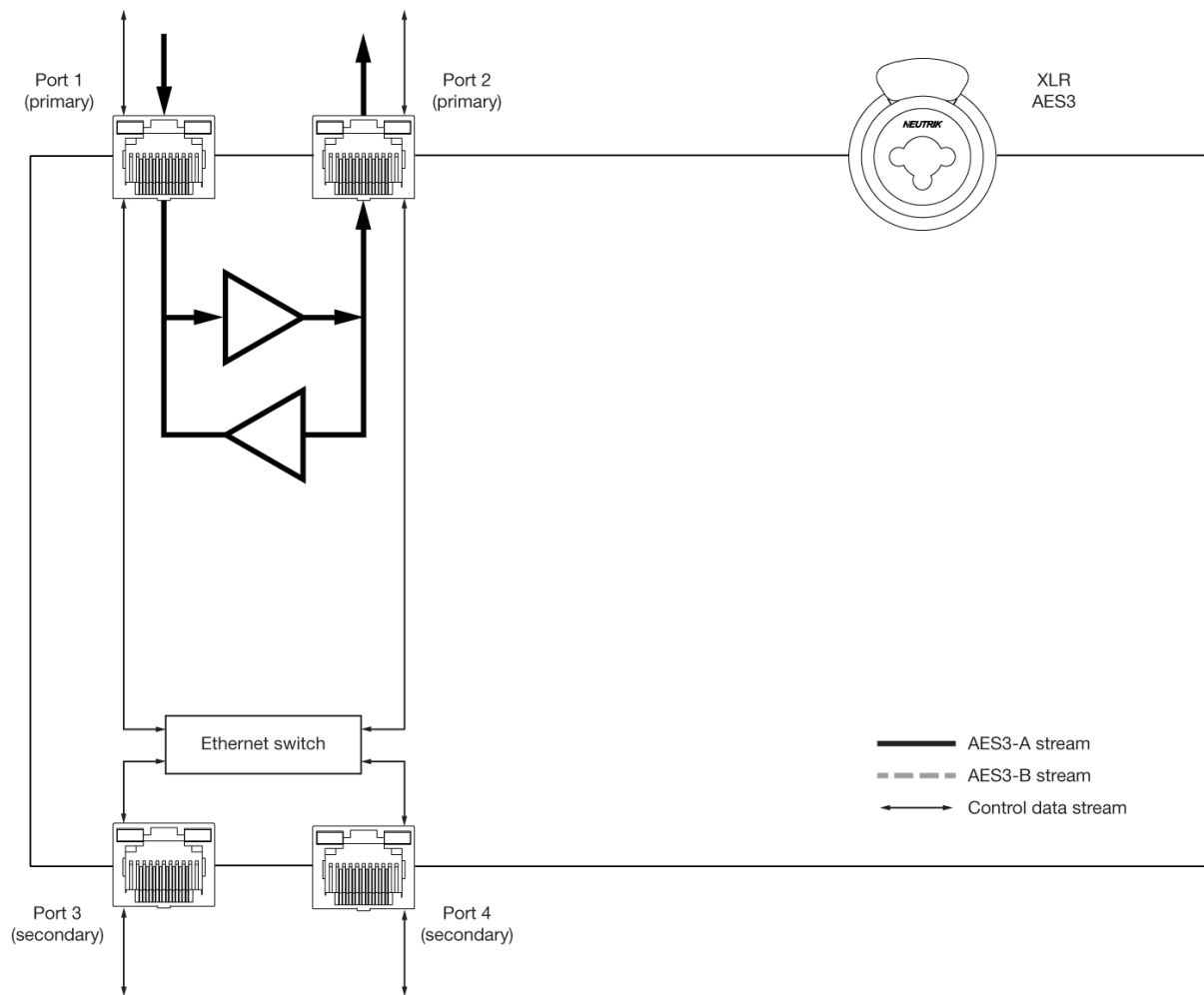
The rear panel toggle button near to the channel 2 XLR connector must be in the “AES/EBU” position. There are three ways the AES can be forwarded: forward to AES3-A, forward to AES3-B, forward to both.

IMPORTANT: In any forward mode, the amplifier can accept as the sole AES3 input signal the one coming from the AES3-XLR connector.

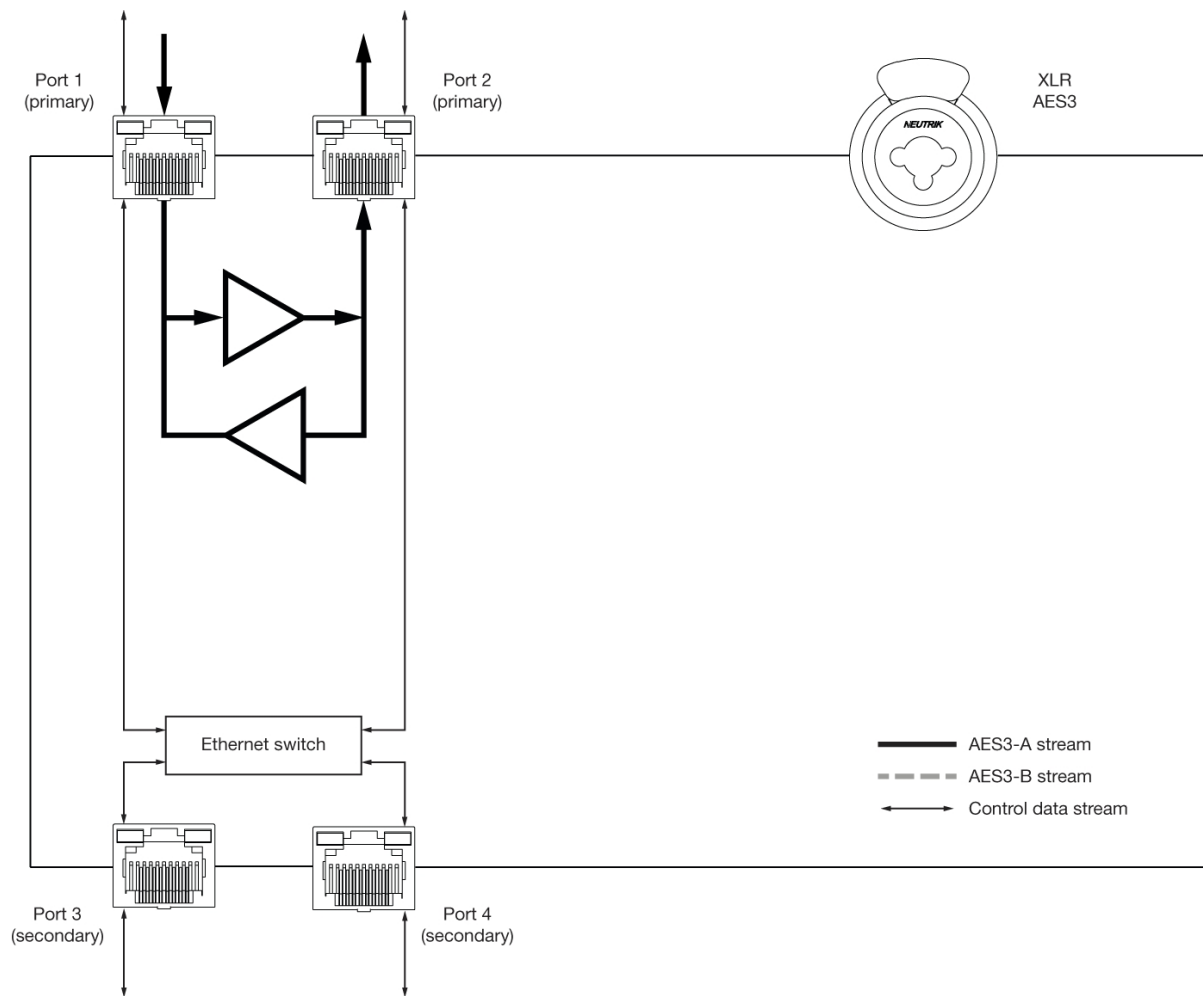
The RJ45 ports cannot, input AES3 signals to the amplifier.

Forward to AES3-A

The amplifier's AES3-XLR connector will be routed to the AES3-A stream on both primary PORT 1 and 2.

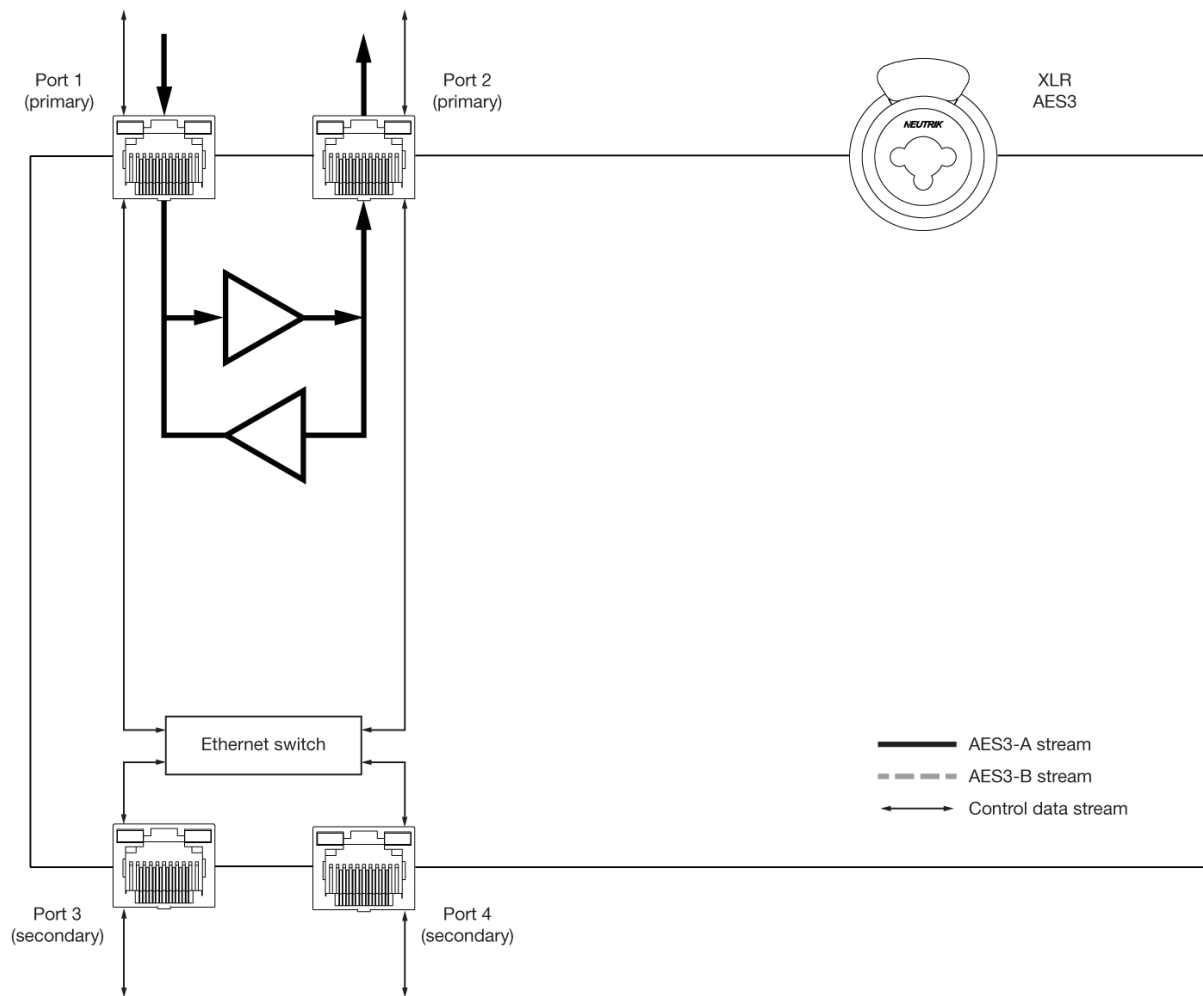


If there is an AES3-B stream incoming from either primary RJ45 ports (1 or 2), this will be repeated on the other primary port.



Forward to AES3-B

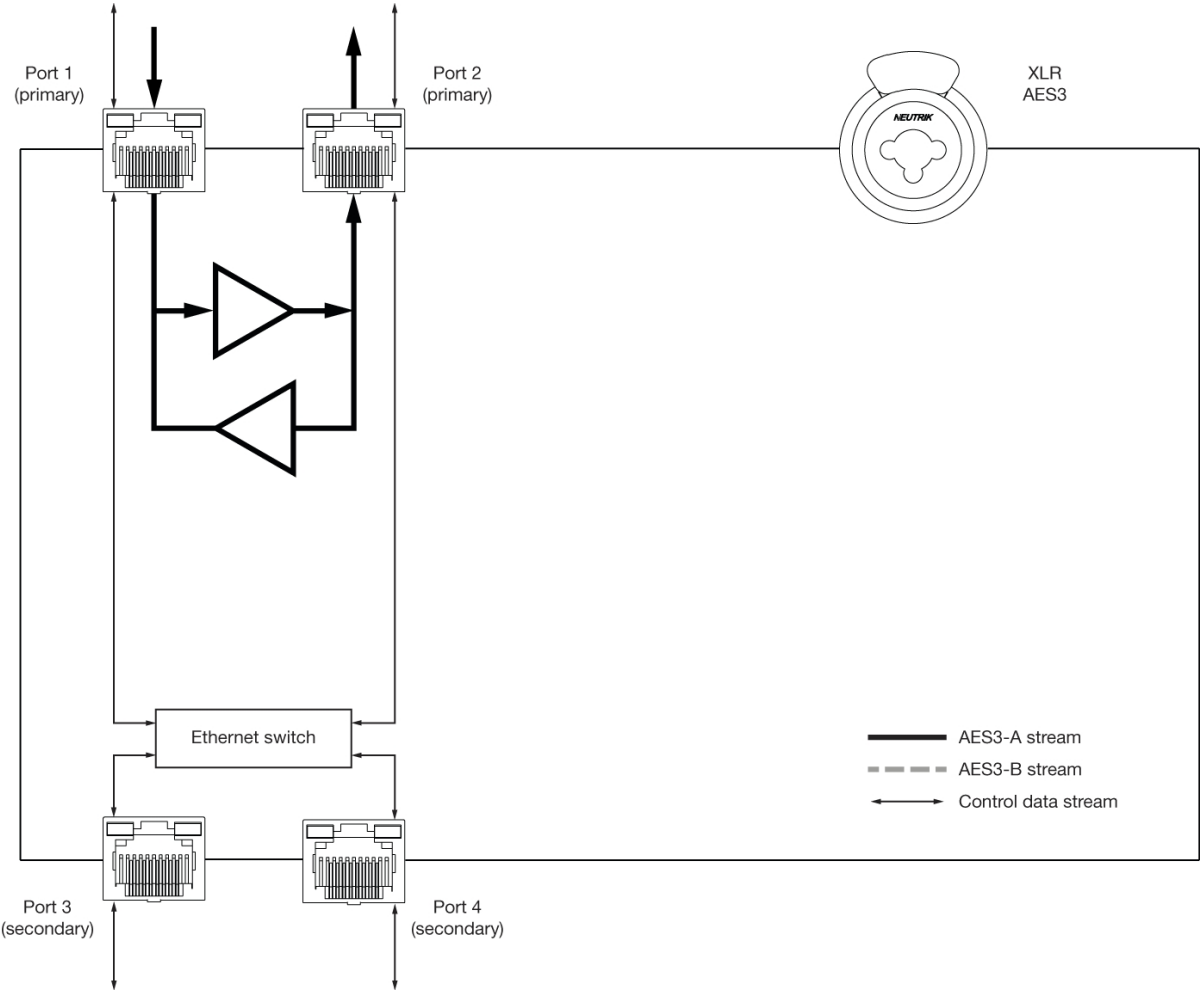
The amplifier behaves just as in the forward to AES3-A mode but with respect to the AES3-B stream. The AES3-XLR stream will be routed to the AES3-B stream on both primary PORTS 1 and 2. The AES3-A stream, if present will be repeated from/to primary RJ45 ports 1 and 2.



Forward to both

The amplifier's AES3-XLR stream will be routed to both AES3-A and AES3-B streams on both primary PORTS 1 and 2.

Repeater functionality will be disabled.



Network robustness

K Series amplifiers equipped with a [KAESOP](#) are capable of being networked routing both data and audio streams to each other.

In dealing with networks of amplifiers, one of the most important aspects to consider, especially when working in a critical application such as large venue sound distribution, is the robustness of the network itself. Data and audio connections can be made fault proof by means of some level of redundancy.

The degree of redundancy expresses how many network connections can break before sound is interrupted in any one amplifier part of the system.

- A zero degree redundant system is not robust: the first connection to jump (either from a cable failure or even from an amplifier problem) means the whole system goes down.
- A one degree redundancy system, on the other hand, will continue working automatically if one (but no more than one) connection fails.

K Series amplifiers support up to two degrees redundancy thanks to the adoption of proper networking topology: by detecting any connection failure on both analog and digital input K Series amplifiers are capable to automatically (and almost instantaneously) modify the audio feed direction to allow the output signal to remain uninterrupted.

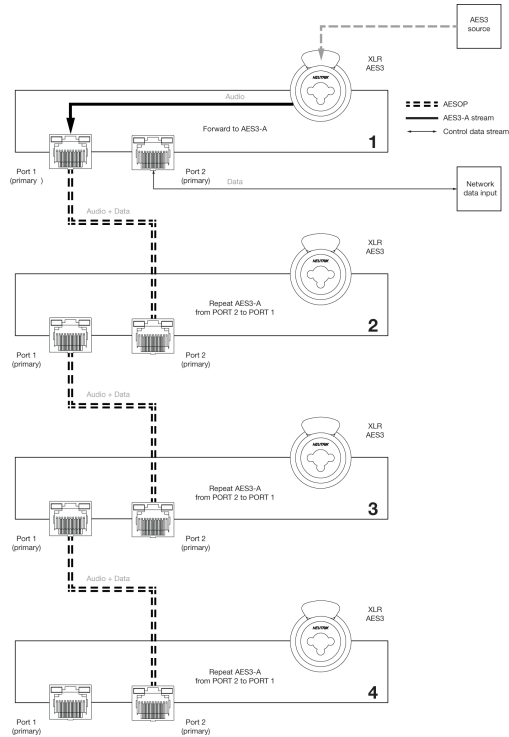
The following sections illustrates and analyze some common amplifier network topologies with different degree of redundancy.

- [Daisy chain](#)
- [Daisy chain with redundant AES3](#)
- [Daisy chain with AES3 and Ethernet redundancy](#)
- [Two degree redundant daisy chain](#)

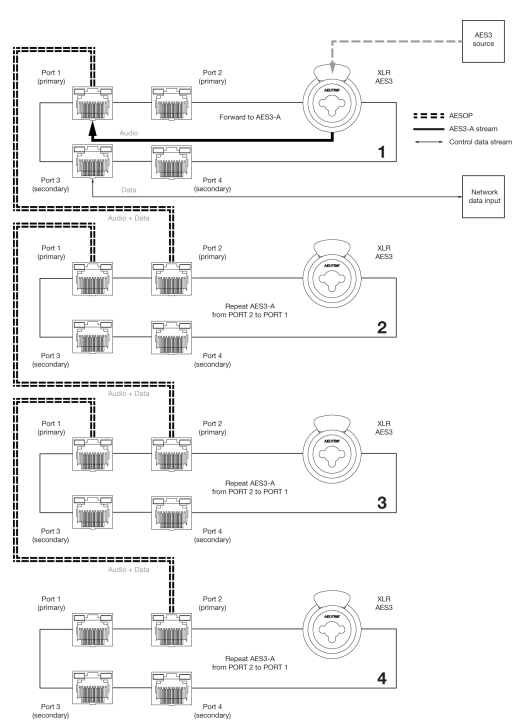
Daisy chain

Daisy chain is a wiring scheme in which multiple devices are networked together in sequence, i.e. in series.

The following figure shows the diagrams of daisy chain connections of 4 amplifiers with four and two AESOP ports respectively.



Daisy chain - two ports models



Daisy chain - four ports models

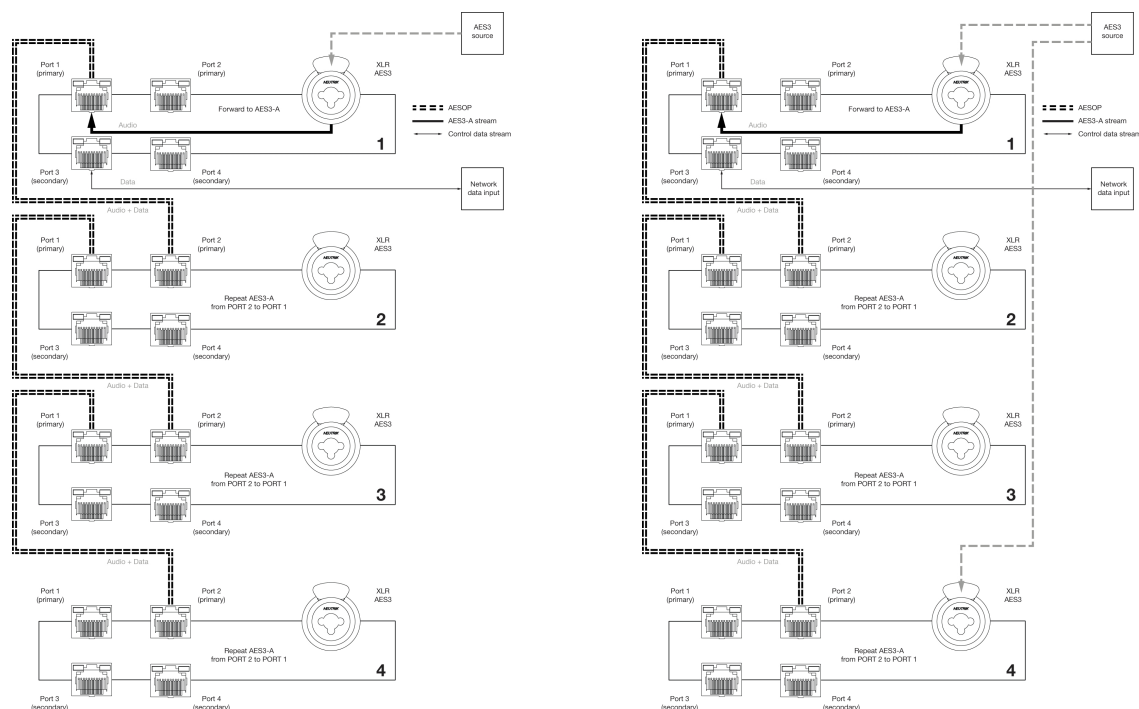
In both configuration, only the first amplifier – fed with the digital signal via the AES3-XLR – is set in forward mode: any other amplifier in the chain is a repeater.

Ethernet data are fed through any free port, either primary or secondary, and conveyed to the AESOP with the AES3.

This daisy chain topology is not robust (zero degree of redundancy). If any single AES3 or Ethernet cable connection is interrupted, the whole system fails.

Daisy chain with redundant AES3

A slightly more robust network with respect to the audio system is the one illustrated in the following picture.



Daisy chain with AES3 redundancy - two ports models.

Daisy chain with AES3 redundancy - four ports models.

Two amplifiers, the first and the last one in the chain, are set to work in forward mode. The remaining amplifiers are set to work in repeater mode.

Even if both the leading and the trailing amplifier forward the AES3 stream through the AESOP, there is no risk of data collision; furthermore, all amplifiers are capable to switch in real time to the best signal source in case of connection failures.

This configuration implies the use of an AES3 patch bay in order to feed with the same digital signal the leading and trailing amplifiers.

Thanks to the auto-sync features implemented in K Series amplifiers, no synchronization mismatches occur between the two AES3 streams.

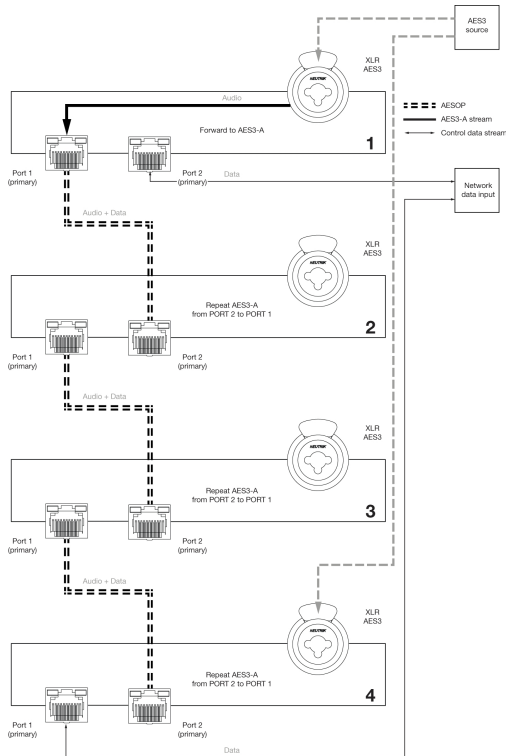
Failure cases

- Damaged AESOP connection between amp n and $n+1$.
Ethernet network connection would be interrupted but not the audio stream. The audio continuity is preserved thanks to the real-time switch of the AESOP stream toward the uncorrupted source coming from the trailing amplifier. The amplifier $n+1$ and the following lose the data connectivity.
- Damaged AES3 input connection.
No sound interruption would be heard because the failed input is immediately replaced by the AESOP stream. Ethernet connectivity is not affected by this kind of failure.

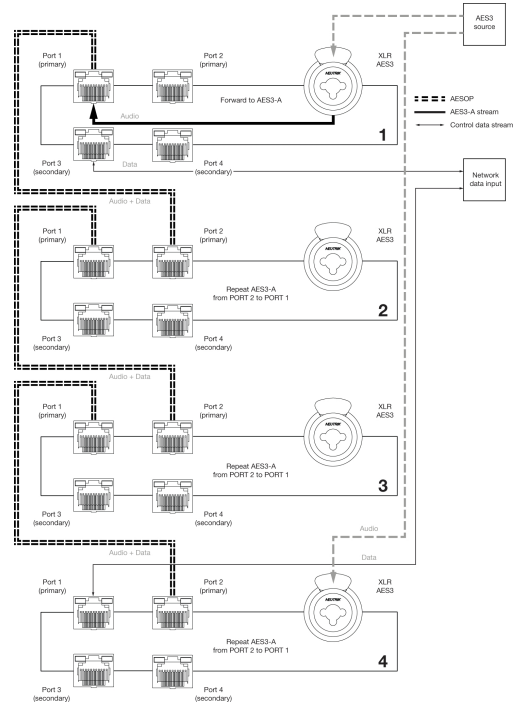
The robustness of this network is guaranteed for AES3 signals only, and for a single cable failure at a time (one degree of redundancy). If two or more connections should fail, one or more amplifiers (depending on where the interruption occurs) would be muted.

Daisy chain with AES3 and Ethernet redundancy

Similarly to the previous schema, both AES3 and Ethernet connection are fed to the leading and the trailing amplifiers in the daisy chain network.



Daisy chain with AES3 and Ethernet redundancy
two ports models.



Daisy chain with AES3 and Ethernet redundancy
four ports models.

The AESOP protocol can handle data conflict and manage real-time switching to a safe signal and/or data source.

This configuration implies the use of an AES3 patch bay and an Ethernet switch.

Failure cases

- Damaged AESOP connection between amp n and $n+1$.
The audio and Ethernet continuity is preserved thanks to the real-time switch of the AESOP stream toward the uncorrupted source coming from the trailing amplifier.
- Damaged AES3 input connection.
No sound interruption would be heard because the failure input is immediately replaced by the AESOP stream. Ethernet connectivity is not affected by this kind of failure.
- Damaged Ethernet input connection.
No data corruption would occur because the failure input is immediately replaced by the AESOP stream. The audio stream is not affected by this kind of failure.

Even if this network configuration implements both data and audio redundancy, its robustness is the same of that of the previous topology: signal integrity, both analog and digital, is guaranteed up to a single case of failure (one degree of redundancy).

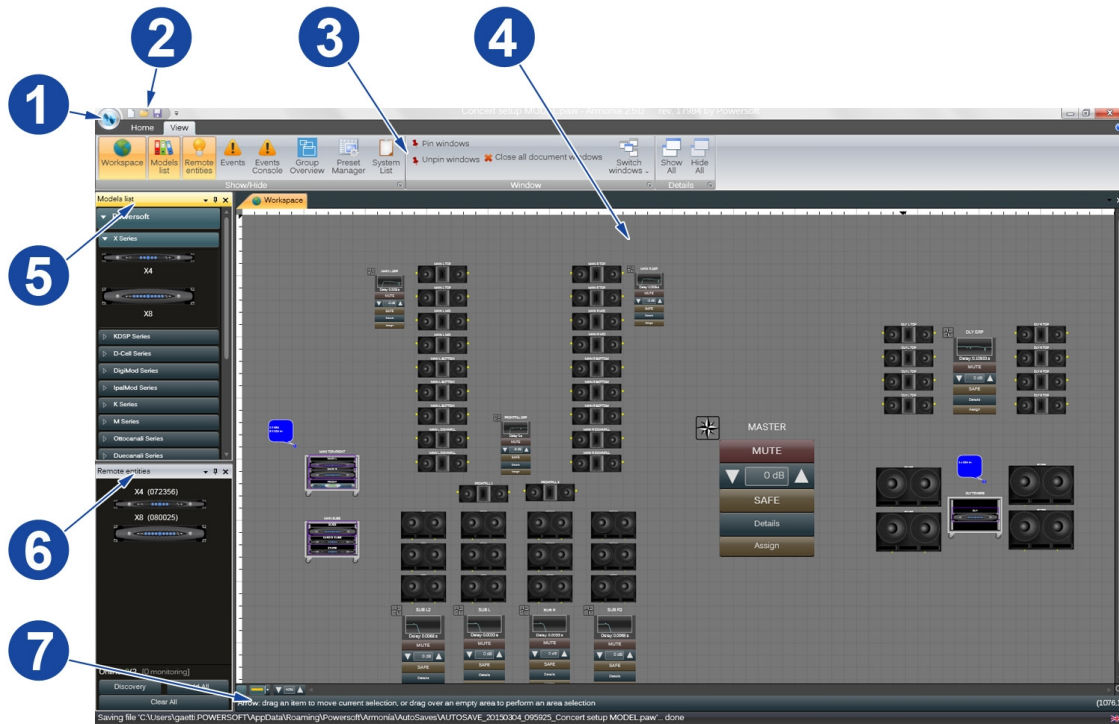
This parameter allows the user to choose the behavior of the amplifier when the digital audio stream is missing and the “Input selection” is set as KAESOP → OUT (or KAESOP → DSP → OUT).

The two possible alternatives are: Mute and Analog. In Analog mode the amplifier automatically switches to CH1/CH2 analog input if the digital stream is missing, returning to the digital stream in case this should become available again. This mode could be used to implement an analog backup connection for the digital stream.

Overview of the interface

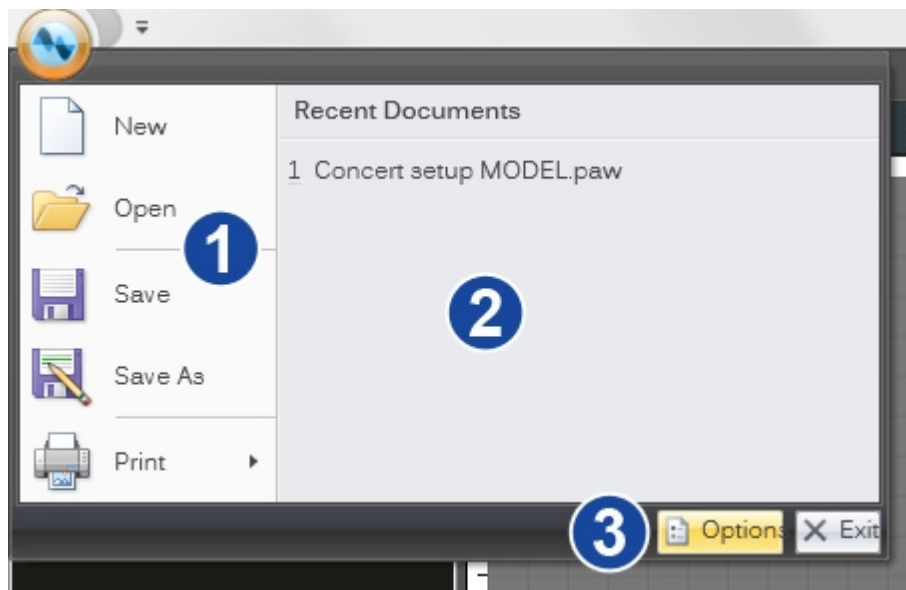
Armonía provides an intuitive interface for controlling and monitoring of a wide range of amplifier and DSP functions.

The main window in Armonía is the [Workspace](#) where you can compose and manage the [Setup](#).



1. [Armonía button](#)
2. [Quick access toolbar](#)
3. [Ribbon](#)
4. [Workspace](#)
5. [Model list](#)
6. [Remote entities](#)
7. [Statusbar](#)

Armonía button



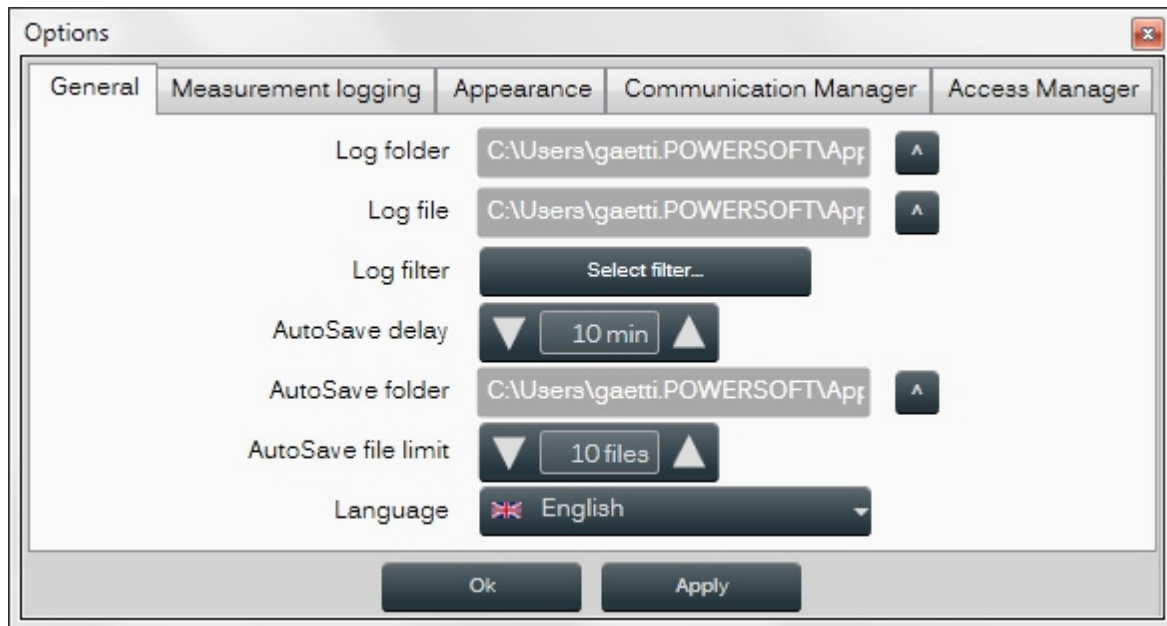
1. **Application menu** - contains controls for working with files.
2. **Recent Documents** - lists the Setup files ([PAW](#)) recently opened.
3. **Options, Exit** - opens the [Option](#) dialog window or exit the application.

Options


The option dialog window provides access to the configuration of Armonía and is composed by five sections:

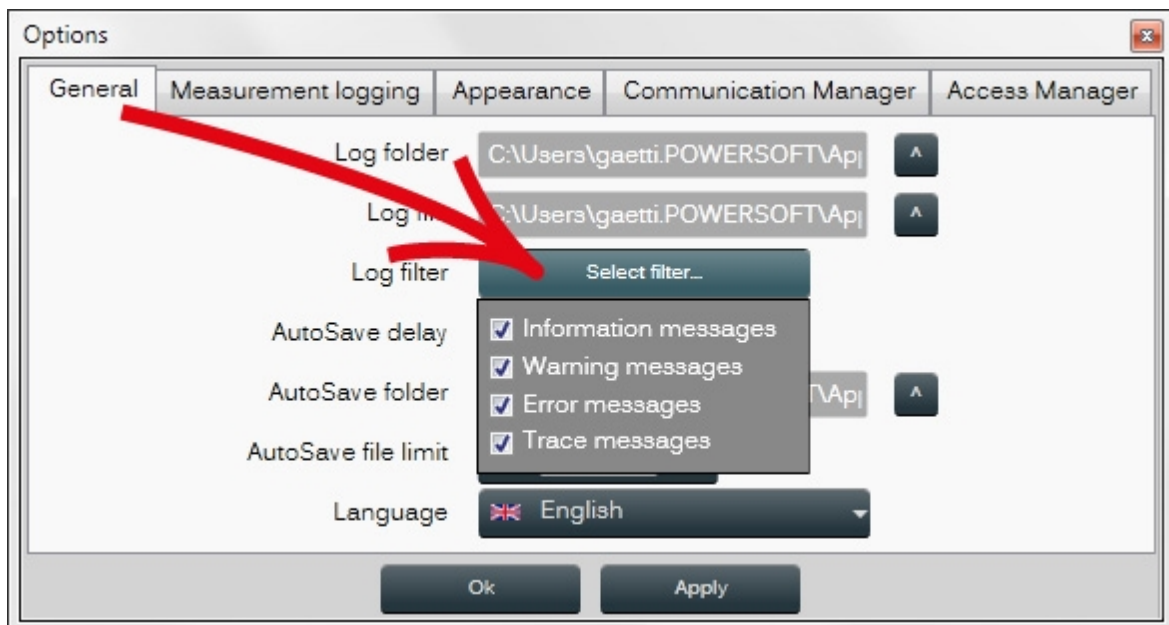
- [General](#)
- [Measurement logging](#)
- [Appearance](#)
- [Communication Manager](#)
- [Access Manager](#)

General

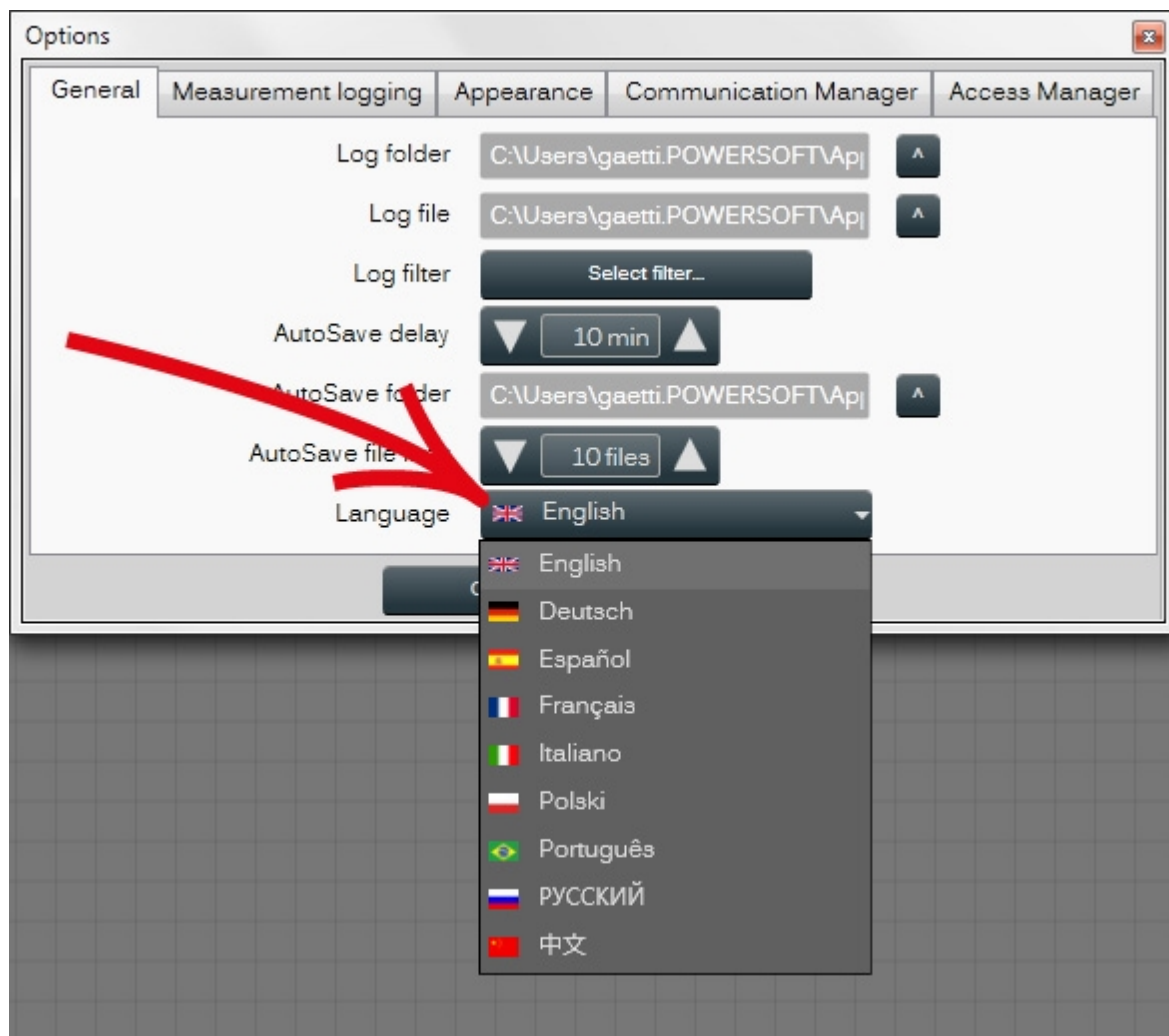


The General section allows to:

- locate the Log and the AutoSave files: click on the button  to reveal the file in File Explorer;
- set the filters for selecting what messages to save in the Log file;




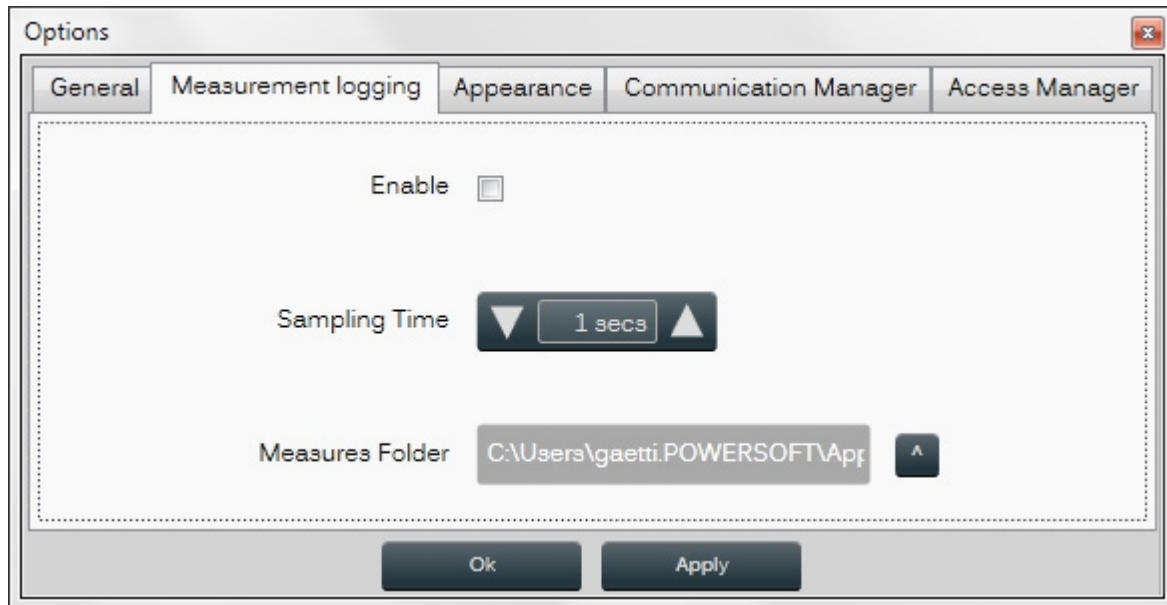
- set the language for the Armonía interface.



Measurement logging

Armonía can write down in a .CSV log file the operating parameters of the controlled devices. In order to activate this function you have to enable the measurement logging and set the time span (sampling time from 1 s to 300 s) between measurements.

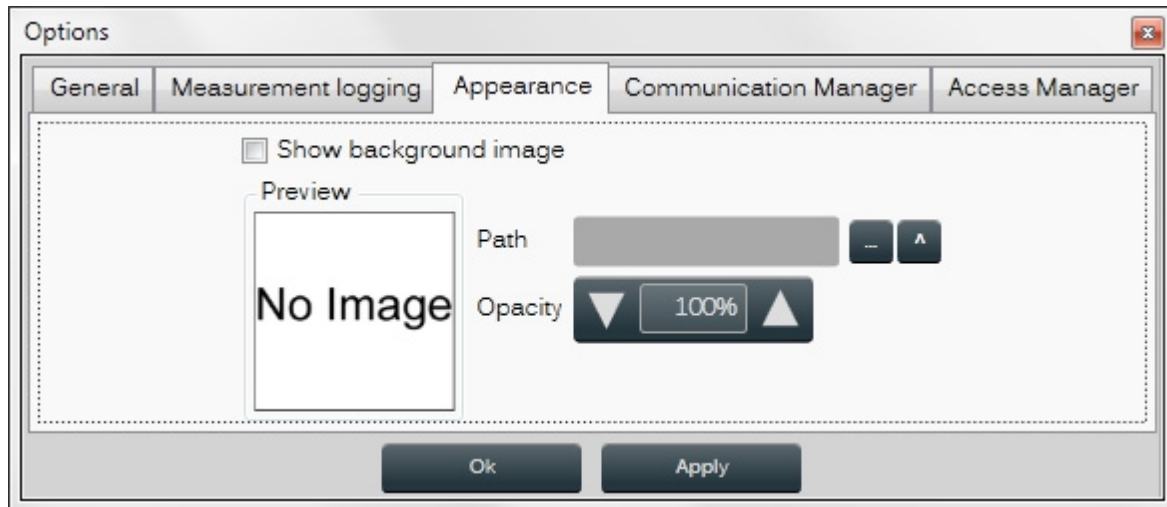
Click on the button  to reveal the measurement log file in File Explorer;



Follow the list of logged parameters:



- TimeStamp (yyyy-mm-ddThh-mm-ss.ffz)
- Amplifier name
- Current preset
- Temperature (°C)
- Mains current (Arms)
- Mains tension (Vrms)
- Protection (True/False)
- Per each channel:
 - Output voltage (Vpeak)
 - Output power (VA)
 - Real power (W)
 - Gain reduction (dB)
 - Impedance (ohm)

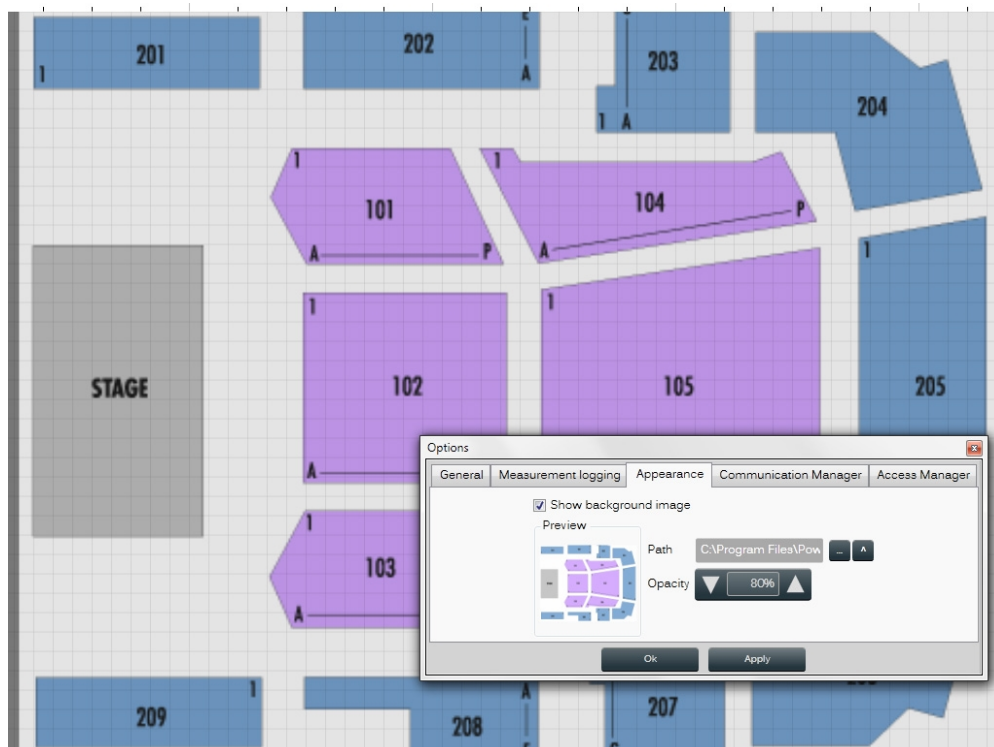
Appearance



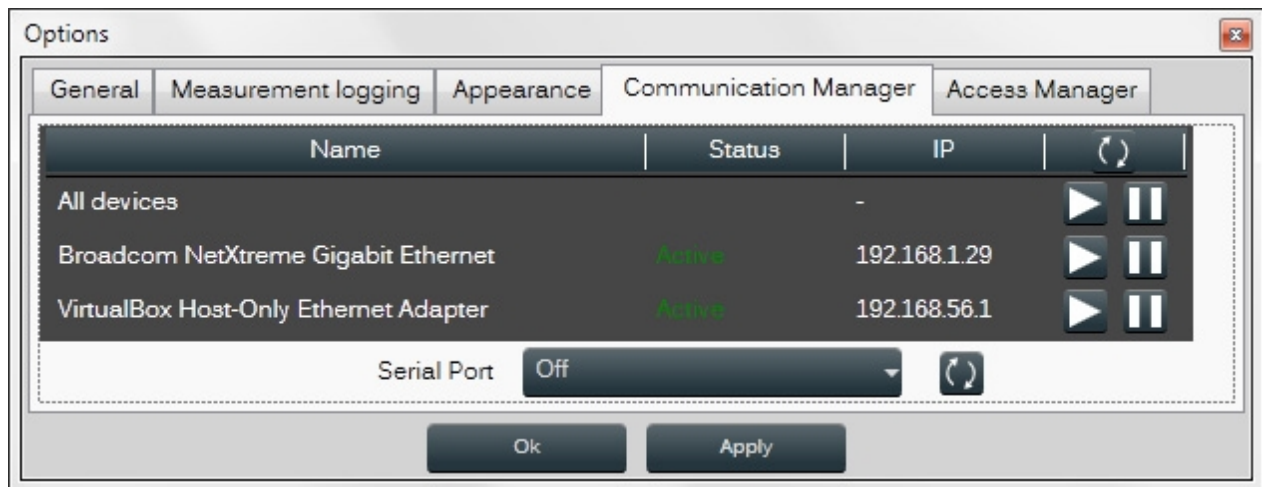
Armonía allows to overlay an image on the Workspace order for you to make the the interface more comfortable.

Armonía can import images in the following formats: bitmap (*.bmp), jpeg (*.jpg), graphic interchange format (*.gif) and portable network graphics (*.png).

1. Enable the image overlay by clicking on the *Show background image* button;
2. Click on the  button and navigate your file system looking for the desired image;
3. Once loaded, by clicking on the button  to you can view the image file in Internet Explorer;
4. Optionally, you can select the opacity of the image.
5. Click on apply to immediately see the result.

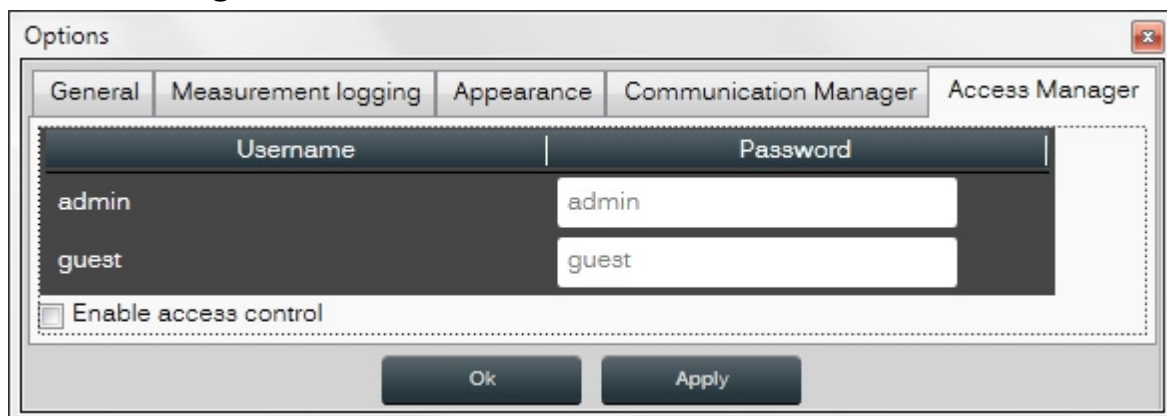


Communication Manager



The Communication Manager allows to manage network interfaces and serial communication. Refer to the [Setting network interface](#) section for an explanation about this tool.

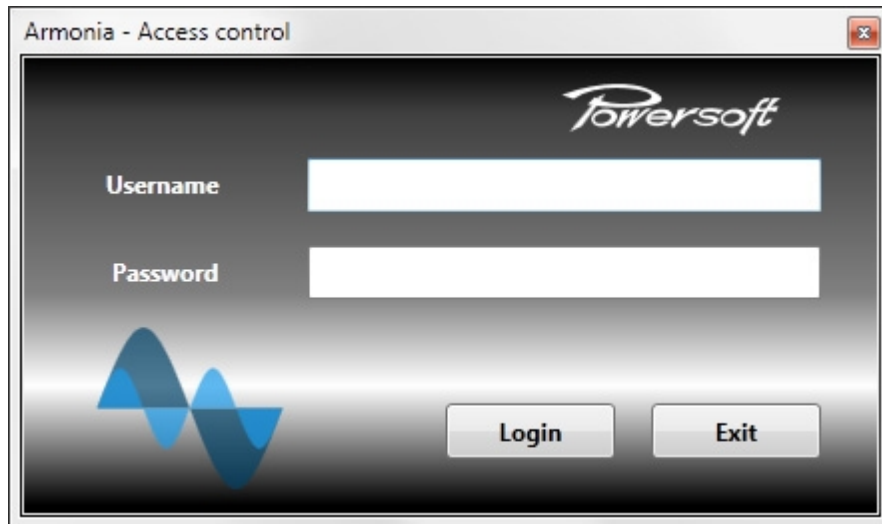
Access Manager



The Access Manager allows to restrict user access to Armonía functions. Armonía comes with two default user accounts: *admin* and *guest*. No other accounts can be added or removed.

In order to activate the access control, you have to insert a password for both *admin* and *guest* users and check the *Enable access control* check box.

The next time Armonía is launched the user will be prompted for username and password before beginning to use the application.



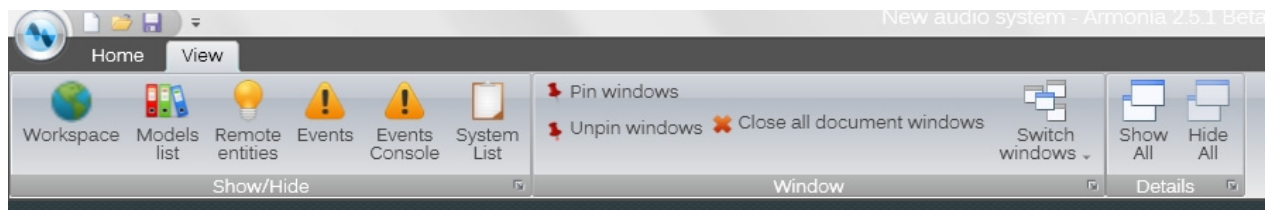
User types:

ADMIN: is the system administrator. He or she has no limitations in system and device management. When the Access Manager is disabled, any user is admin on Armonía.

GUEST: is a system inspector. He or she can only observe system parameters and measurements. Guest users are unable to modify the Setup.

Armonía provides a modified version of the ribbon for Guest users in order for them to access only available features.

The interaction with the Workspace, Models list, Remote entities, Events, Event Console and System List is limited to monitoring: all interacting buttons are disabled.



Windows

Armonía provides different windows for different tasks.

All available windows are accessible by means of the control buttons in the [View tab in the Ribbon](#).

Third-party plug-ins would provide further windows for specific tasks: please refer to the third-party documentation for information about their use.

The default windows provided by Armonía are:

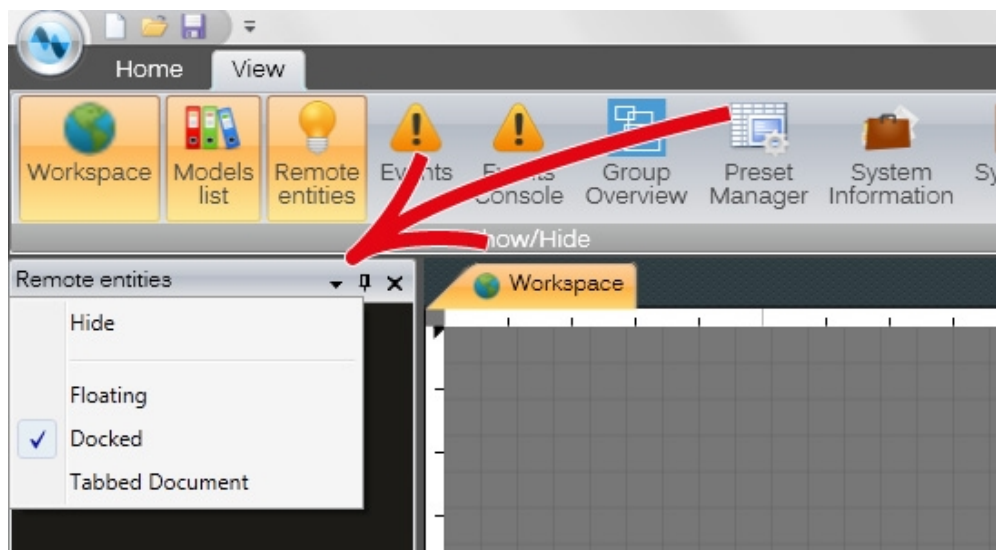
- [Workspace](#);
- [Model list](#);
- [Remote entities](#);
- [Events](#);
- [Events console](#);
- [Groups overview](#);
- [Preset manager](#);
- [System information](#);
- [System list](#).

Managing windows appearance

You can manage the appearance of the windows by means of the dedicated controls in the [View tab in the Ribbon](#) and right clicking on the title bar of the selected window.

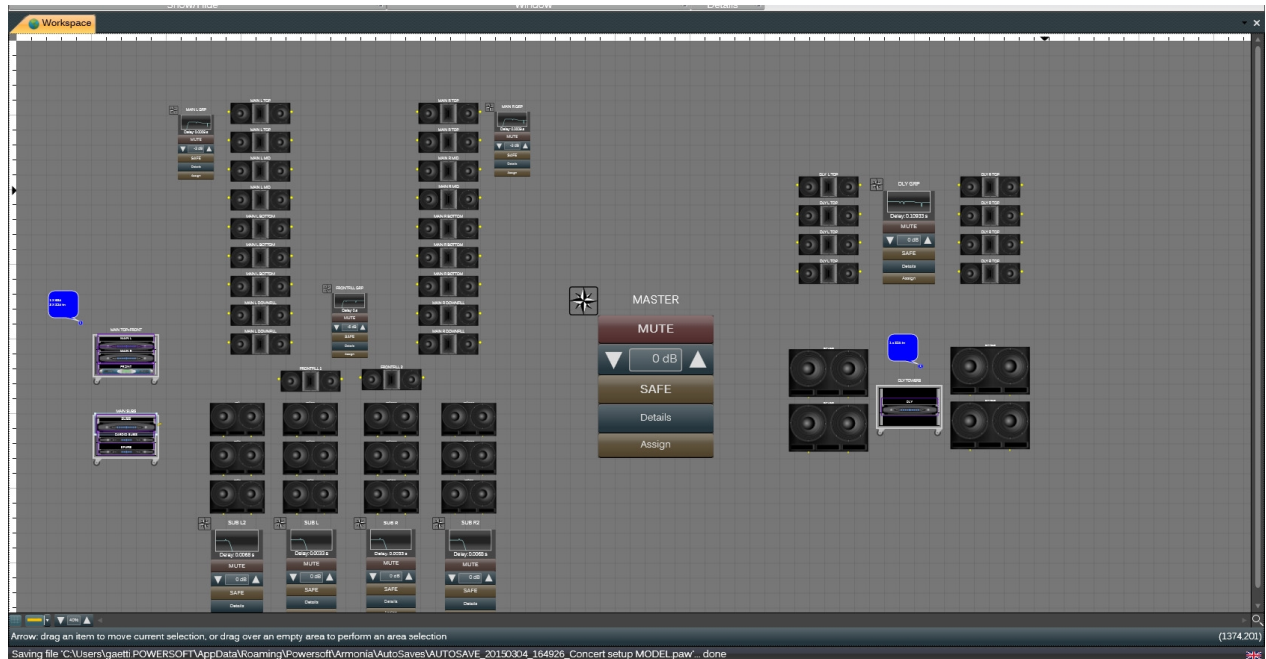
The windows can be dragged anywhere inside the Armonía interface, simply by clicking and dragging the title bar. Furthermore, by right clicking on the title bar you can select among three appearance modes:

- **Floating** - In floating mode, a window has a thin title bar and can appear anywhere on your screen. A floating window is always on top of all other windows. You can modify the size or position of a window when it is floating.
- **Docked** - In docked mode, a window is fixed to the left border of the Armonía interface. You cannot modify the size of a window when it is docked.
- **Tabbed Document** - In tabbed mode, multiple windows are contained within a single window, using tabs as a navigational widget for switching between them.



Workspace

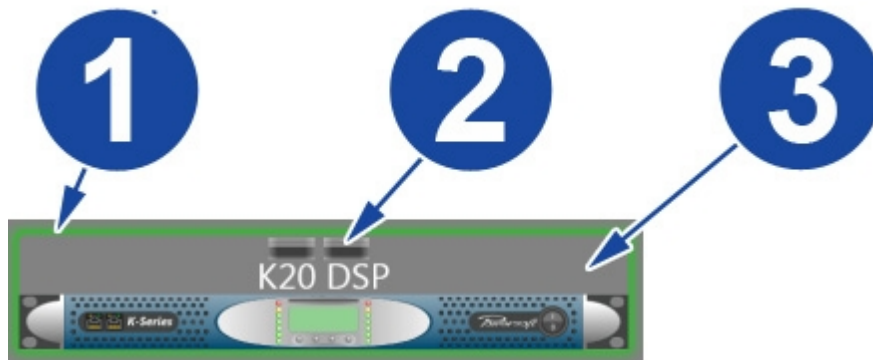
The Workspace is the main window in Armonía where you can design and manage your [Setup](#).



- [LivingWorkspace™](#)
- [Show and hide the Workspace](#)
- [Workspace status bar](#)
- [Working in the Workspace](#)
- [Selections](#)
- [Positioning tools](#)

LivingWorkspace™

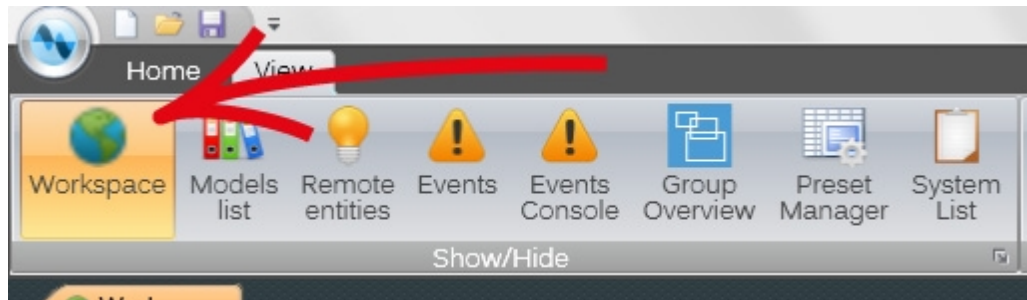
Starting from the version 2.3.0, Armonía introduces a LivingWorkspace™ that provides an overview of the entities status such as signal presence, muting, gain reduction and clipping. Tooltips have been improved including the amplifier status and connection, current preset, alarm description and networking information.




1. All the amplifiers placed on the Workspace are highlighted by a colored border whose color changes depending on the status – see the [Amplifier Status Color Code](#);
2. The channel status is highlighted by the LEDs positioned above the amplifier name – see the [Signal Status Color Code](#);
3. The background color of the unit changes when an alarm is engaged – see [Alarm Color Code](#).

Show and hide the Workspace

You can show and hide the Workspace by clicking on the Workspace control button in the [View tab on the Ribbon](#).



It is possible to close (hide) the Workspace window by clicking on the close button  located on the top-right corner of the window.

Workspace status bar

At the bottom of the Workspace windows is located its statusbar.



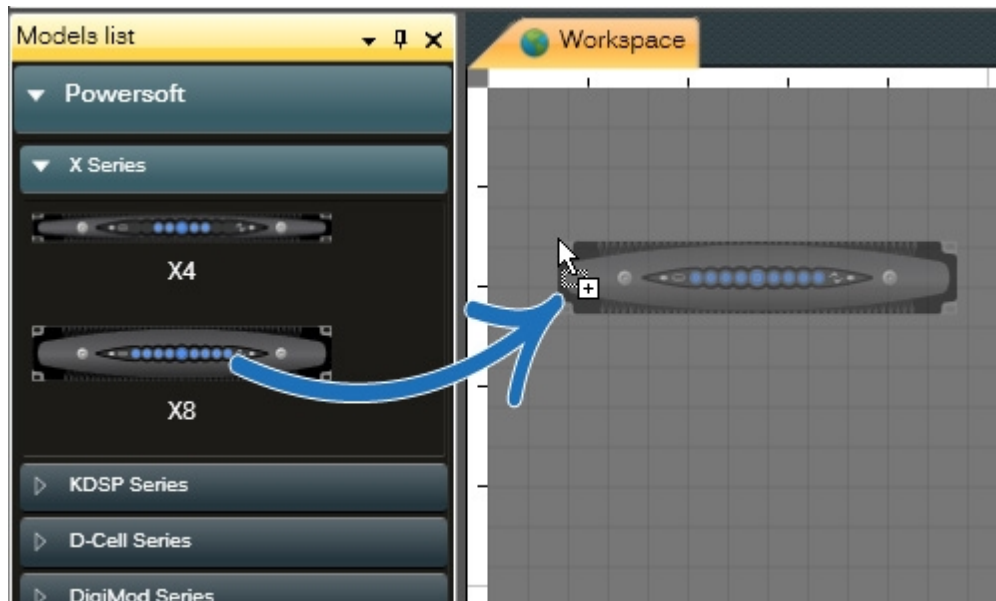
The statusbar contains:

1. **Grid** button to hide and show of the grid;
2. **Rulers** button to hide and show the vertical and horizontal rulers
3. **Zoom** selector to set the zoom level of the view
4. **Descriptive bar** that display information about the selected tool
5. **Pointer** position

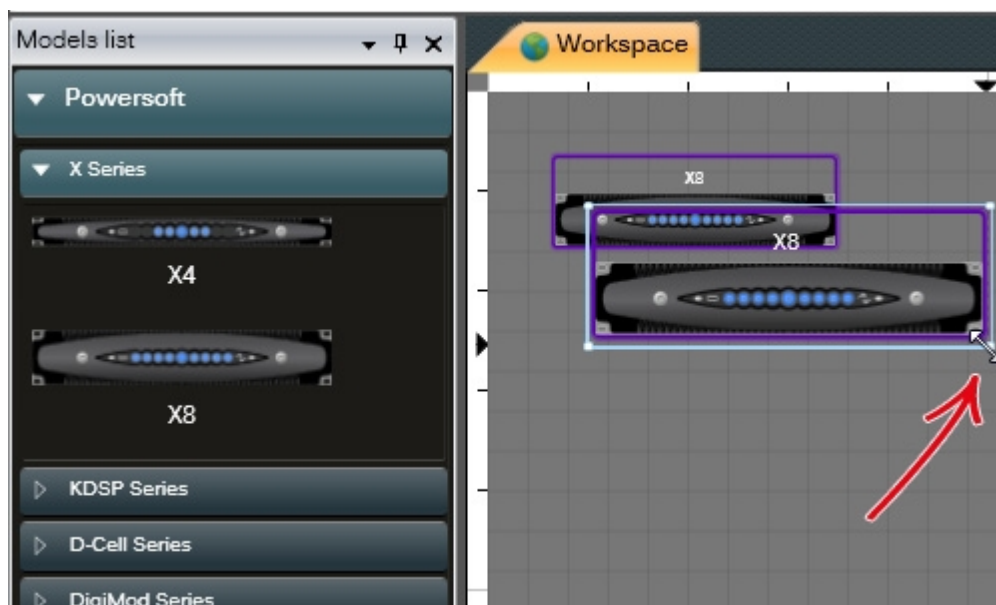
Working in the Workspace

The Workspace works in tight conjunction with the [Remote entities](#) and [Model list](#) windows.

In order to populate the [Setup](#) double click or drag-and-drop the [entities](#) from the Model list or the Remote entities.



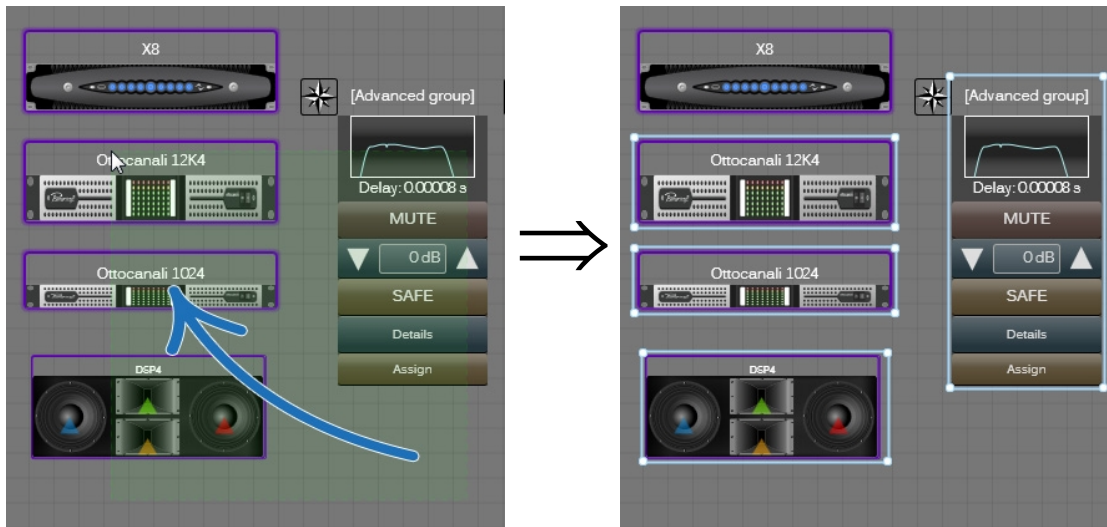
Any unit in the Workspace may be selected by clicking on it; a cyan border appears around it. The image of the unit can be re-sized by grabbing a corner handle in the familiar way.



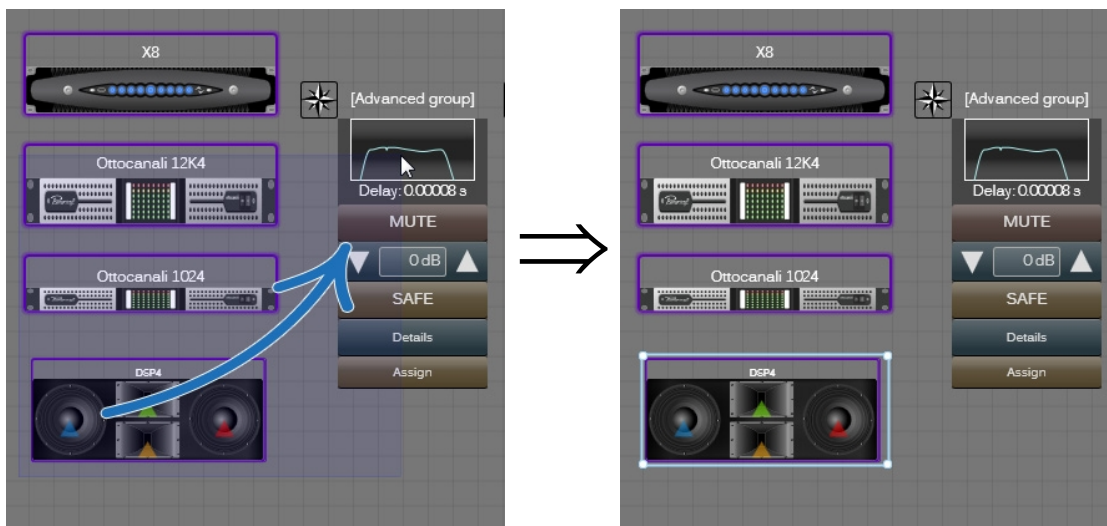
Selections

Armonía Pro Audio Suite provides two methods for selecting units in the Workspace:

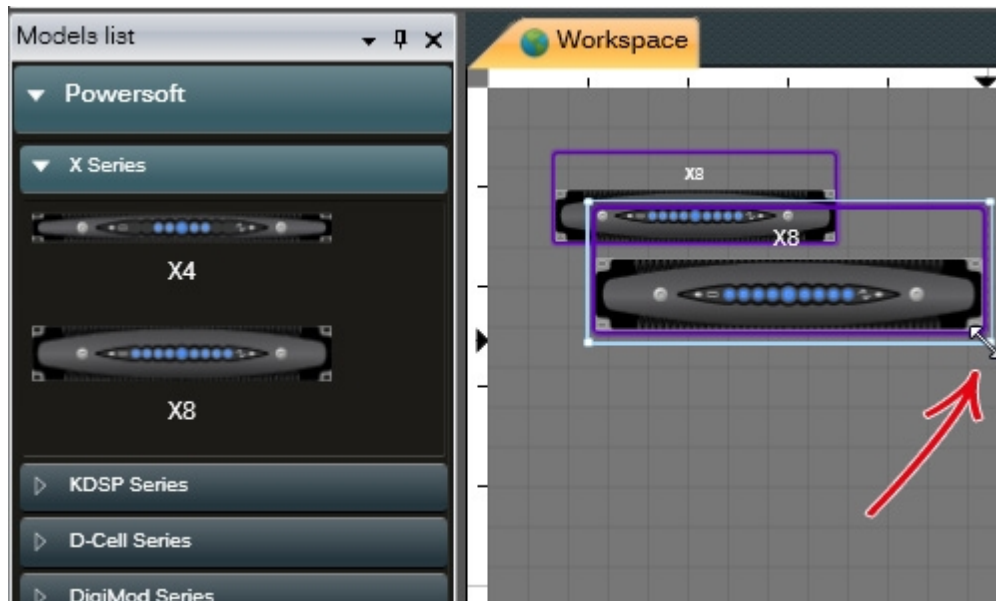
- drag a selection from **RIGHT to LEFT** (green): select all the units that both intersect and are completely contained into the selection;



- drag a selection from **LEFT to RIGHT** (purple): select only the units that are completely contained into the selection.



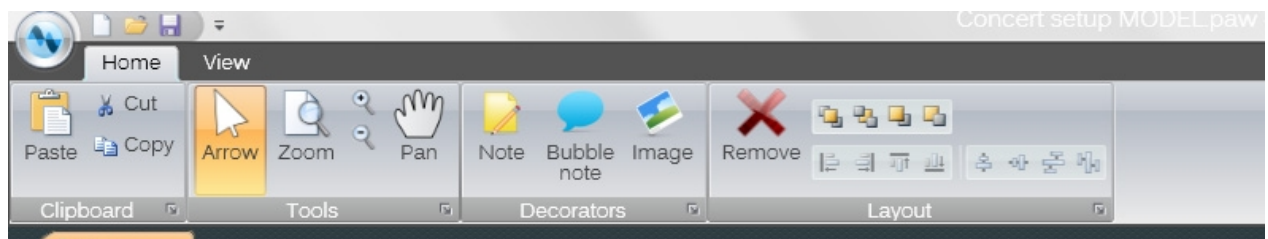
Selected units are highlighted by a cyan border and four handles at the corners: the image of the unit can be re-sized by grabbing a corner handle in the familiar way.



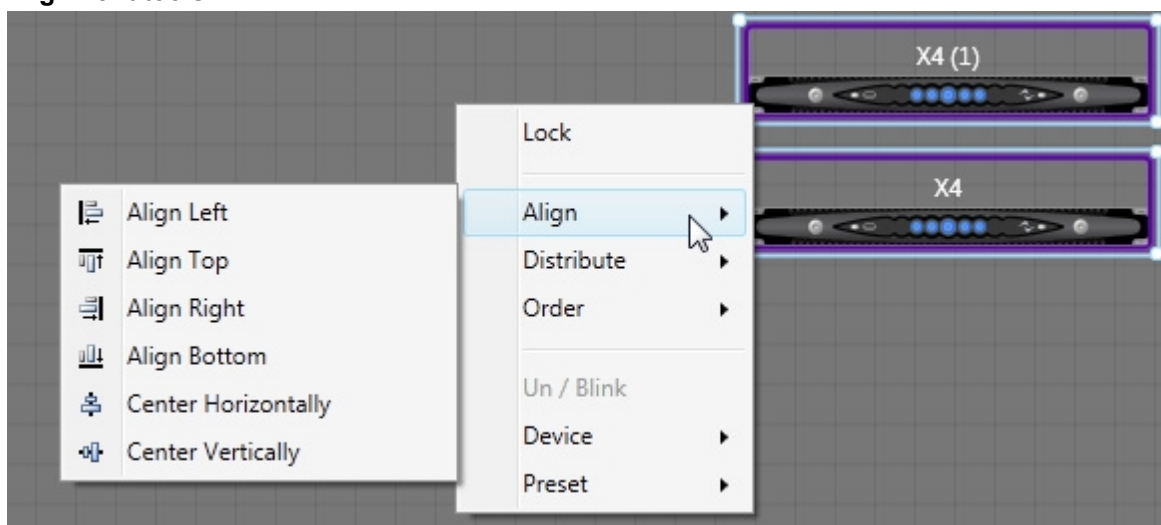
Positioning tools

You can arrange the position of the entities and the components in the Workspace using the Align, Distribute and Order tools.

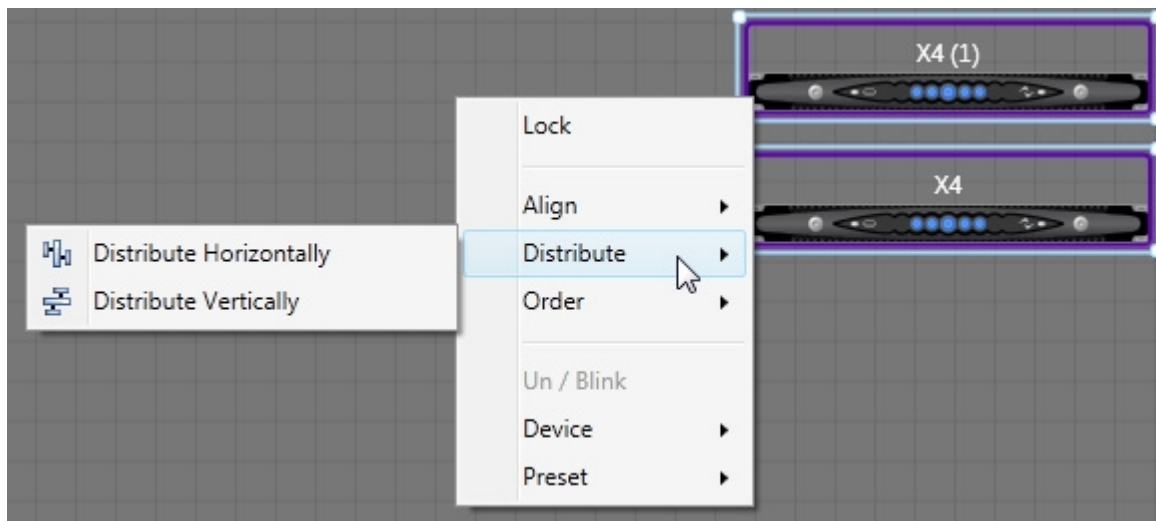
These tools are accessible via the Layout group in the [Home](#) tab on the [Ribbon](#), or through the context menu that appear right clicking on the Workspace.



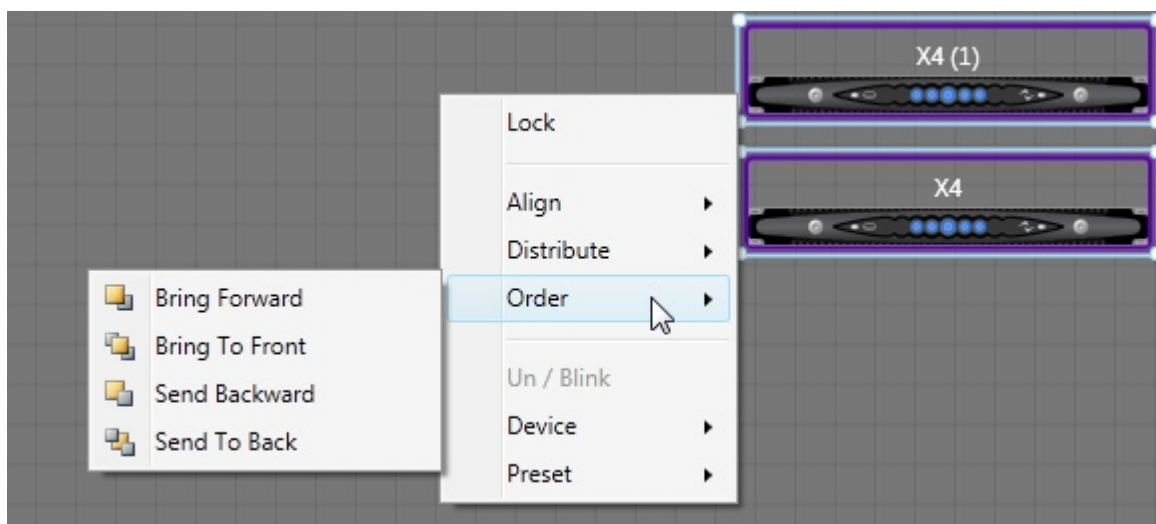
- **Alignment tools**



- **Distribute tools**



- **Order tools**

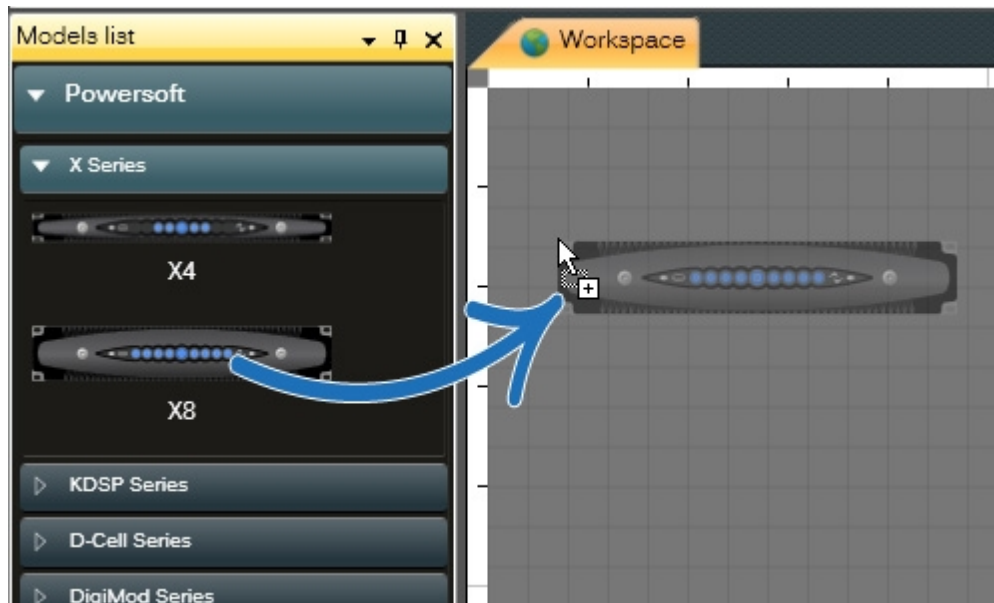


Model list

The Model list contains the units that may be present in a [Setup](#).
The units in the Model list are grouped in four categories:

- [Powersoft](#)
- [Components](#)
- [Groups](#)
- [Racks](#)

In order to populate the Setup, double click the units in the Model list or drag-and-drop to the [Workspace](#).
Any unit added to the Workspace from the Model list appears in the Setup as a [virtual entity](#).



Powersoft group

The *Powersoft* group contains all Powersoft products, both rack amplifiers and amp modules.

- Rack amplifiers are listed by family: DSP equipped amplifiers provide interfaces for accessing all DSP parameters; non DSP amplifiers may provide restricted access to some operating parameters such as rail voltage, LiveImpedance measurement, etc, according to the characteristic of the model. Not remoteable units, i.e. models without networking features, may be added to the Workspace as [components](#).
- Amp modules are represented as [active loudspeakers](#), listed by family, name and DSP type.

Remote entities

The Remote entities window allows to discover and display the [networked units](#) and [add](#) them to the current [Setup](#) in the [Workspace](#).

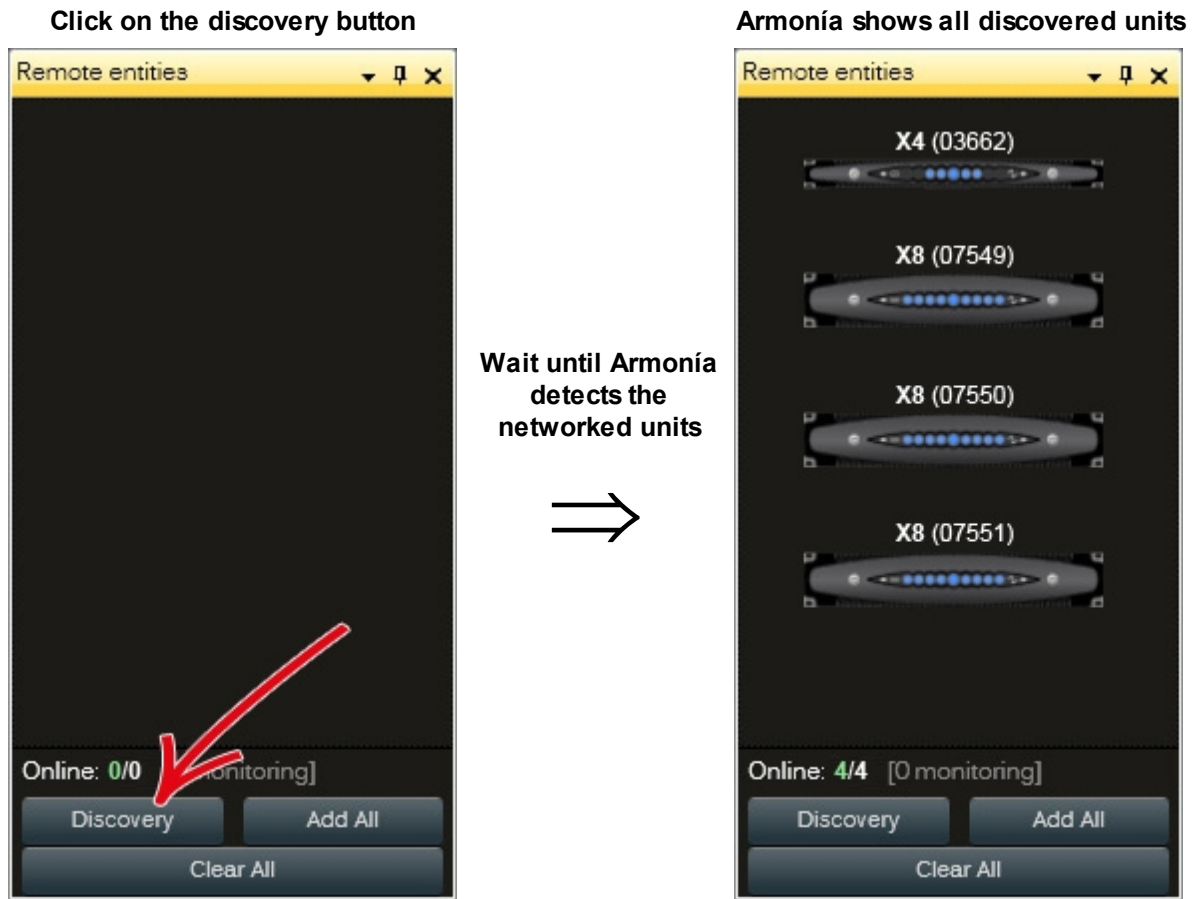
At Armonía start up the Remote entities is empty: in order to detect the networked units **click on the [Discovery](#)** button.

Discovery

The discovery process relies on the [Communication Manager](#): Armonía sends a broadcast message on all [active interfaces](#) waiting for the response of the networked units.

If the computer hosting Armonía has more than one Ethernet adapter, we recommend to deactivate all

unused ports in the [Communication Manager](#).



It may happen that some units within the network are not properly detected: this is the case of IP mismatch or wrong subnet configuration.

In order to limit network anomalies, please follow the instruction reported in the [Connecting amplifiers and DSPs](#) section.



1. List of the discovered remote entities
2. Number of remote entities [added](#) to the Workspace (monitoring)
3. Number of [on-line](#) (green) entities versus all discovered (white) entities
4. Discover the networked entities and add them all to the Workspace.

In the example above

Armonía discovered four entities: three X8 and one X4 amplifier platforms, but one of the X8 - the one with 07550 serial number - turned [off-line](#) after discovering.

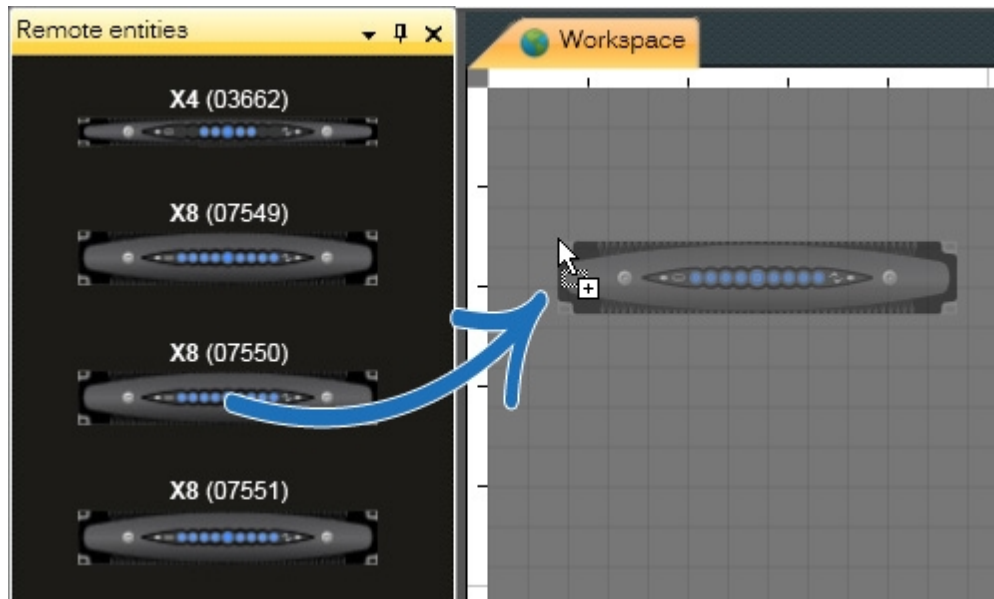
The Remote entities states "**Online: 3/4**" meaning that 3 out of 4 discovered units are on-line (one is off-line).

Furthermore, one of the on-line units is the current [Setup](#) (the one with 07551 serial number).

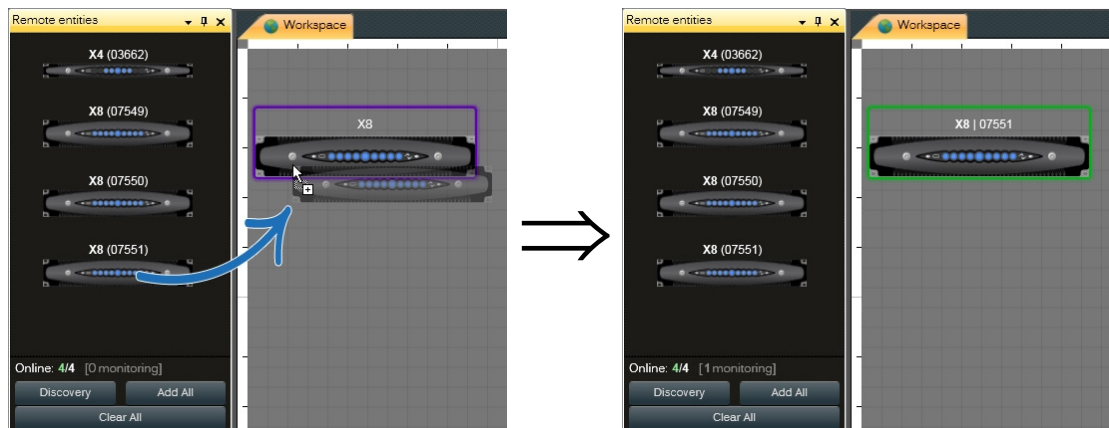
The Remote entities states "**[1 monitoring]**" meaning that one of the detected units has been added to the Workspace.

Adding remote entities to the Workspace

In order to populate the [Setup](#) double click or drag-and-drop the [entities](#) from the Remote entities.

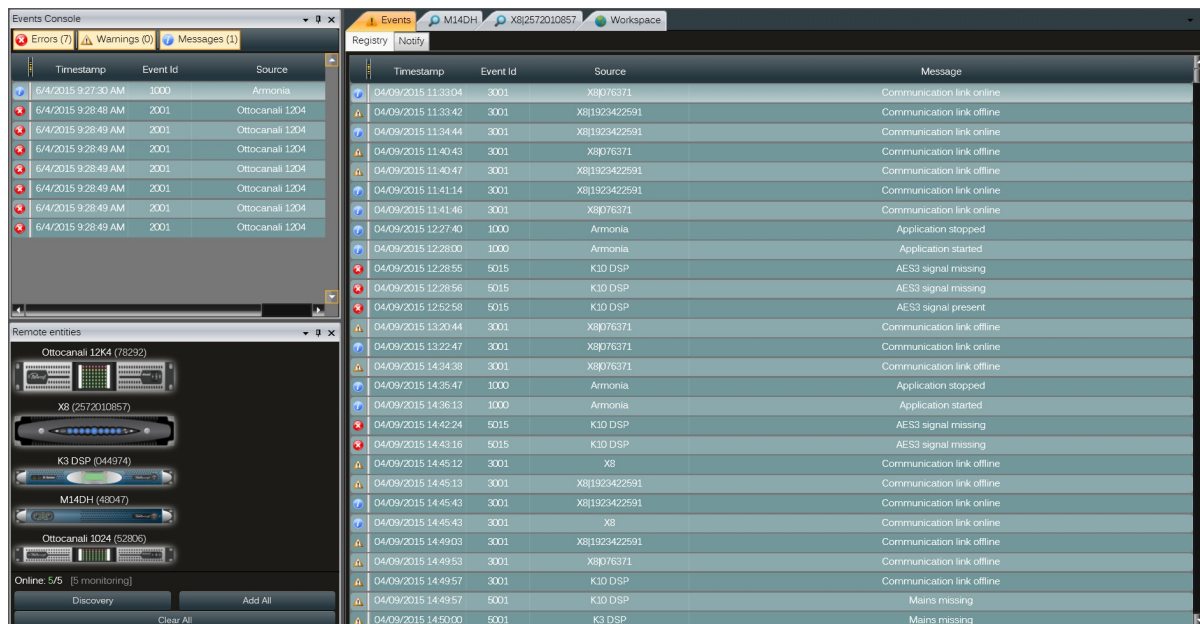


If the Setup has been realized off-line and contains only virtual entities, it is possible to synchronize the virtual setup to the actual sound reinforcement system.



Events and Event Console

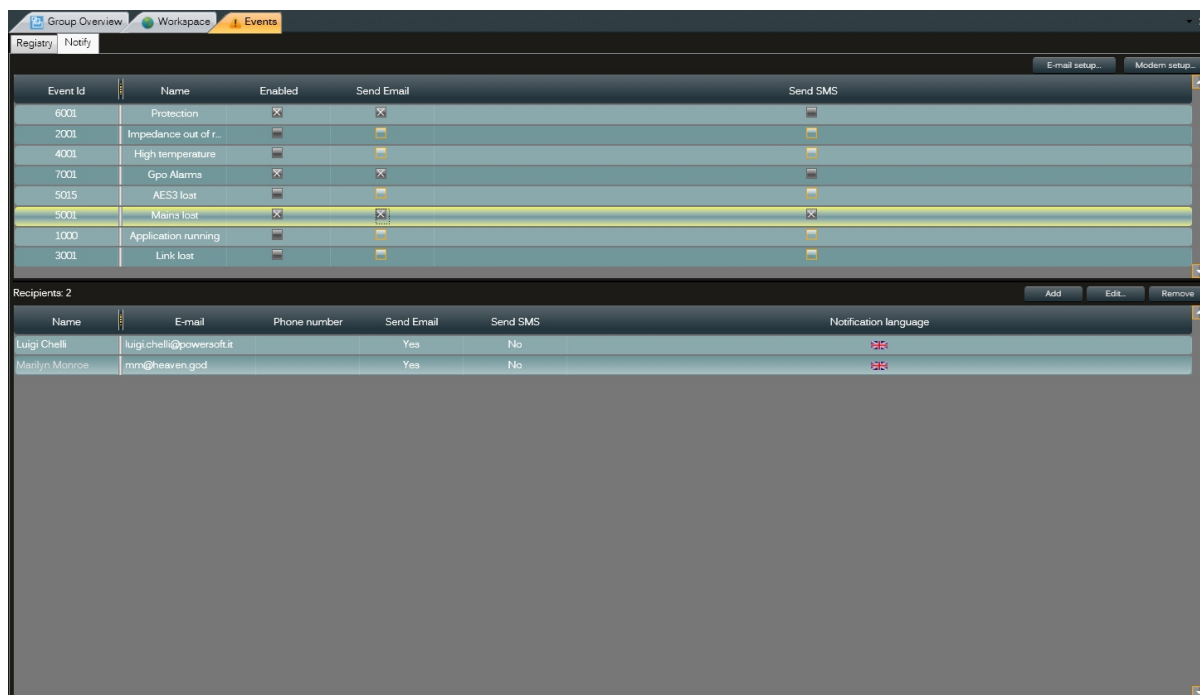
The Event and Event Console windows collect system alerts, namely status messages and error warnings. Alerts are sent by the networked units to Armonía: depending on the type of alert, Armonía triggers different actions, e.g. highlight the units in the [LivingWorkspace™](#) and send an email or an sms to a specified recipient; the Event window manages the latter actions.



The **Events** window stores in a registry the alert history: it collects all the status messages and error warnings sent by the units starting from the first run of Armonía with real entities. On the other hand, the **Event Console** shows a session history about the alerts coming from the actual networked units; it is a filter of the Events register focused on the running session. By clicking on the three buttons above the Event Console registry, it is possible to filter the alerts below, according to the selected type of message: Errors, Warning, Messages.

Through the Event window it is possible to define a set of alerts that can be sent by email or sms to specific recipients.

By clicking on the tab **Notify** on the top left corner of the Event windows, Armonía displays a list of events that could trigger the alerts and a list (initially empty) of recipients that could receive the alerts.



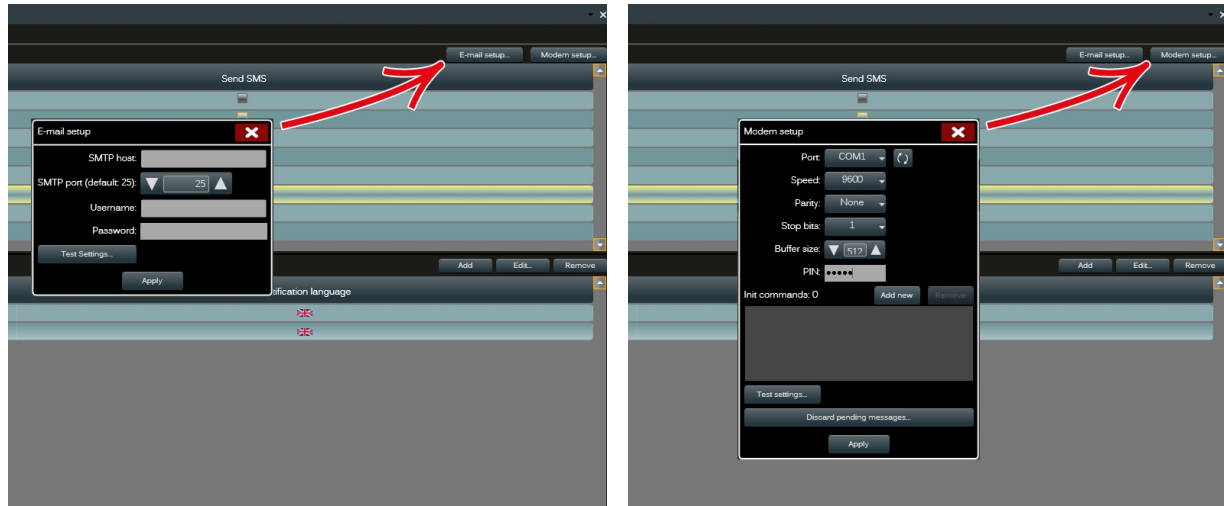
The available alerts are:

- Protection
- Impedance out of range

- High temperature
- GPO Alarms
- AES3 lost
- Mains lost
- Application running
- Link lost

In order for the alert messages to be sent to the specified recipients, the connection parameter for sending email or sms must be set.

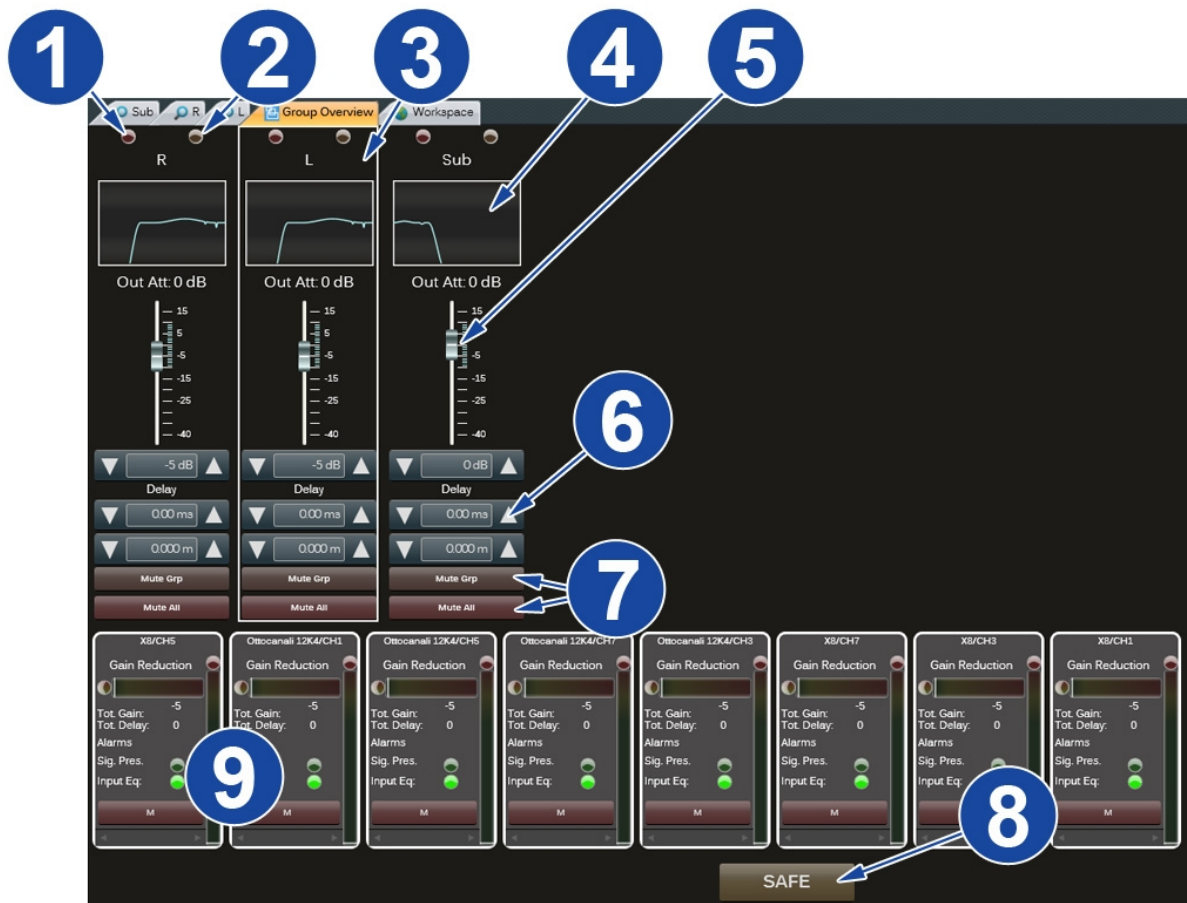
In the top right corner of the windows there are two buttons that provide access to the email and sms (modem) setting windows.



Groups overview

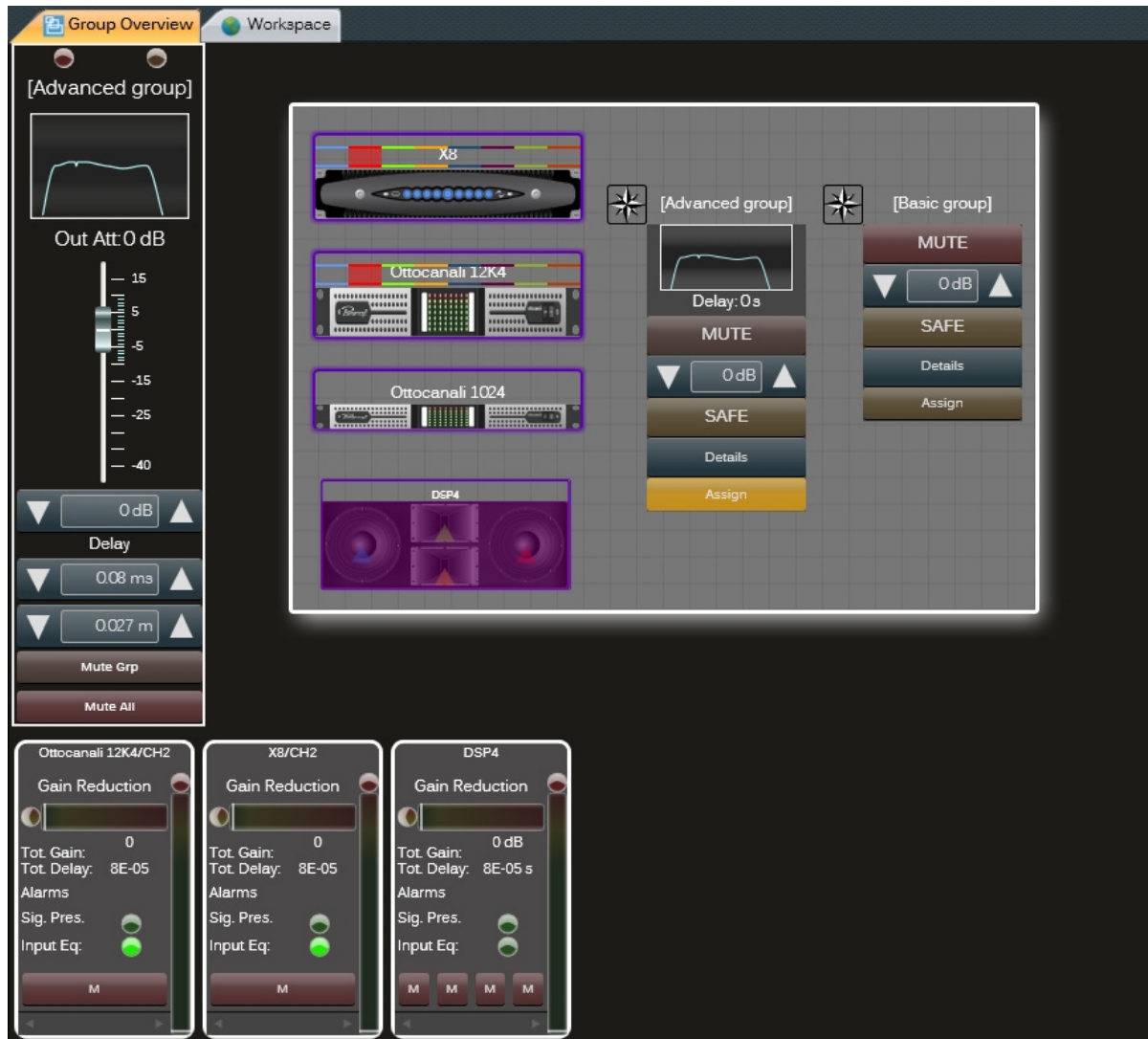
This Group overview windows provides an overview of all applied Advanced groups.

Each Advanced group is shown in a column: by selecting the group, a list of little control panels is shown on the lower part of the window; each control panel displays the parameters of a channel assigned to the selected group.



1. Clip state - lit when a channel in the group reaches clipping
2. Gain reduction - lit when a channel in the group activates the gain reduction
3. Selected Advanced group - a border highlight the selected group
4. Applied group equalization
5. Applied group level
6. Applied group delay
7. Mute group and Mute all
8. Safe button - set the window in safe operating mode: adjustment are inhibited
9. Channels control panels

Channel control panel



Armonía provides a control panel for each channel assigned to the Advanced group. The control panel displays:

- Signal metering with clip indicator;
- Gain reduction;
- Total gain applied to the channel (channel gain + groups gains)
- Total delay applied to the channel (channel delay + groups delays)
- Alarm messages
- Signal presence indicator
- Input equalization presence indicator
- Mute(s) output button

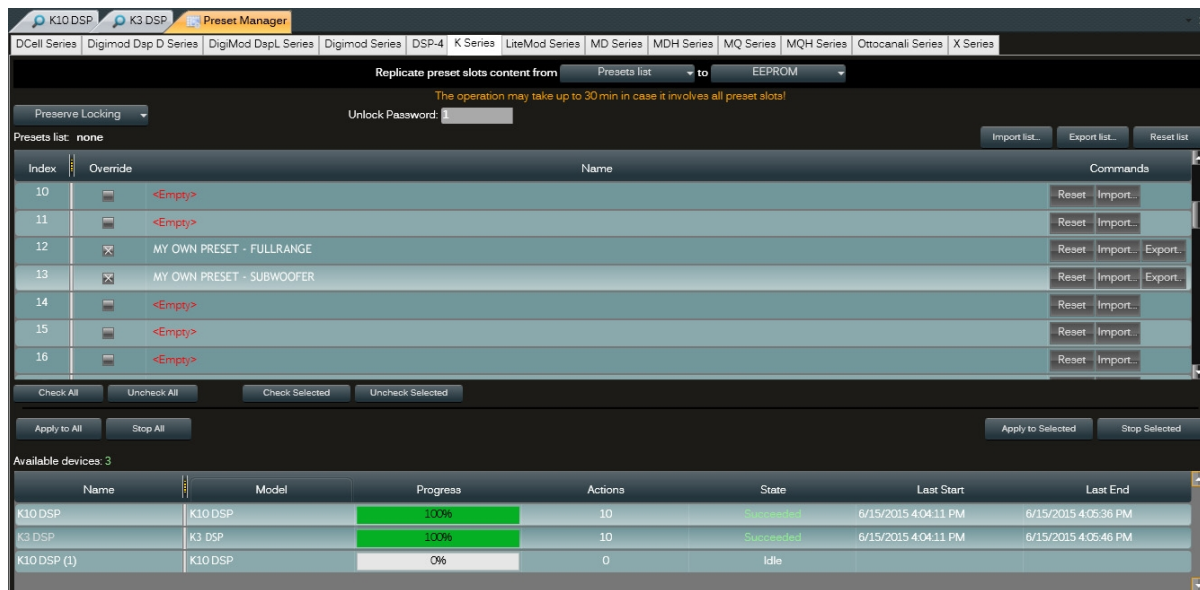
Since the Advanced group acts on the input stage of each channel, units like active loudspeakers may have more than one output mute command - one per output channel - depending on the applied preset.

Preset manager

The Preset manager provides access the entities on-board Preset sets.

Depending on the unit type, the internal EEPROM storage memory can save inside the unit the system configuration parameters and the DSP preset, in a finite number of preset slots (the number of preset slot depends on the type of device).

K Series and Duecanali Series amplifiers provide a further [SmartCard](#) reader that can be used to import/export up to 150 presets by means of a SmartCard provided by Powersoft.



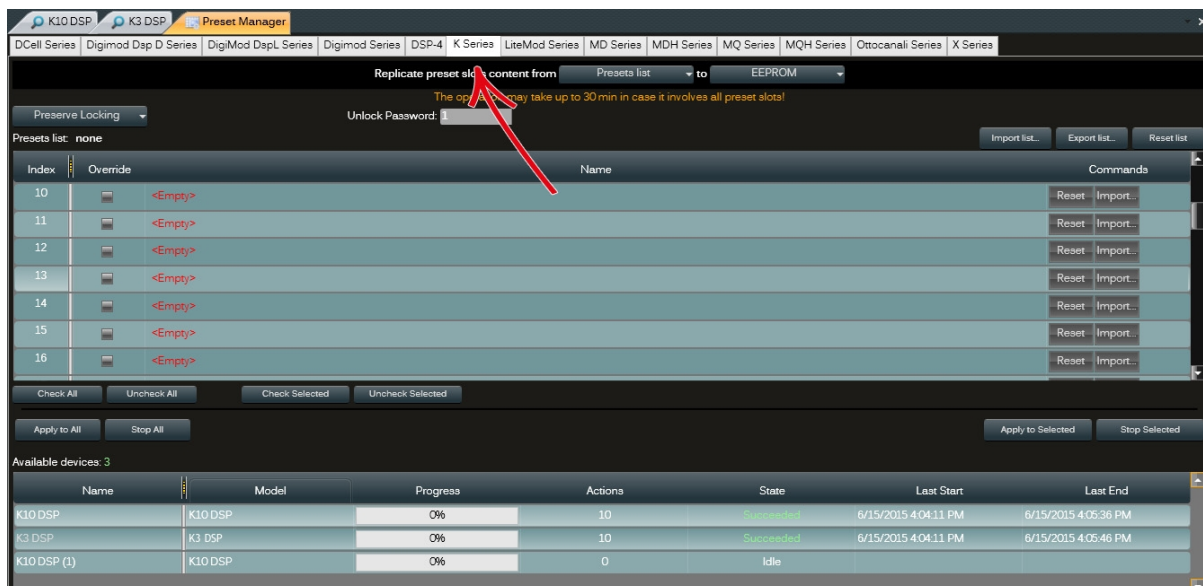
The Preset Manager in Armonía is a tool for managing (move, import and export) the [PAM](#) preset files within the entities physically connected to Armonía.

Furthermore, the Preset Manager allows to import and export the entire preset list to and from a unit.

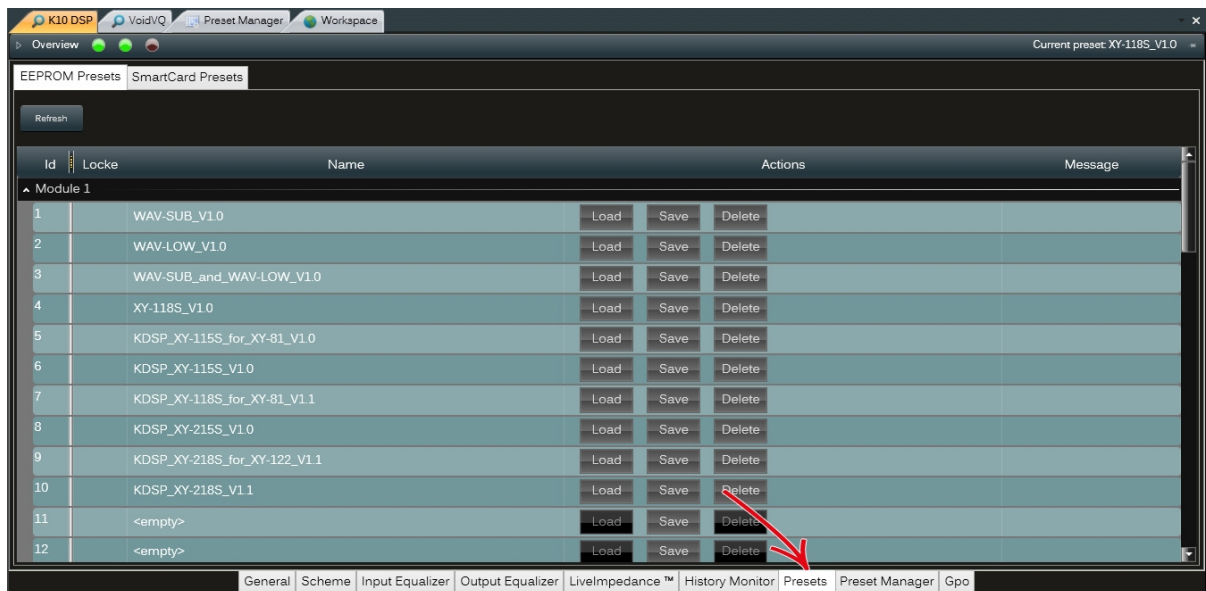
- [How import a preset in a unit](#)
- [How export a preset list from a unit](#)

How import a preset in a unit

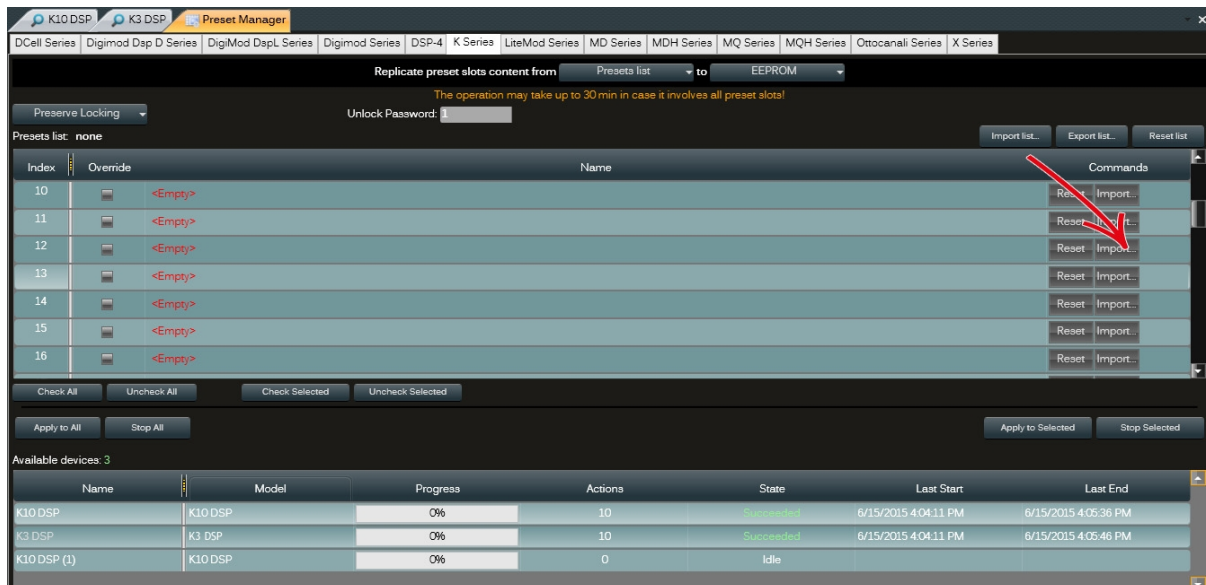
1. Define the type of entity (Series) in the top list.



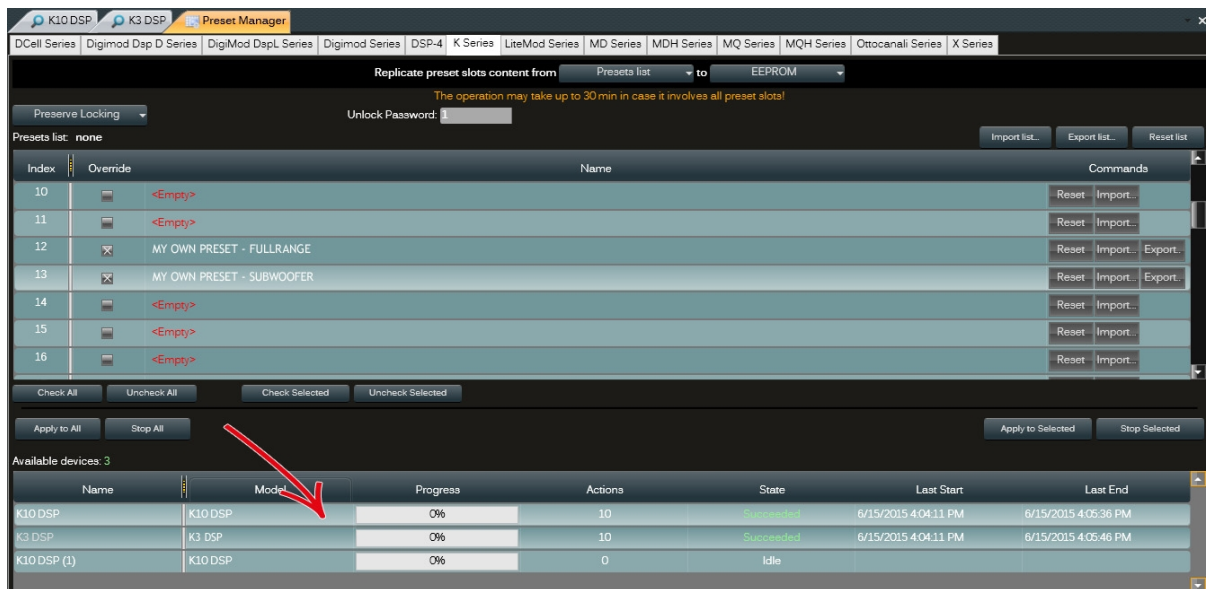
2. Define what preset slot to fill with the new preset.
If the slot contains a preset, it will be overridden, so take care to identify the correct slot. You can verify the usage of the local memory clicking on the Preset tab in the unit control panel.



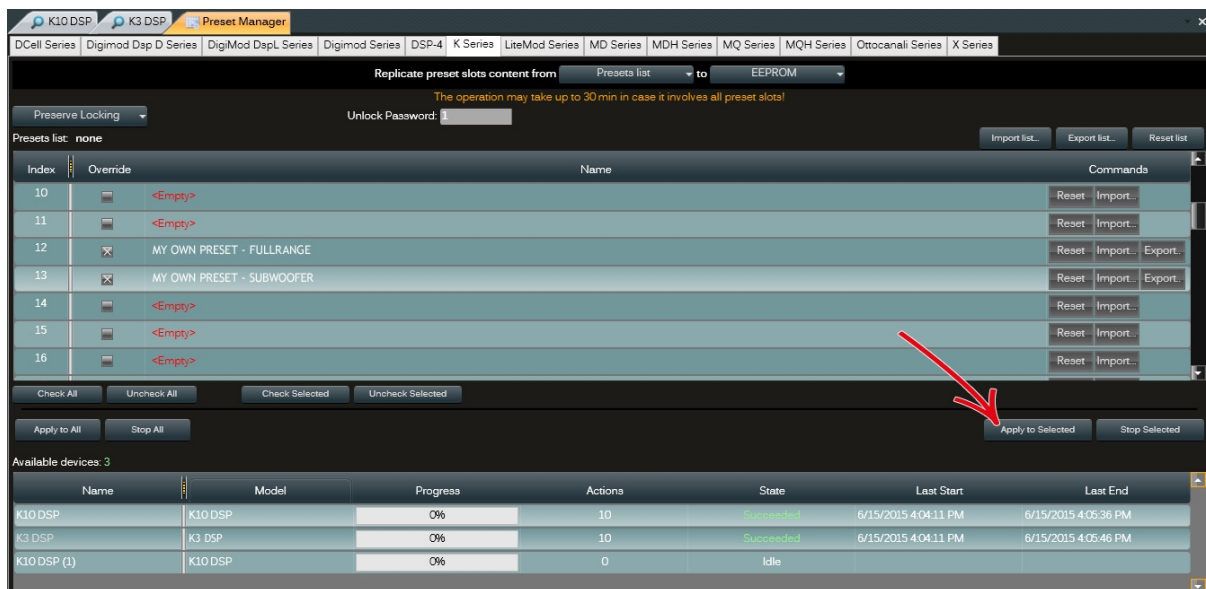
- In the selected slot, click on the the *Import* button: a new window on your file system will appear. Select the proper [PAM](#) preset file (take care to match the unit model).



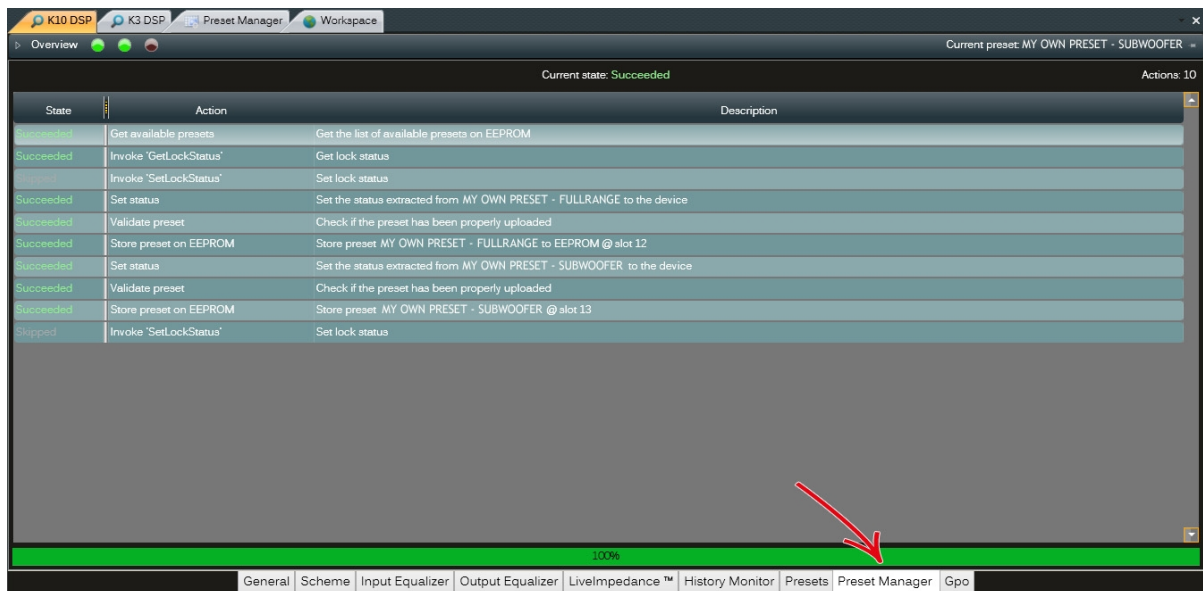
- Select the unit(s) you want to import the preset(s) in (possibly all), among the ones listed in the bottom table:



- Click on the *Apply to selected* (possibly *Apply to all*) button to import the preset(s):

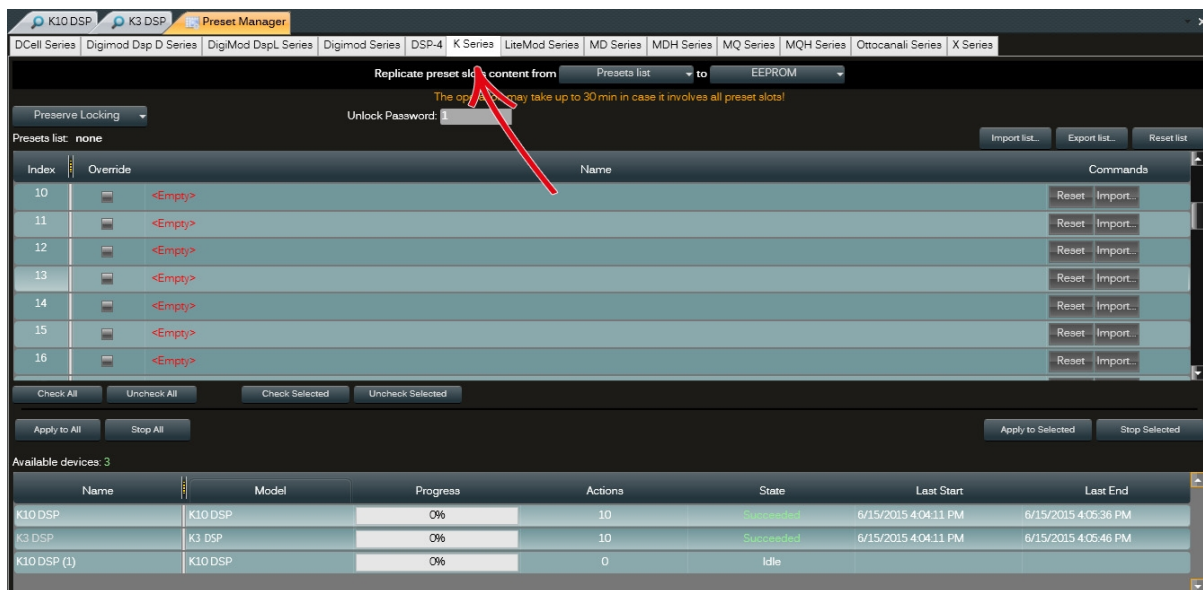


- You can verify the completion of the process through the progress bar and the Preset Manager tab in the unit control panel.

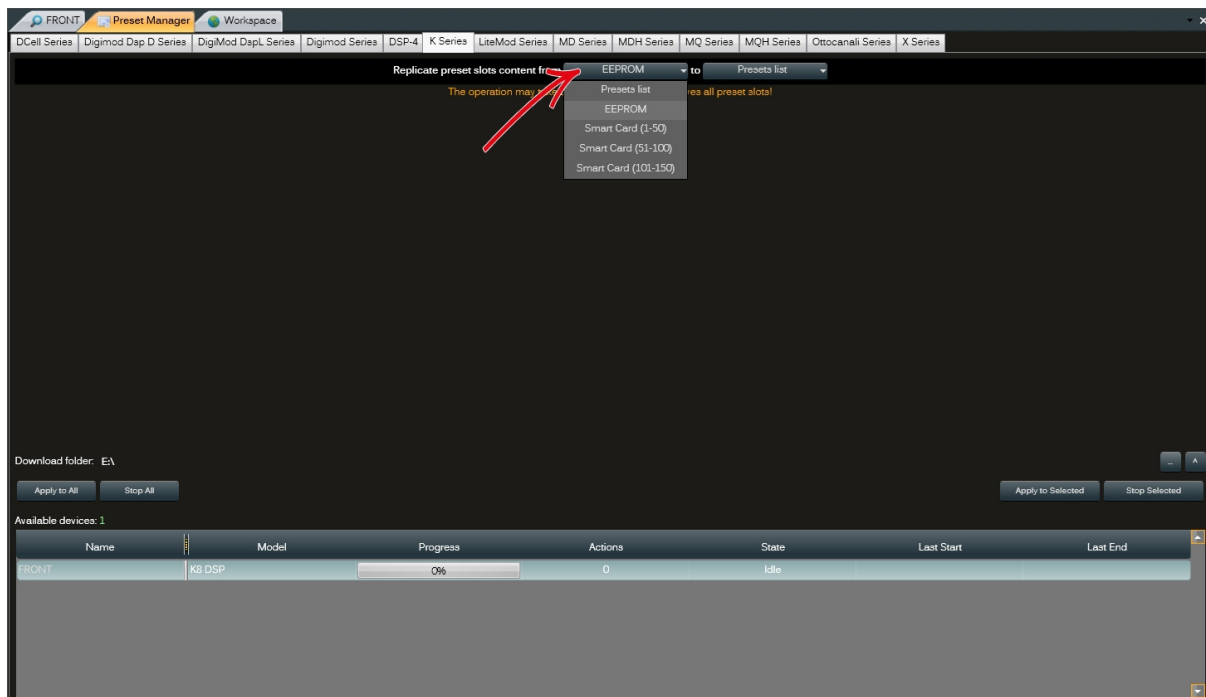


How export a preset list from a unit

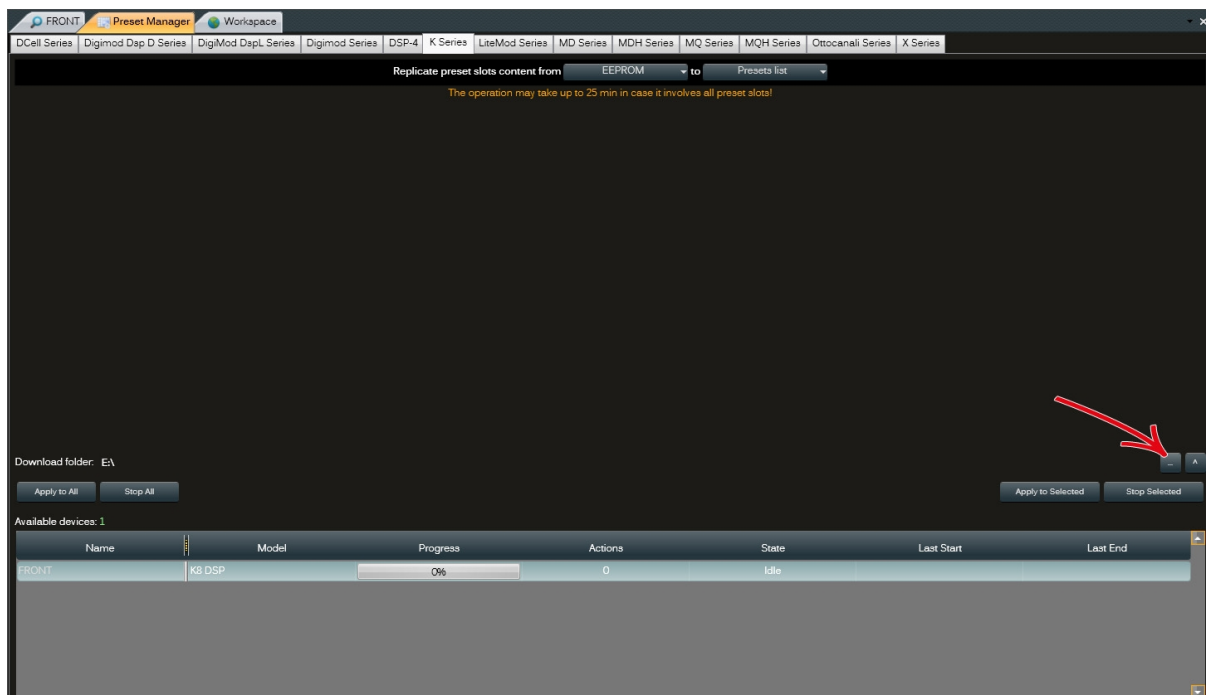
1. Define the type of entity (Series) in the top list.



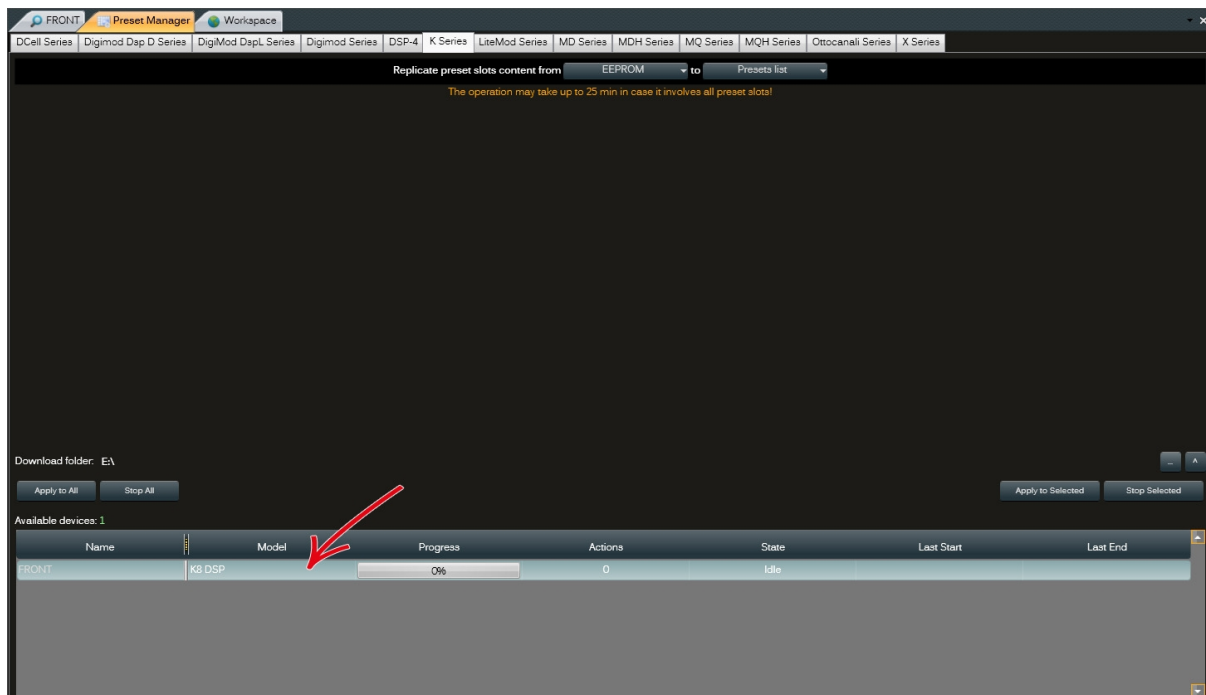
2. Click on the drop-down list at the top of the window and select the source from which to download presets.
Depending on the type of device, you could choose among different sources: for example, K Series provides the internal EEPROM storage memory and up to three blocks of 50 memory slots in the SmartCard.



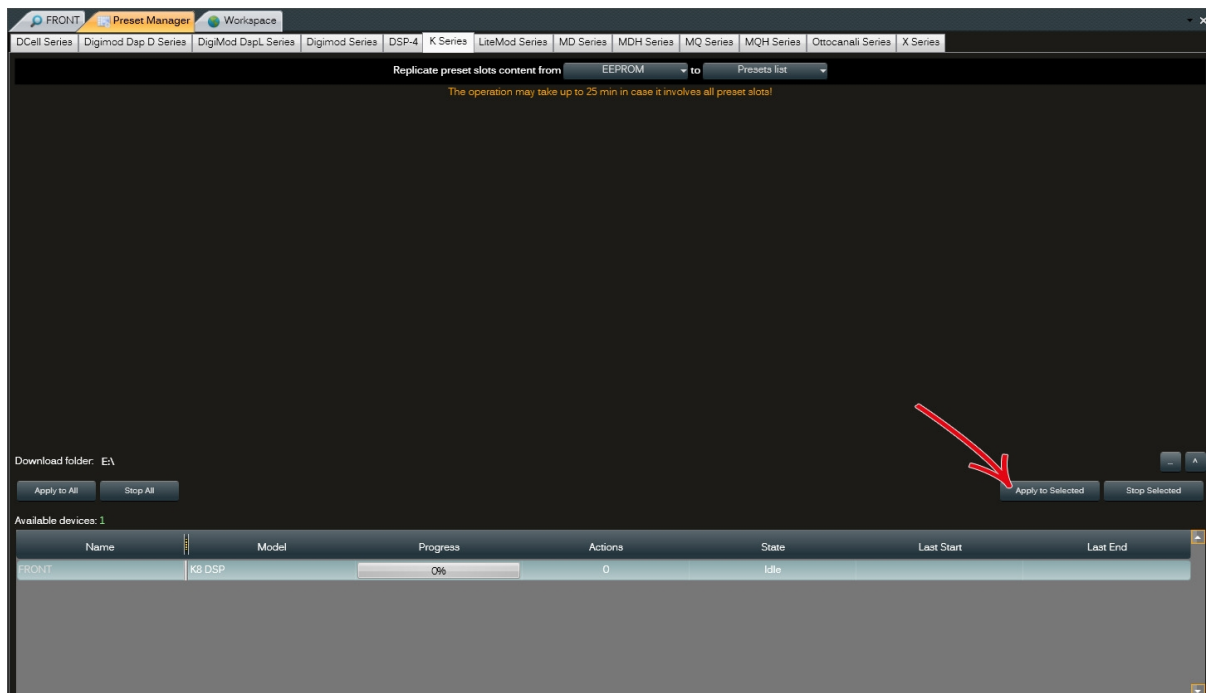
3. Select the destination path on your computer where the preset list file will be saved:



4. Select the device from which to export the presets:



- Click on the *Apply to Selected* button to start exporting the preset list(s): Armonía will create a [PLIST](#) file from the chosen memory location of each selected device.

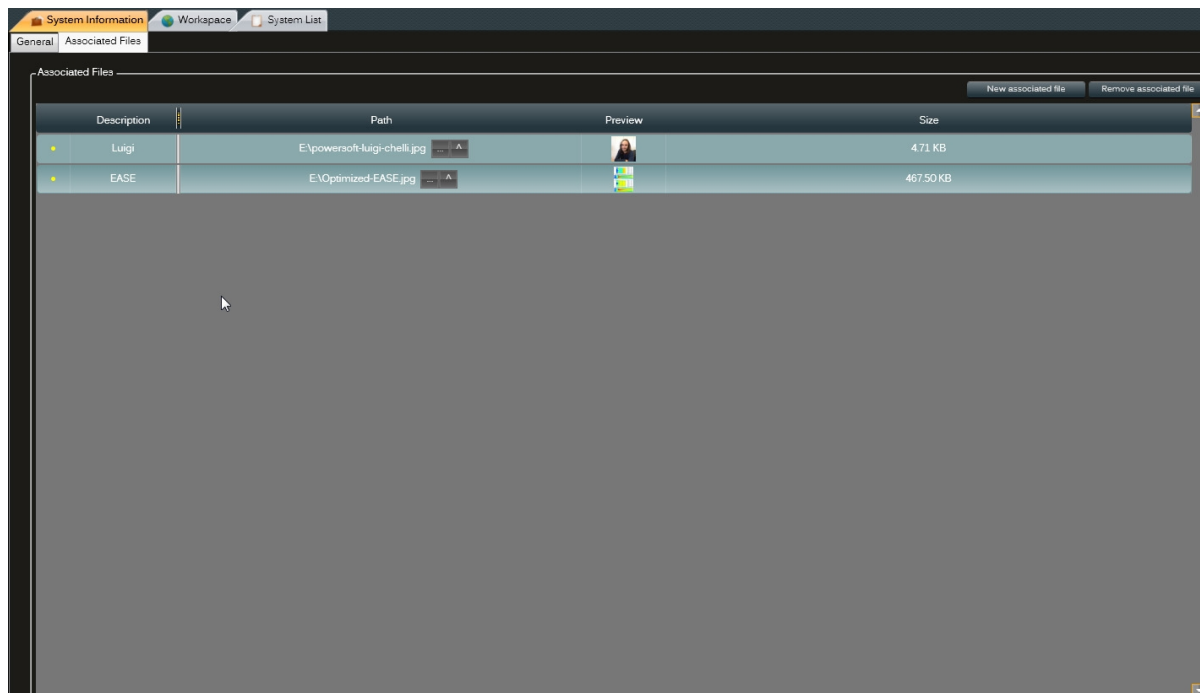
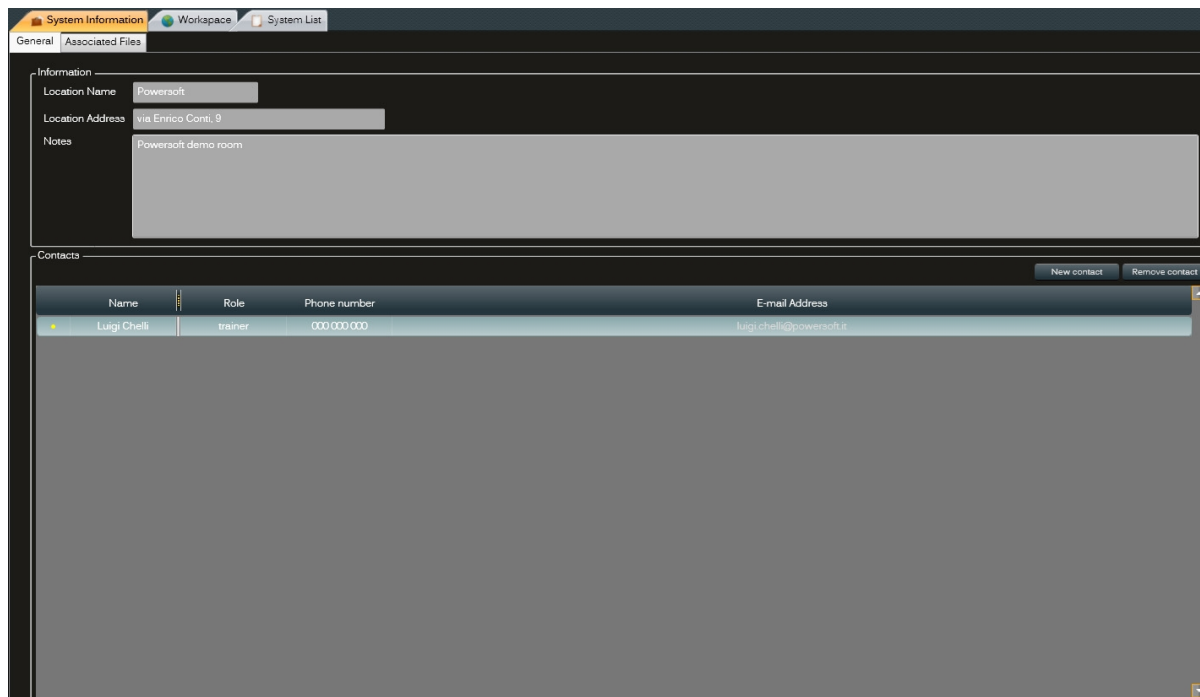


System information

The System information window allows the system engineer to manage information about the venue and the people involved in the project.

Furthermore, Armonía can handle the link to external resources such as images, preset files, projects from other applications, etc.

NOTE: Armonía handles just the link to the external resource, i.e. the path to the file; none of the linked resources is incorporated into the Setup.



System list

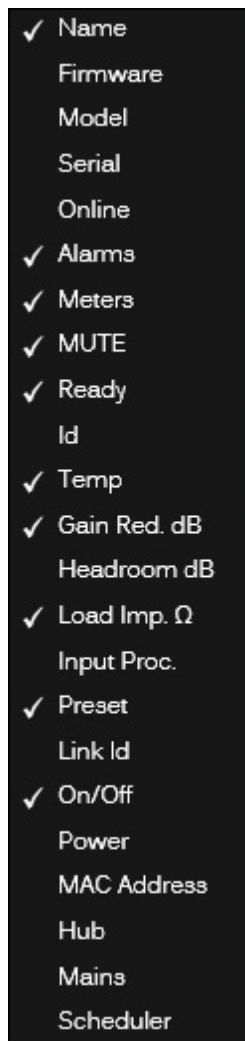
The System List displays the main details of all the amplifiers making up the current Setup (either on-line or off-line).

The System List is a useful tool both in live events and in maintenance environments, where multiple units have to be monitored.



1. **Mute All / UnMute All** commands
2. **Turn On All / Turn Off All** commands (available only for amplifiers supplied by a secondary DC power source, e.g. [PowerControlHub](#))
3. **Clear all filters** to clean the [filters](#) that may be set for the system list view
4. **Zoom** select row height among three levels
5. **Scheduler** set a time [schedule](#) for turning on/off specific amplifiers

The view is completely customizable: it is possible to select what column to show or hide. Right click on the header row and select among the following:



Filters

In large installation with tens of amplifiers, the system list may be very long: in order to make it easy to monitor the devices or specific contexts, the header cells of the system list provide filters to zoom in a selection of rows.

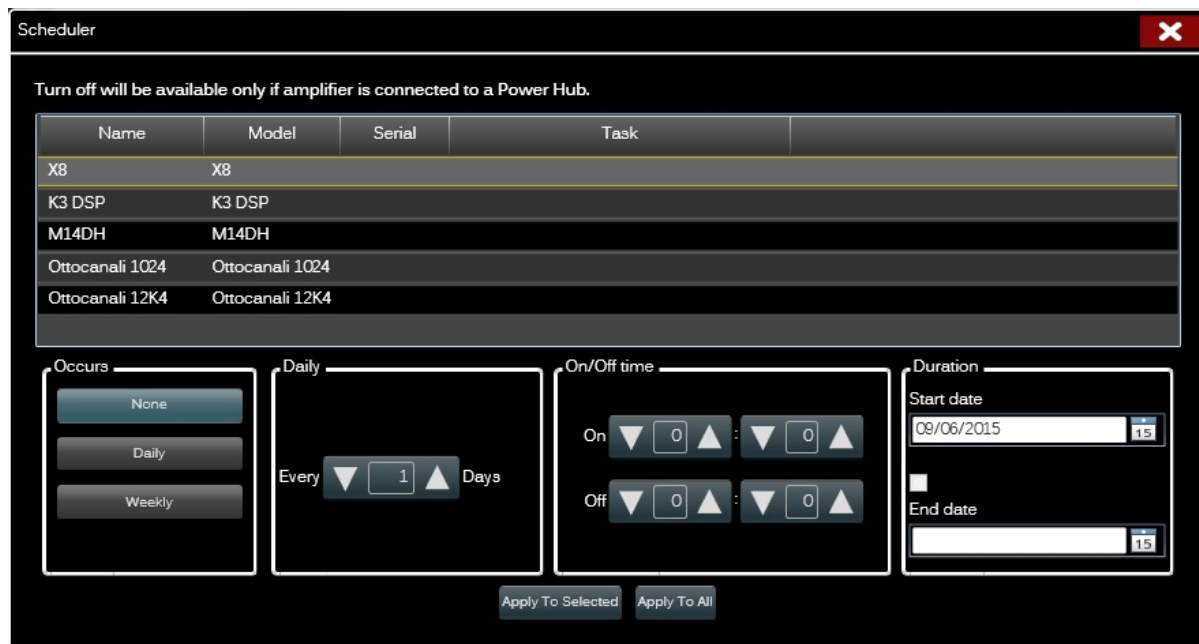
In order to remove the filters, click on the "**Clear all filters**" button in the upper menu bar.

Scheduler

The scheduler provides a tool for turning on and off specific amplifiers within the system list.

In order for the selected amplifiers to be turned on and off, a secondary DC power source, e.g.

[PowerControlHub](#), must be connected to the Vext plug available on the rear panel of the amplifiers.



Ribbon

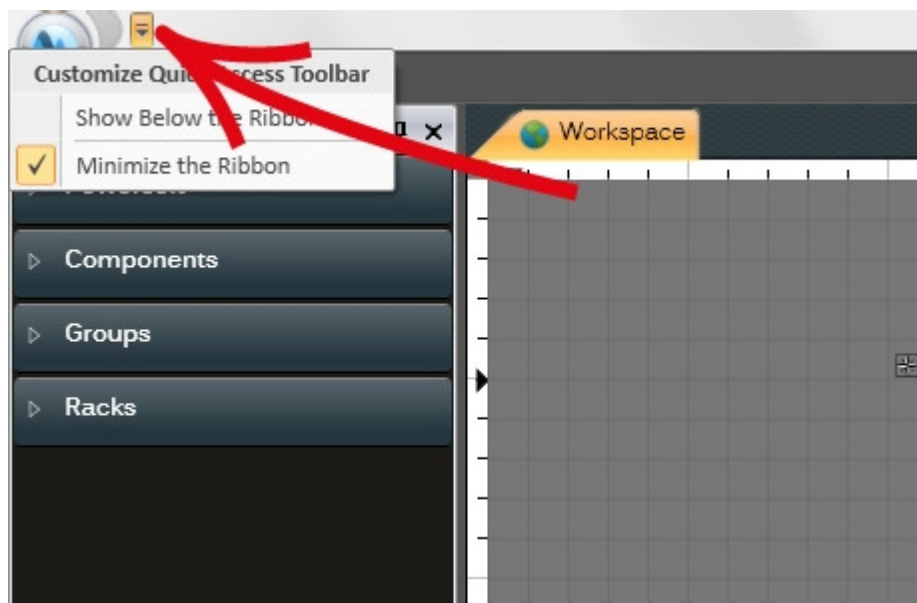
The Ribbon is a command bar that organizes the features of Armonía into a series of tabs at the top of the application window.

The Ribbon uses adaptive layout and resizing to present the optimal control layout for a variety of window size.

When the Ribbon is minimized, you see only the tabs [Home](#) and [View](#).

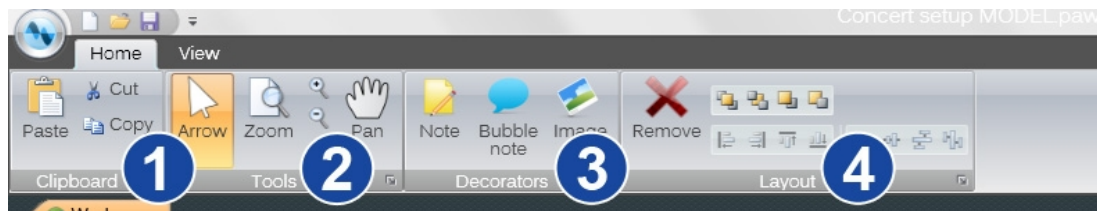
You can toggle the minimized view of the Ribbon by right clicking on the [Quick access toolbar](#) and checking/unchecking the command *Minimize the Ribbon*.

Keyboard shortcut: to minimize or restore the Ribbon, press CTRL+F1.



Home tab

The Home tab contains controls for working with the document content within the [Workspace](#).



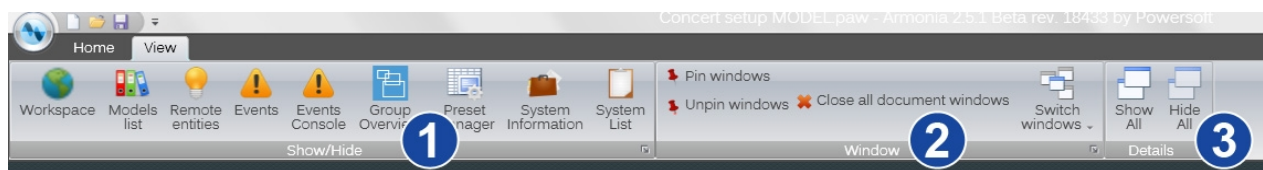
The Home tab contains four groups of tools:

1. **Clipboard** - includes tools that let to store text and graphics that you copy or cut from anywhere, and it lets you paste the stored items into any other place or Setup
2. **Tools** - provides tools for managing the Workspace view (see [Positioning tools](#) for more details).
3. **Decorators** - allows to insert notes and images into the Workspace (see [Notes and images](#) for more details).
4. **Layout** - provides tools for selecting, removing and managing the position of the units within the Workspace (see [Positioning tools](#) for more details).

View tab

The View tab contains controls for working with windows and views. The View tab content changes with respect to the type of users logged into Armonía.

The following is the default configuration of the View tab when either no [access control](#) is enabled or the actual user is admin.

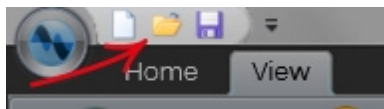


The View tab contains three groups of tools:

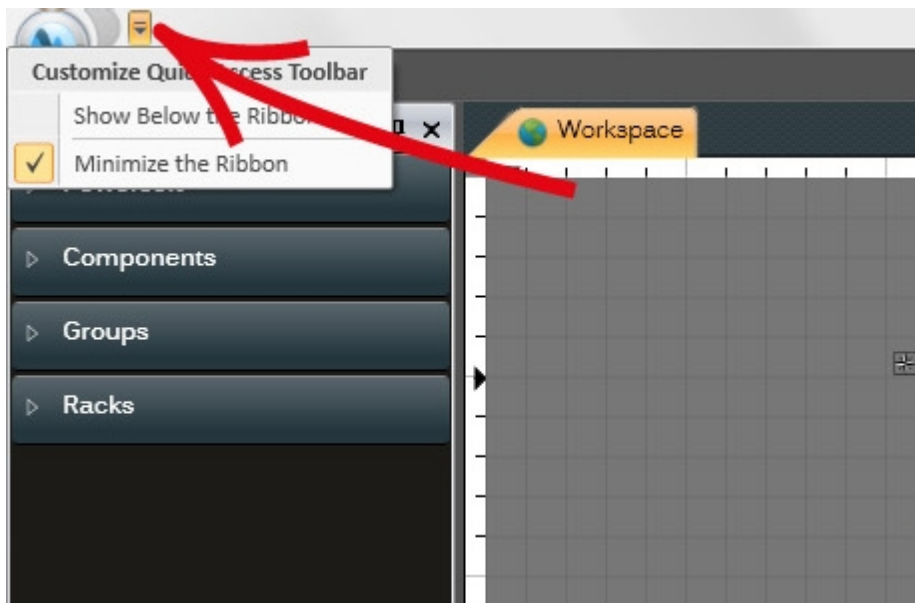
1. **Show/Hide** - allows to toggle the view of the windows one by one (see [Windows](#) for more details).
2. **Windows** - allows to arrange and manage the appearance of the windows (see [Managing windows appearance](#) for more details).
3. **Details** - provides the commands to either show or hide all windows.

Quick access toolbar

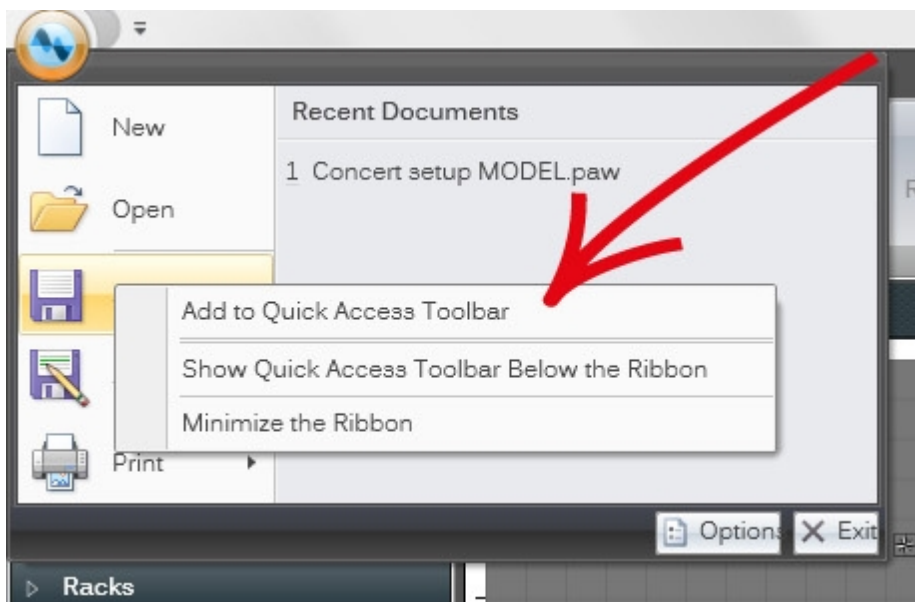
The Quick access toolbar is a small, customizable toolbar that exposes a set of commands that are specified by the application or selected by the user.



By default, the Quick access toolbar is located in the title bar of the application window but can be configured to display below the [ribbon](#).



Almost all [ribbon](#) and application menu controls allow their associated command to be added to the Quick access toolbar through the context popup menu (right click on the control to show the context popup menu).

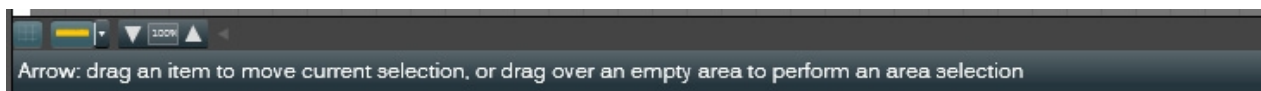


Statusbar

The Statusbar is a horizontal area at the bottom of a window where Armonía displays information about the current condition of the application.



The Workspace implements a further [Statusbar](#) that allows to manage the view: it provides tools for zooming and toggling of rulers and background grid.










Working with Armonía

- [Presets](#)
- [Active & Passive Loudspeakers](#)
- [Setup](#)
- [Processing architecture](#)
- [Color codes](#)

Presets

Armonía Pro Audio Suite provides many ways to export and import the configuration of the entire [Setup](#) and of single [entities](#).

Different configuration files are identified by their extension and associated icon:

-  [PAW](#) - Powersoft Armonía Workspace file
-  [PAM](#) - Entity Preset file
-  [CHP](#) - Channel Preset file
-   [IQP / OQP / POQP](#) - Input Equalizer Preset / Output Equalizer Preset / Pre-Output Preset file
-  [RACK](#) - Rack Preset file
-  [PLIST](#) - List of Presets file

Preset files can be managed:

- at global level via the Save and Save As button in the [Application menu](#) ([PAW](#) file);
- within the [Workspace](#) through the context menu associated to the unit icon ([PAM](#) and [RACK](#) files);
- on a specified group of units via the [Preset Manager](#) ([PLIST](#) file);
- at high level of granularity, within the unit control panel, at the input and output processing sections ([IQP](#), [OQP](#), [POQP](#) and [CHP](#) files).

PAW

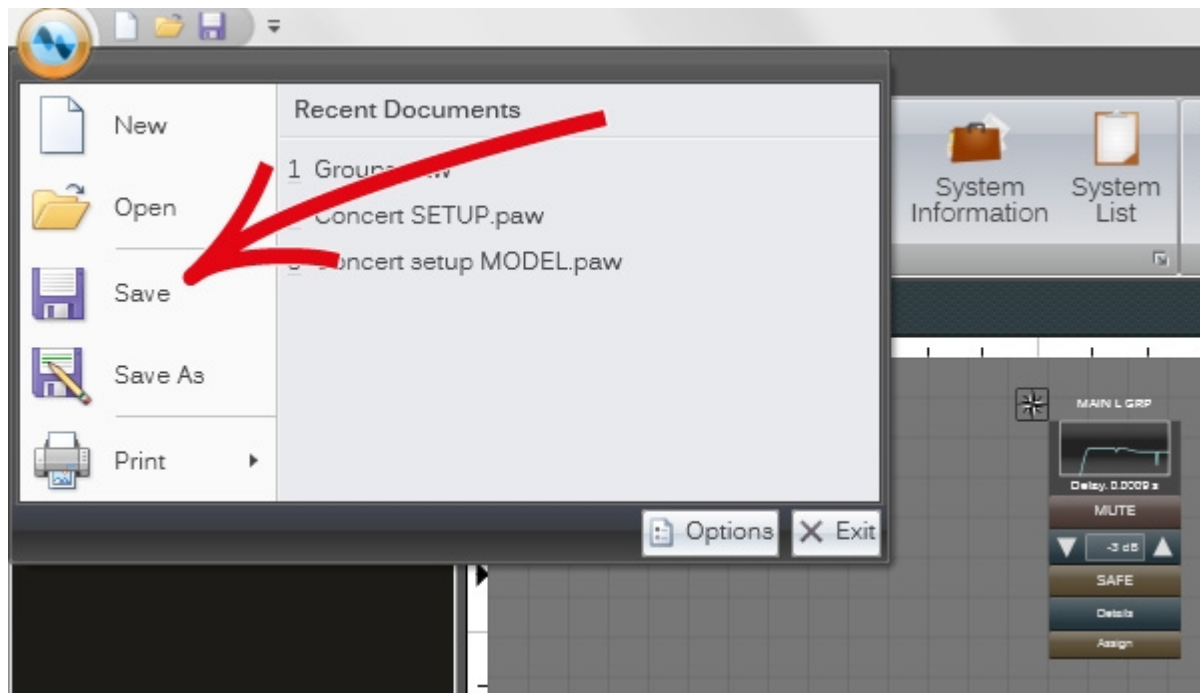
Powersoft Armonía Workspace file

This is the default file associated to Armonía: the entire Setup configuration in the Workspace can be saved in a PAW file.

In order to save the Setup in a PAW file, click on the Armonía button and select Save or Save As.

On the *Recent Documents* panel it is possible to select to open a PAW file among the Setup files recently opened.



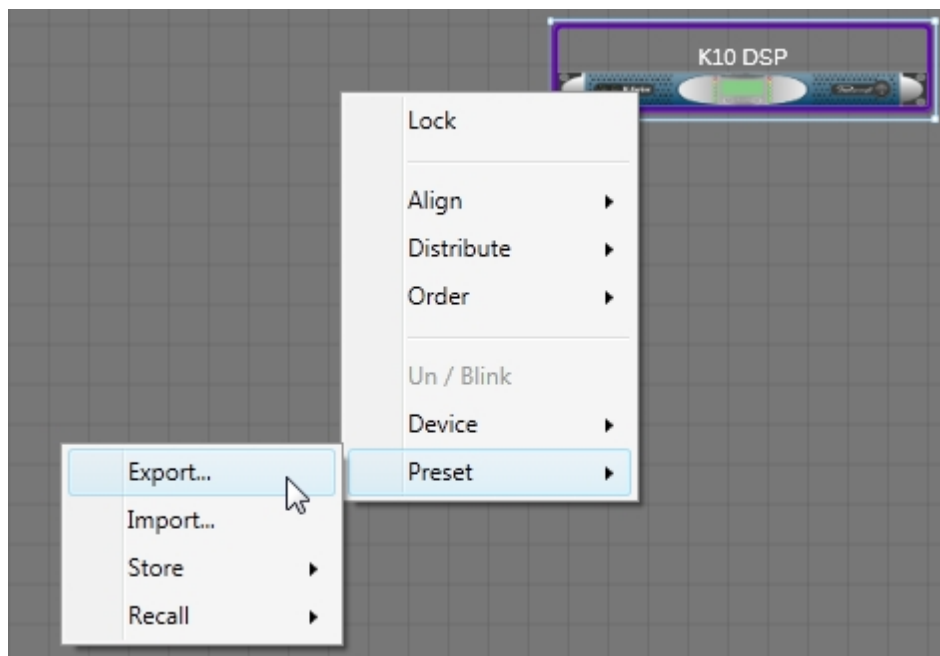


PAM

Entity Preset file

The settings of an amplifier can be saved in your computer as a Preset file with PAM extension.

Right click the amplifier in the Workspace, select *Preset* in the context window, then *Export...*



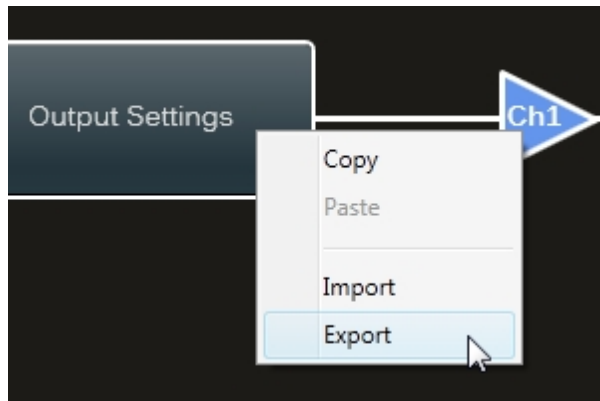
CHP

Channel Preset file

Channel Preset embeds the settings of the selected channel: source selection, input and output equalizers, limiters, damping and output settings.

Channel Preset exporting feature is available on K Series, M Series, Ottocanali 1204, Duecanali Series, DSP-C, DSP-D and DSP-4 models.

Open the Schema of the device, right click the colored triangle representing the output, then select *Export*

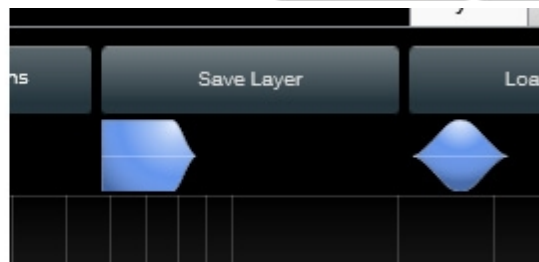
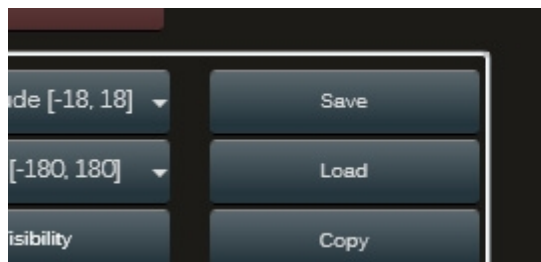


IQP / OQP / POQP

Input Equalizer Preset / Output Equalizer Preset / Pre-Output Preset file

Since Input, Output and Pre-Output implement different technologies, they can be exported in different file formats

In order to save the equalization curve, press the SAVE button located in the equalizer windows (the actual position of the button depends on the device and the type of equalizer).

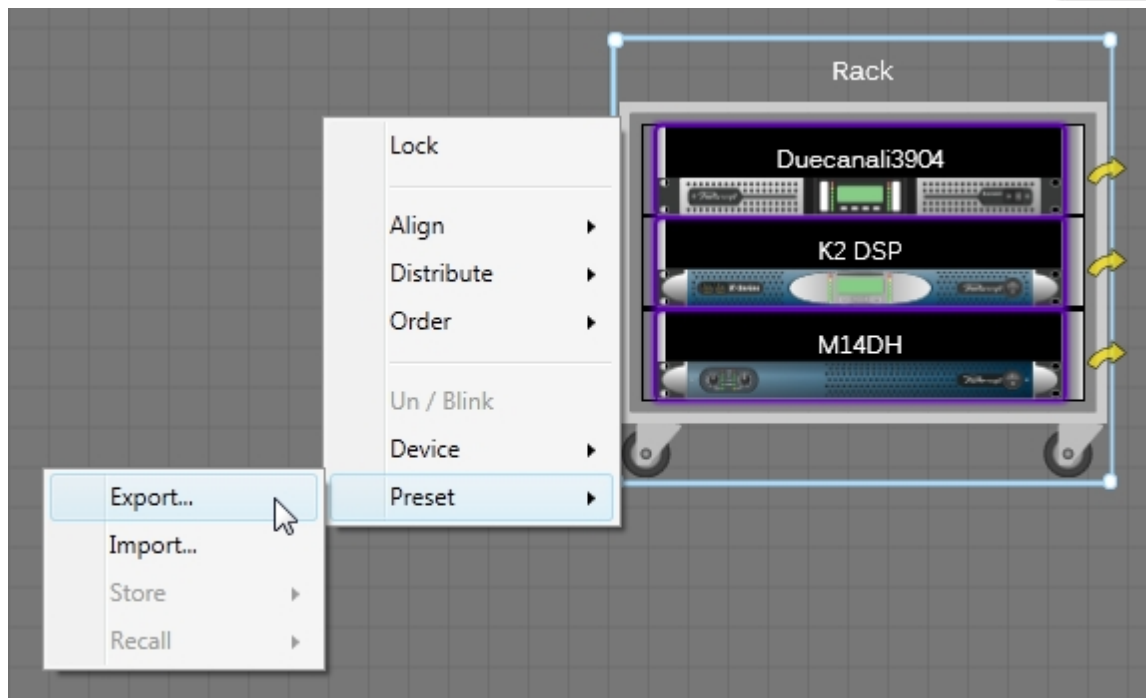


RACK

Rack Preset file

The Rack Preset embeds the type and sequence of the amplifiers contained in the rack and each single configuration.

Right click the frame of the rack, select *Preset* in the context window, then *Export*



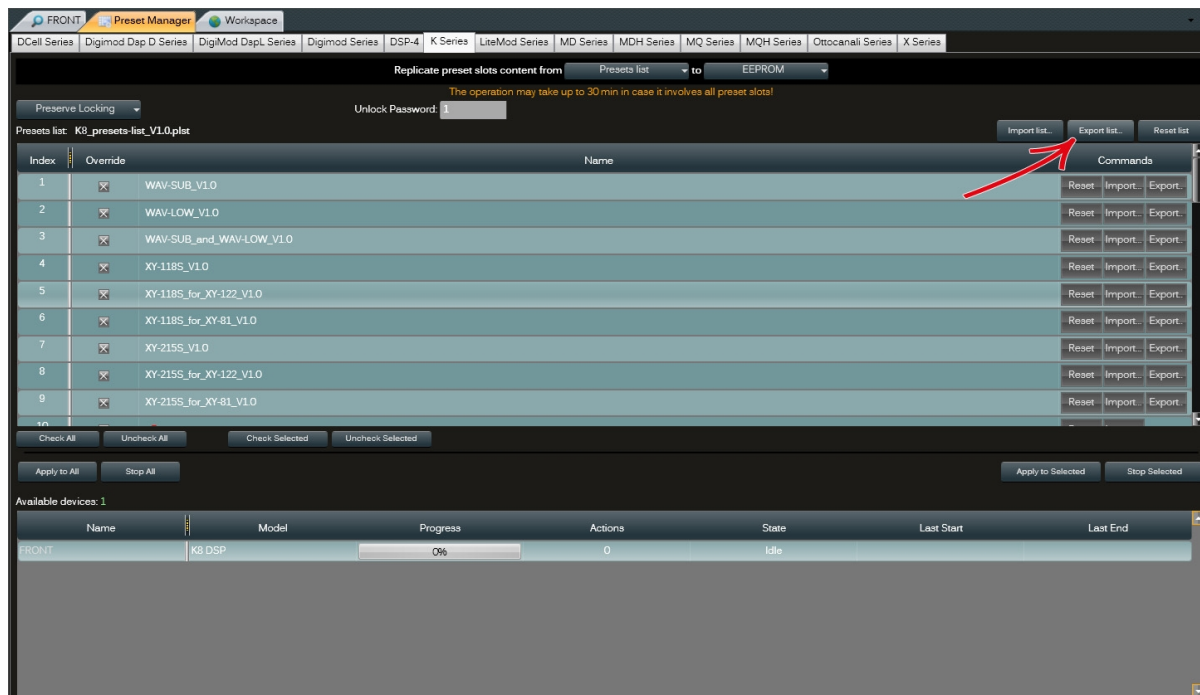
PLIST

List of Preset file

The PLIST file contains all the Preset from the internal storage memory (EEPROM) of a unit, or a [SmartCard](#) inserted into a K Series or Duecanali Series amplifiers.

The [Preset Manager](#) provides many ways to export a PLIST file from a list stored in the computer or the ones saved into the networked units.





Active & Passive Loudspeakers

It is possible to place both active and passive loudspeakers in the Workspace.

- Active loudspeakers are [entities](#) (virtual or remote) that implement a dashboard providing access to its operating parameters.
Active loudspeakers are recognizable by the colored triangles representing the output channels (see the [Channel Color Code](#) for details).
Active loudspeakers are listed by amp module name and DSP type in the [Module list](#)'s Powersoft group.

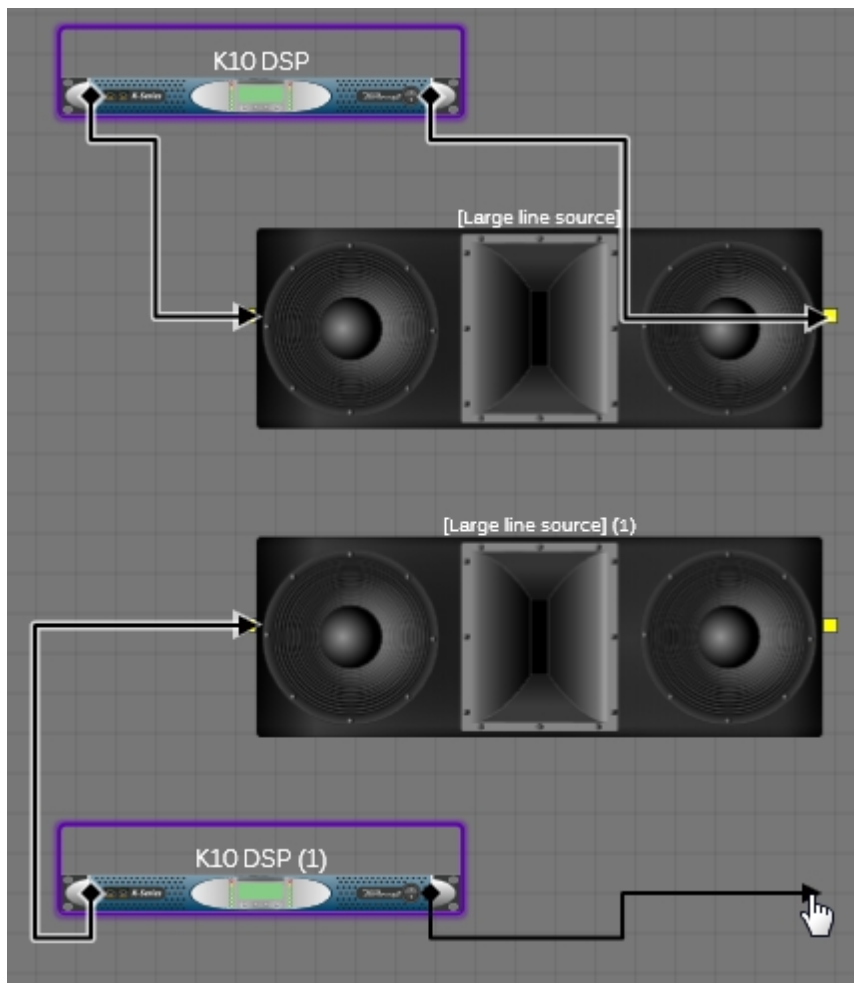


- Passive loudspeakers are [components](#) useful to the user to represent the current sound reinforcement system, but don't implement any remote control.
Passive loudspeakers are listed by type in the Module list's Components Group.



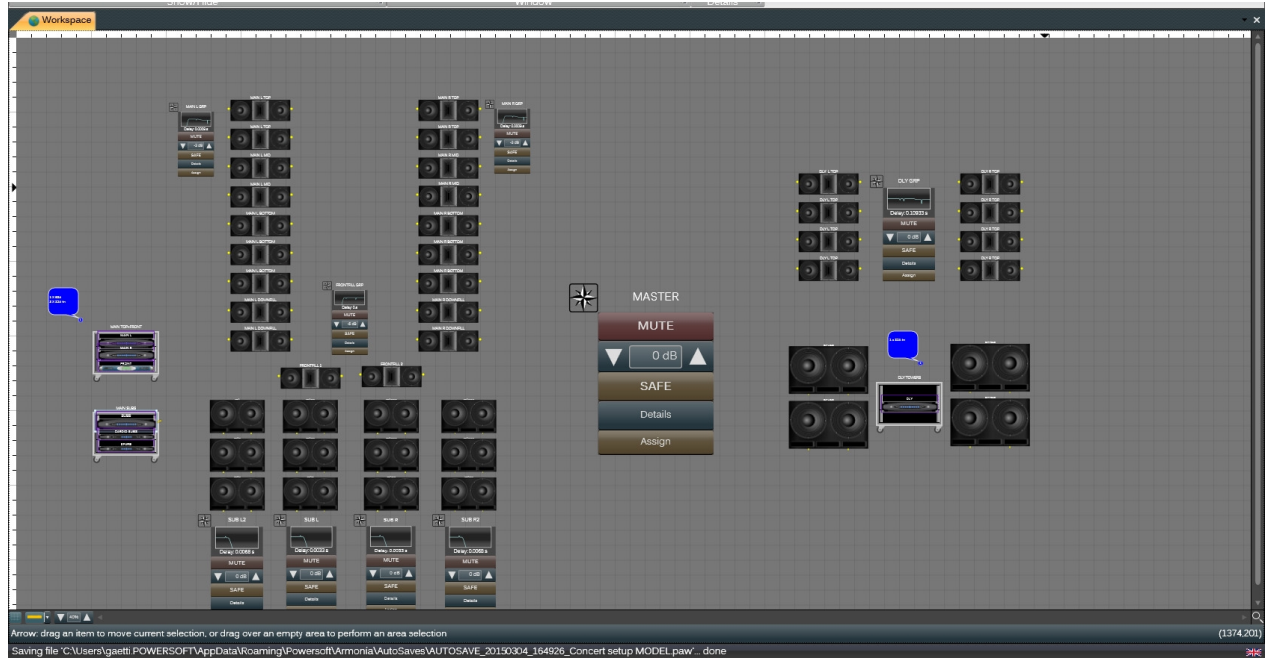
Passive loudspeakers have yellow handles where it is possible to connect the amplifier output channels.

Connections are merely descriptive since the passive loudspeakers components have neither controls nor operating parameters.



Setup

A Setup is a set of units (entities or components) and parameters into the [Workspace](#) representing the sound reinforcement system you are going to manage.



A Setup can contain the following:

- [Entites](#)
 - Power amplifiers;
 - Active loudspeakers;
 - DSPs
 - Racks;
- [Components](#)
 - Groups;
 - Processors;
 - Loudspeakers;
- [Notes and images](#).

A Setup may be saved, managed and controlled:

- Saving a Setup allows you to store and recall all entities and components operating parameters.
- In order to manage a Setup, Armonía provides tools for adding/removing units, align and link components. Setups can be managed both [on-line](#) and [off-line](#).
- Armonía implements full remote control of the entities' operating parameters, alarms and GPIO during live performance.

Off-line Setup

An off-line Setup represents a sound reinforcement system when no units are physically present or connected to Armonía.

All [entities](#) in an off-line Setup may be completely managed, modified and tuned as virtual entities but their remote counterpart can not be controlled because they are not physically connected to Armonía. Off-line units can be recognized by their red border.



Off-line unit

The virtual entities are special off-line units that don't have a remote counterpart but can be inserted into the Workspace and managed within the Setup.



Virtual entity

Refer to the [Amplifier Status Color Code](#) for more details about unit status.

Off-line operating can be very useful as it provides the system designer a way to configure the sound reinforcement system even if Armonía is not connected to the network of amplifiers and DSPs. The Setup configuration can then be uploaded to the remote entities (physical units) at a later date, by [syncing](#) the virtual units to the real ones.

On-line Setup

When Armonía is connected to the network of amplifiers and DSPs, it is possible to work on-line and manage the live Setup in real time.



On-line unit

Note that when under Armonía control, local control of the remote entities parameters may be disabled or inhibited.

Syncing

When aligning a [remote entity](#) to its [virtual entity](#) counterpart in the Workspace, Armonía asks in what direction to synchronize the parameters:

- the remote entity import the operating parameters from the virtual entity:



- the remote entity export the operating parameters to the virtual entity:



At any time Armonía may detect some difference between a remote entity's operating parameters and its configuration in the Workspace (e.g. while synchronizing a remote entity to its virtual counterpart in the Workspace); when this happens the **DeSync** dialog window will appear.

The DeSync dialog window allows to define in what direction to synchronize the parameters.



Please note that even if the selected amplifier is not a K Series amplifier, the DeSync window will always show the images of K Series amplifiers.

Entities

An entity is a unit recognized by Armonía that has a control panel or a dashboard providing access to its operating parameters.

Entities are collected within the [Model list](#) ([virtual entities](#)) and/or discovered in the [Remote entities](#) window ([remote entities](#)).

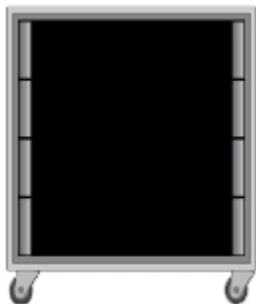
Entities can be inserted into the [Workspace](#).

The following component are example of entities:

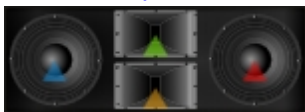
- [Power amplifiers](#);



- [Racks](#);



- [Active loudspeakers](#)



New releases of Armonía may implement new type of entities.

Virtual entities and Remote entities

Some entities may be purely virtual, such as the [racks](#), or have a physical remote counterpart (e.g. amplifiers); in the later case, Armonía may connect the physical remote unit to its virtual representation in the Workspace: the physical remote unit is a remote entity.

Remote entities may be:

- [off-line](#): Armonía lacks the connection with the unit, but it is possible to manage its virtual counterpart in the off-line Setup.
- [on-line](#): the unit may be inserted in the Workspace or [synchronized](#) to its virtual counterpart.

In order to understand if an entity is on-line or off-line:

- if the remote entity has a virtual counterpart, simply look at the border of the virtual entity: see the [Amplifier Status Color Code](#) for details;
- open the [Remote entity](#) window and click on the Discovery button: on-line entities will be recognized.

If and on-line Setup has been properly saved, by default Armonía automatically synchronizes all virtual entities to the remote entities at discovering.

Components

A component in a Setup is a unit that can't be accessed in its operating parameters.

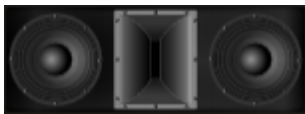
The components may be used in a Setup to improve the system description and identify connections in the Workspace.

Type of components are:

- Processors;



- [Passive loudspeakers;](#)



- [Not remoteable units](#)



New releases of Armonía may implement new type of components.

Racks

A rack is a virtual entity that can be filled with a limited number of other entities, such as amplifiers and processors.

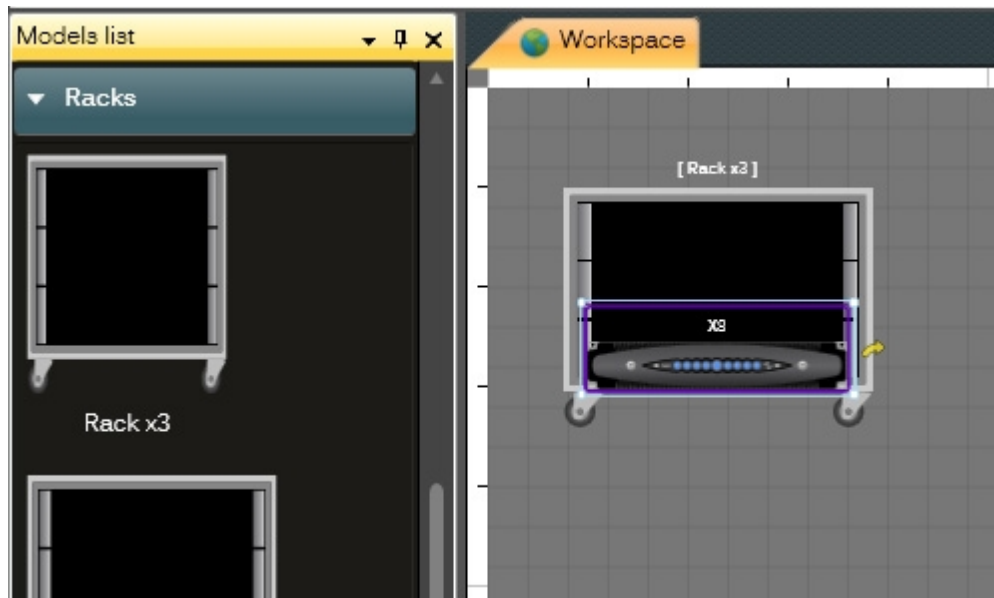
The rack provides a control panel collecting the operating parameters of the entities contained into the rack.

Select and fill the rack

The [Model list](#) contains a series of virtual racks aimed to be used to group other components.

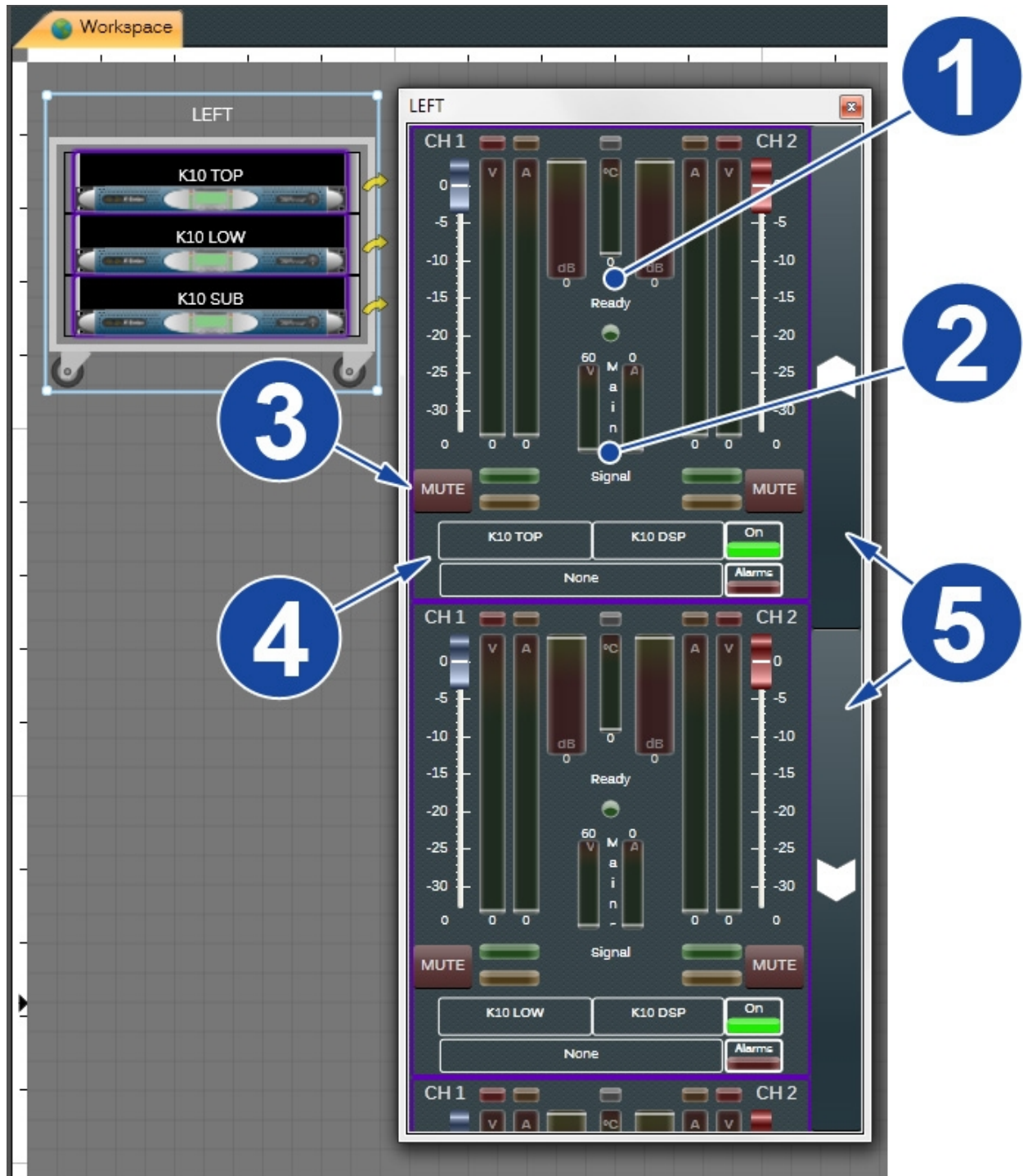


Rackmountable entities may be dragged from the library or from the Workspace and dropped into the rack. When an entity is correctly located in the rack, a small yellow arrow appears to its right when it is selected. Clicking on this arrow removes the entity from the rack for alternative placement.



Rack Control Panel

Double click on any part of the border of the virtual rack to open the Rack Control Panel. By default the amplifiers details are carried out ordered left to right, starting from the top amplifier to the bottom one, but it is possible to arrange the windows of the Rack Control Panel differently.



Each amplifier in the rack has its own set of dedicated details:

1. **Amplifier operating parameters:**
 - Output level – fader;
 - Voltage – meter, current value and clipping LED
 - Current – meter, current value and clipping LED
 - Gain reduction – meter and current value
 - Operating temperature – meter and alert LED
2. **Mains tension and current**
3. **Mute and Group assignment:**

- Ready – LED
- Mute – button and alert LED
- Signal – green LED
- Group assignment – yellow LED

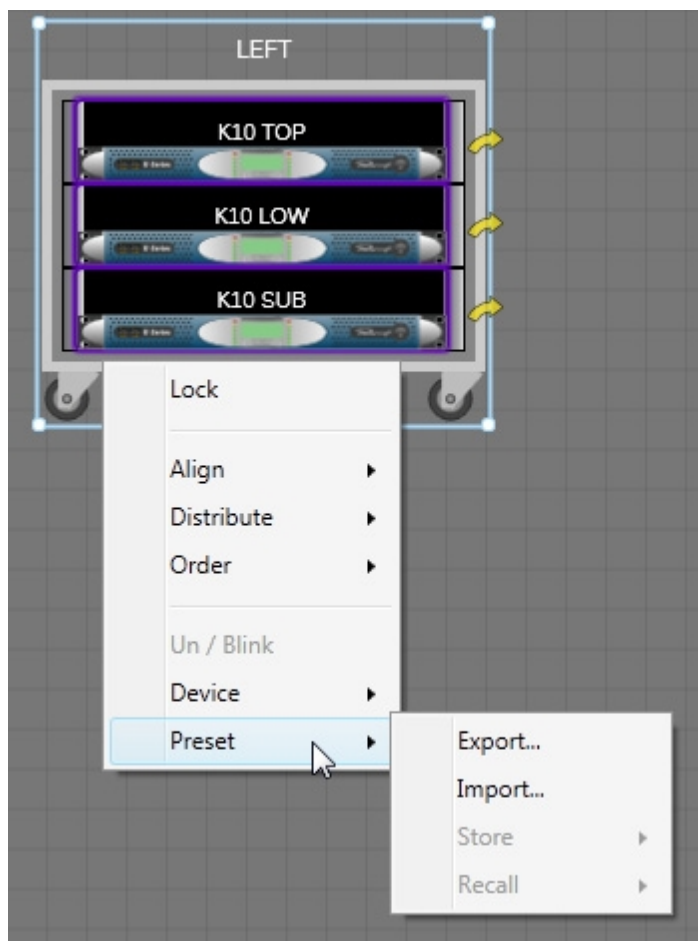
4. **Name, Model and Preset:**

- Amplifier name – label
- Amplifier model – label
- Current Preset– label
- System on – green LED
- Alarms – red LED

5. **Arrows to move the view.**

Rack Control Panel Menu

Right-click on any part of the border of a rack to open a context menu.



- **Lock:** allows to lock the position and the configuration of the components and disable editing.
- **Display option (Align, Distribute, Order):** provides tools for managing the position of the component with respect to other units into the Workspace.
- **Un/Blink:** send a callback signal to the units in order for the operator to recognize the connections with the remote entities.
- **Device:** provides copy and paste commands that allows you to copy or override the current configuration of the rack and all the parameters of the embedded amplifiers.
In order to paste the configuration of a rack to another one, the destination rack must embed the same

amplifiers (number, models and position).

- **Preset:** provide commands to export and import the rack configuration and all the parameter of the embedded amplifiers; the configuration of the rack assembly with all the amplifier parameters may be saved in a proprietary file format with .rack extension.

In order to import a rack configuration into an assembled rack, both the source and the destination racks must be composed by the same number and type of amplifiers. Furthermore the top-to-bottom sequence of the amps must be the same; if either the number, type or sequence of the amplifiers in the destination rack is different with respect to the source rack, the import process will fail.

We suggest to give to the exported .rack file a consistent name that can help you while importing.

On the other hand, the complete rack configuration can be directly imported into the Workspace as a virtual rack assembly.

Groups

Groups are useful tools that allow the user to fine tune and manage many channels belonging to different entities from a single point of control.

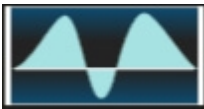
Groups are available on the [Model list](#). In order to add a group to the Workspace simply double-click on it or drag-and-drop it from the Model list to the Workspace.

Armonía provides two types of groups:

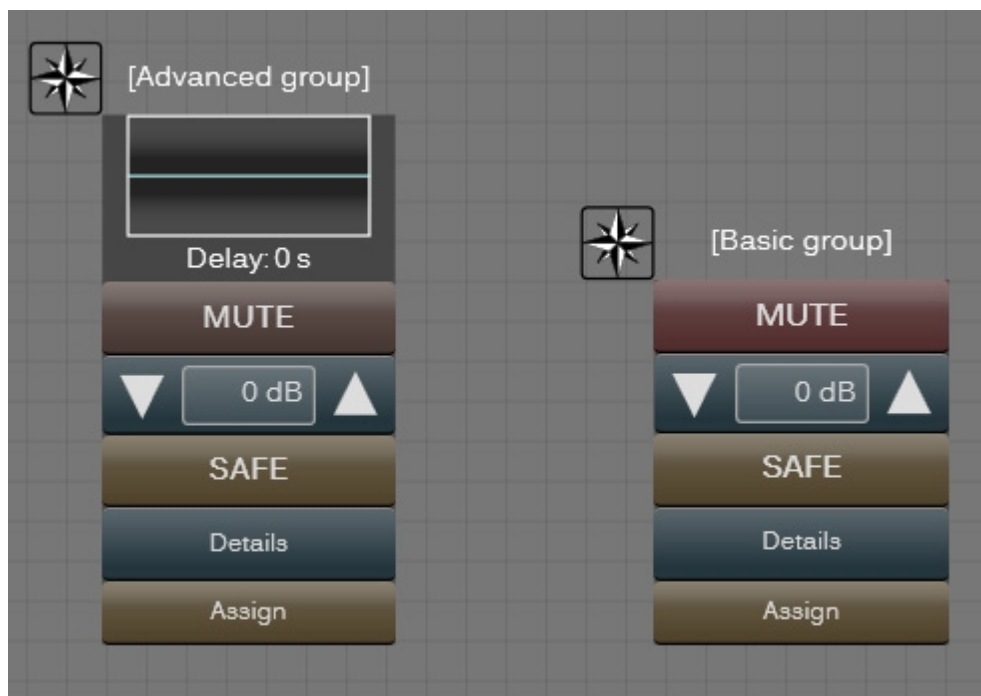
- Basic groups



- Advanced groups



Both Basic and Advanced groups implement [muting](#), [level adjustment](#), and the [safe operating button](#). Advanced groups offer further features, providing the fine tuning of the DSP [input equalizer](#) and [delay](#). Advanced groups overlay their adjustment on the input section of the assigned channels.



Each single channel of any entity in the Workspace may be freely [assigned](#) to multiple groups.

Groups overlay their settings on the operating parameters of the assigned channels: the final behavior of each channel (level, delay, input equalization) derives from the sum of its own settings and the configuration of the groups to which it belongs.

Groups may be used efficiently to control individual sections of the sound reinforcement system, such as front of house line arrays, side-fills, front-fills, delays etc., as groups rather than having to control each

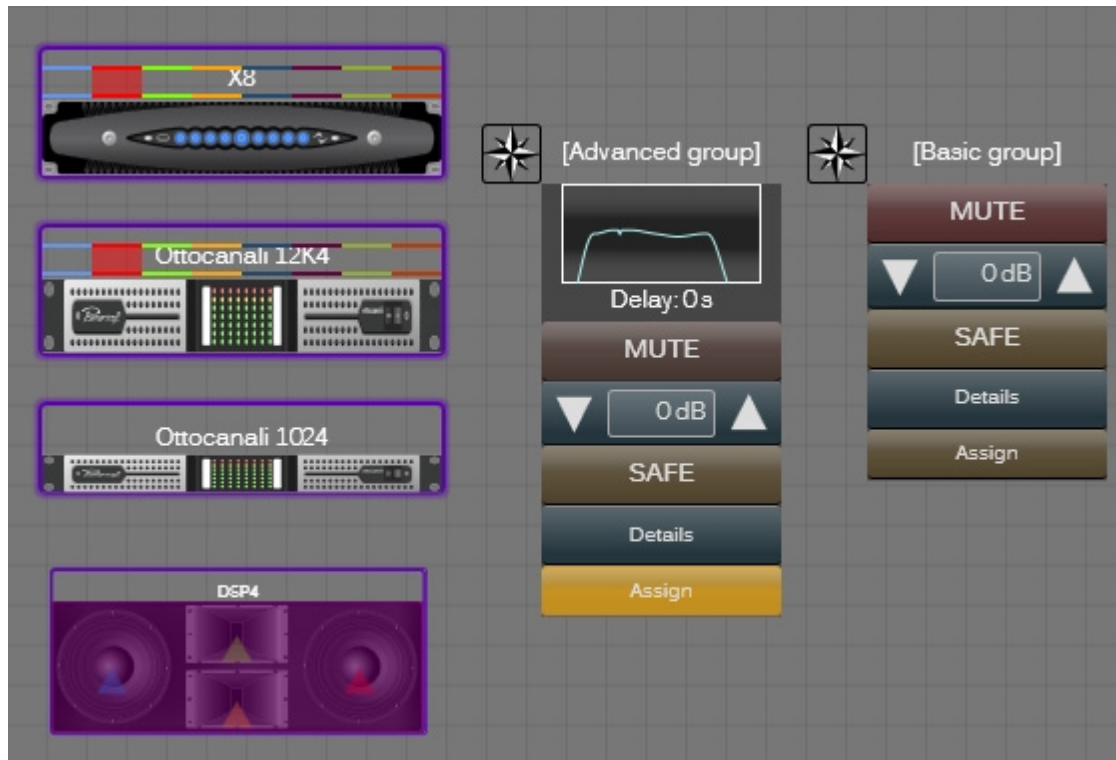
amplifier individually.

This [Group overview](#) window provides an overview of all the Advanced groups.

How to assign a channel to a group

In order to assign a channel to a group:

1. within the Workspace click on the Assign button in the Advanced or Basic group;
2. the unit will show all available channels with their default color markers (see the [Channel Color Code](#));
3. click on the colored marker to select the channel to be assigned to the current group;
4. click again on the Assign button to stop channel assignment.



NOTE: because of the hardware configuration and the computational power of the DSP, the units can manage a predefined set of filters per channel. This prevents some units from being assigned to the Advanced group since it implements three layers of filters that can't be managed by the DSP, while they can be freely assigned to the Basic group.

Group parameters

SAFE

The SAFE button disables all the controls of the group (mute, level, delay, etc.) impeding any undesired attempt to modify the configuration of the group.

MUTE

The MUTE button forces all the assigned channels to mute the output signal.

The Advanced group implements two types of MUTE command:

- Mute group: (default) acts as one can expect, by muting all the channels assigned to the group;
- Mute all: (accessible in the [Group overview](#) window) acts by muting all the output channels assigned to the group, but it leaves to the user the capability to unmute specific channels (e.g. for monitoring).

Level adjustment

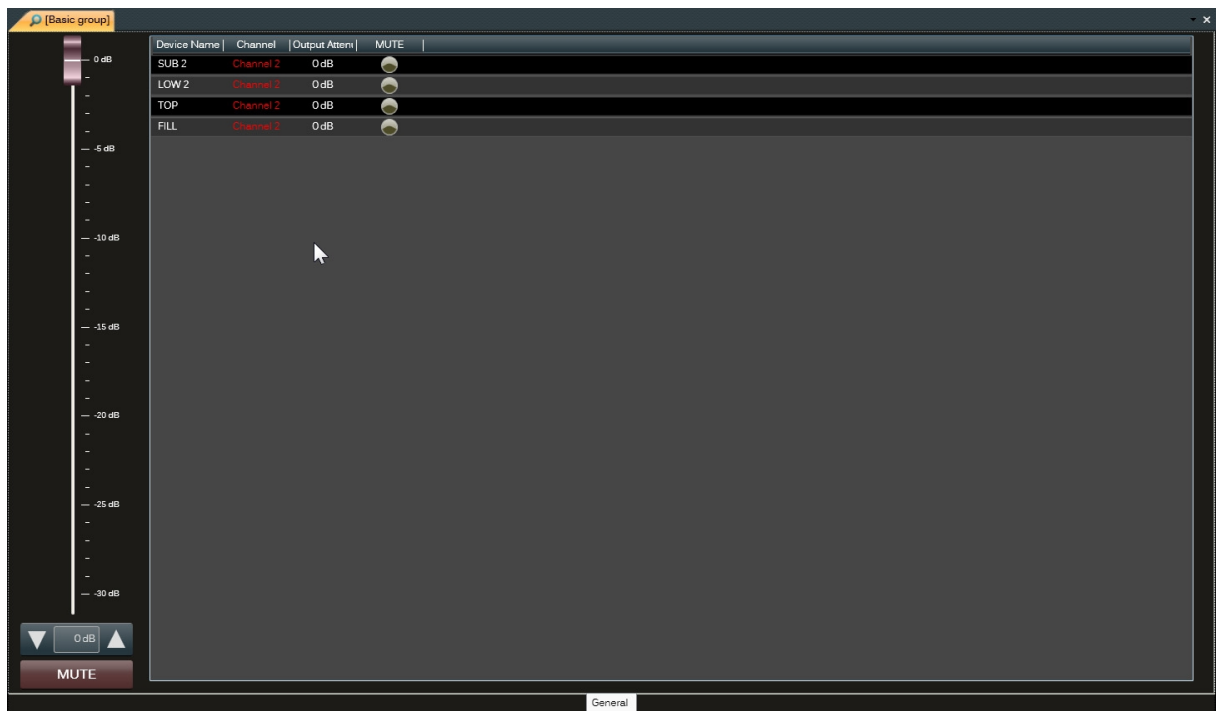
Advanced and Basic groups implement different level adjustment feature:

- the Advanced group's level adjustment ranges from +15 dB to -40 dB;
- the Basic group's level adjustment is a trimmer ranging from 0 dB down to -30 dB.

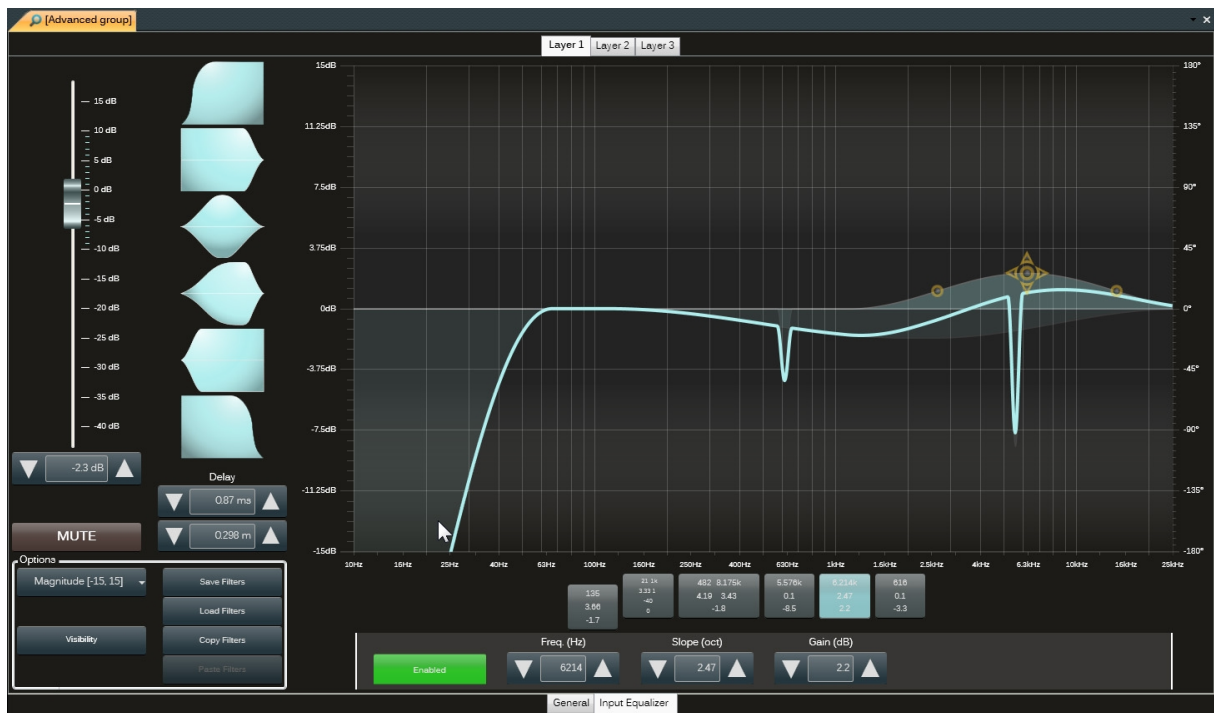
Details

Clicking on the Details button will open the group windows. Advanced and Basic groups implement a *General* windows that shows the level attenuation and mute status of the assigned channels and the names of the original devices.

- The Basic group *General* window:



- With respect to a Basic group, the Advanced group provides a further windows that allows to set the group delay and the group equalization.
All Advanced groups in a Setup can be monitored by means of the [Group overview](#) window.
The Advanced group *Input Equalizer* window:



Input Equalizer

The Input equalizer of the Advanced group implements the same features of a [channel input equalizer](#) and works the same: 3 layers embedding up to 32 filters each, chosen among high- and low-pass, peaking, high- and low-shelving and raised-cosine.

The overall effect of the three EQ layers is applied to the input equalizer of the channels assigned to the group.

Delay

The group delay can be set in seconds and meters: the two input methods are linked.

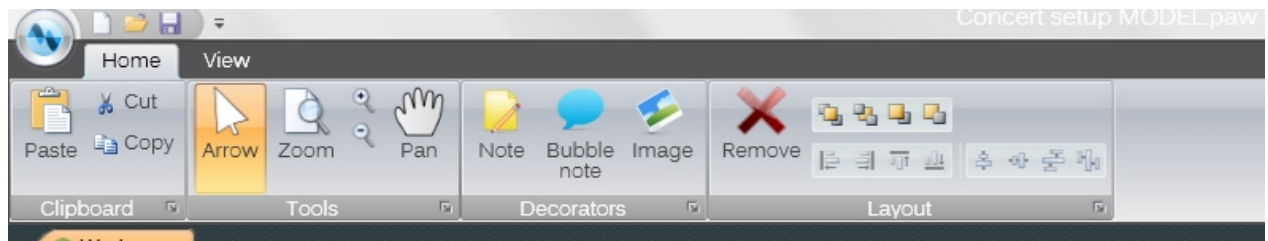
Time and space are linked by the well known rule: $c = x/t$, stating c the speed of sound (344 m/s), x the distance, t the time.

The group delay is added to the individual delays of the channels assigned to the group.

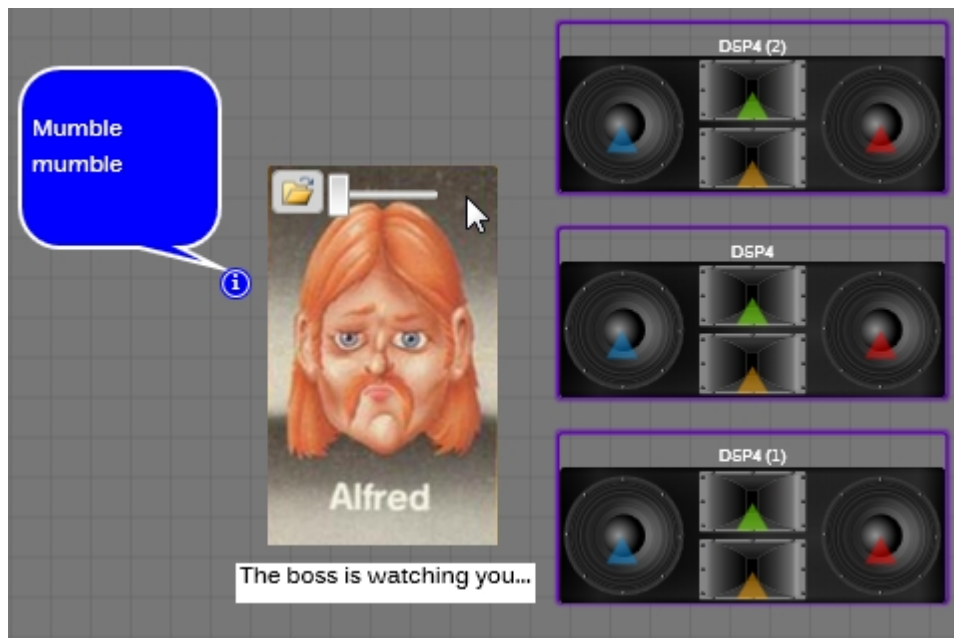
Notes and images

It is possible to place notes and images in any point on the Workspace. Notes and images are useful to document the Setup, identify sections, set reminders, make the interface more comfortable.

The controls to insert notes and images are embedded into the Decorators group of the [Home](#) tab in the [Ribbon](#).



In order to insert a note or image on the Workspace, click on the desired button: the selected decorator will appear on the Workspace.



Processing architecture

The architecture of Powersoft DSPs provides multiple access points to level, delay, equalizers, crossover and phase adjustment. This allows high granularity the performance optimization of a loudspeaker made of multiple ways in small to large scale sound reinforcement systems.

The DSP architecture is based on the following processing sections:

- [Source selection/routing](#)
- [Input processing](#)
- [Advanced processing](#)
- [Speaker routing](#)
- [Speaker processing](#)
- [Output processing](#)
- [Limiters](#)
- [DampingControl](#)
- [Alarms and GPO](#)

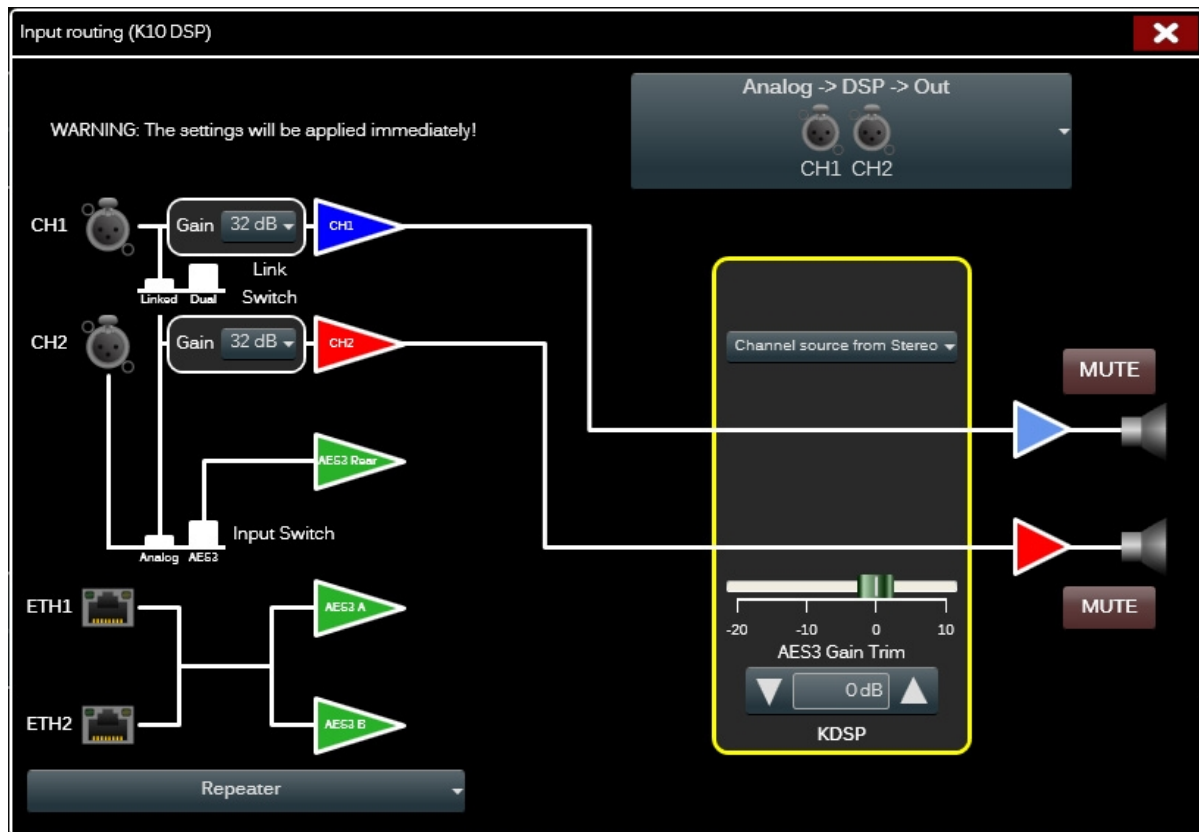
Depending on the model and the computational power of the DSP, the processing sections may be implemented in different ways.

This reflects on the tools provided by Armonía for setting the processing parameters.

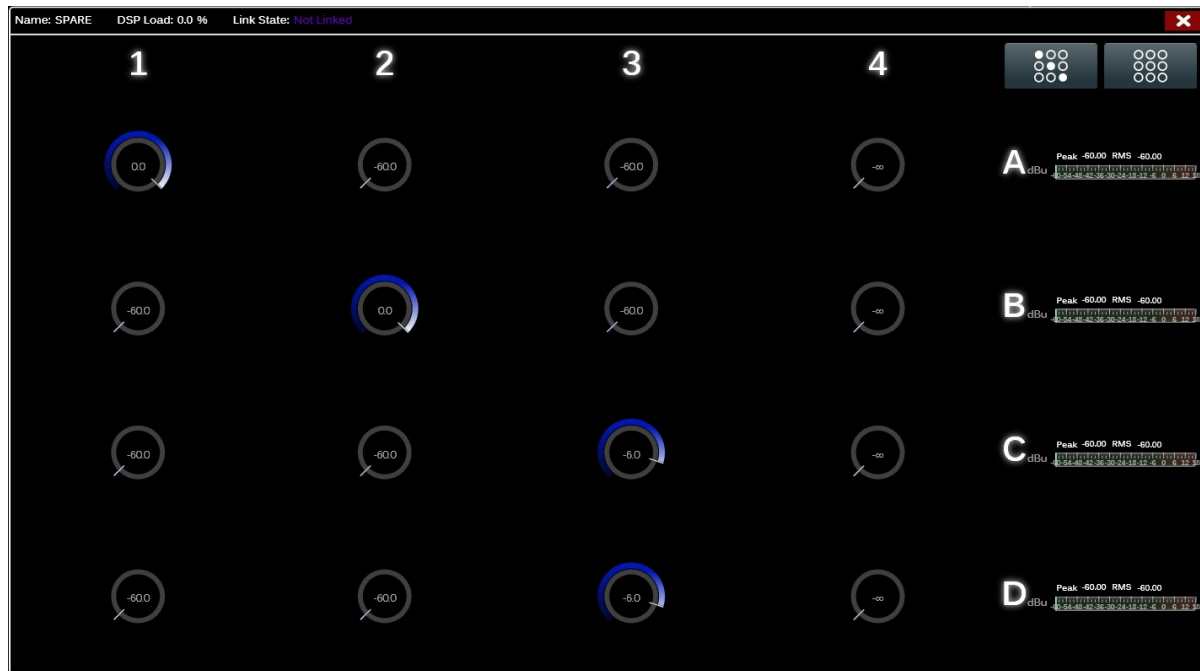
Source selection and routing

The input section allows you to manage input gain and delay of analog and digital sources (where available), in order to compensate transmission latency and levels.

Furthermore, depending on the model, the device may implement: source selection switches, input/output channel routing and [backup policy](#).



Depending on the model, input routing can be accomplished in a separate tool: in X Series a matrix is available for this purpose.



The Matrix implements a non-Boolean routing architecture allowing free channel assignment and level adjustment. It works in tight conjunction with the [Speaker routing](#) tool.

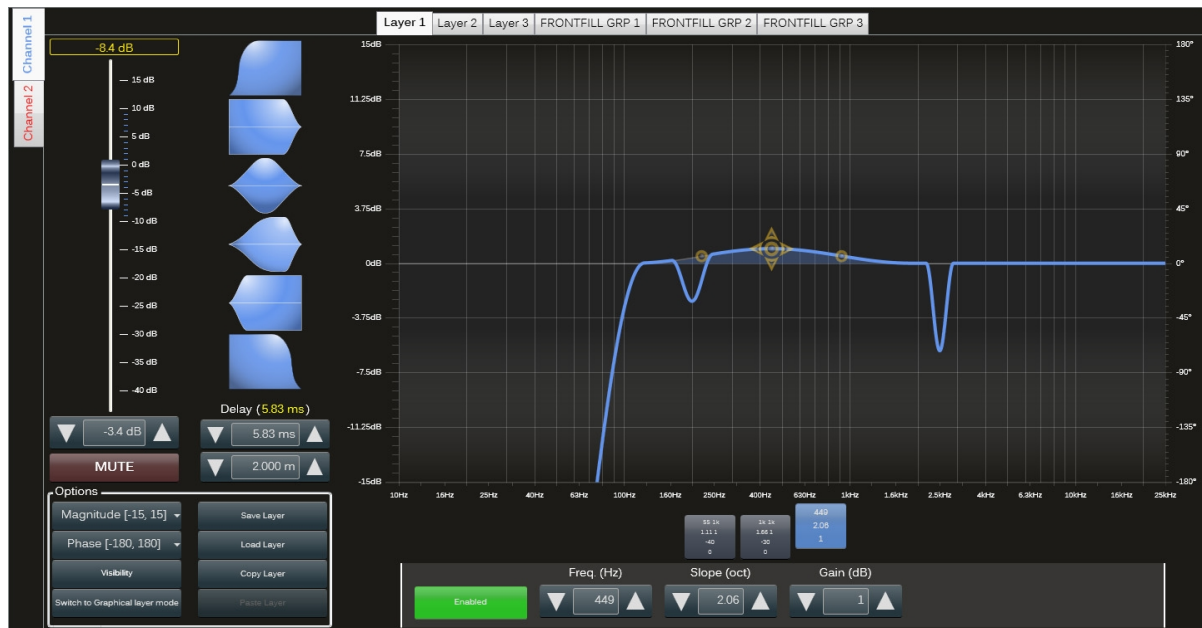
Backup policy

The backup policy aimed to improve reliability against signal fault. By assigning a bus priority to the different input sources – analog, AES3 and Dante streams – per channel, the system is able to automatically switch to a reliable input connection in case of signal drop or pilot tone mismatch. Furthermore Armonía allows to manage input gain and delay of analog and digital sources, in order to compensate transmission latency and levels.



Input processing

This section allows you to optimize the level and shape the sound of the input signals. Gain and polarity adjustment, full parametric filters, delay and mute are available.

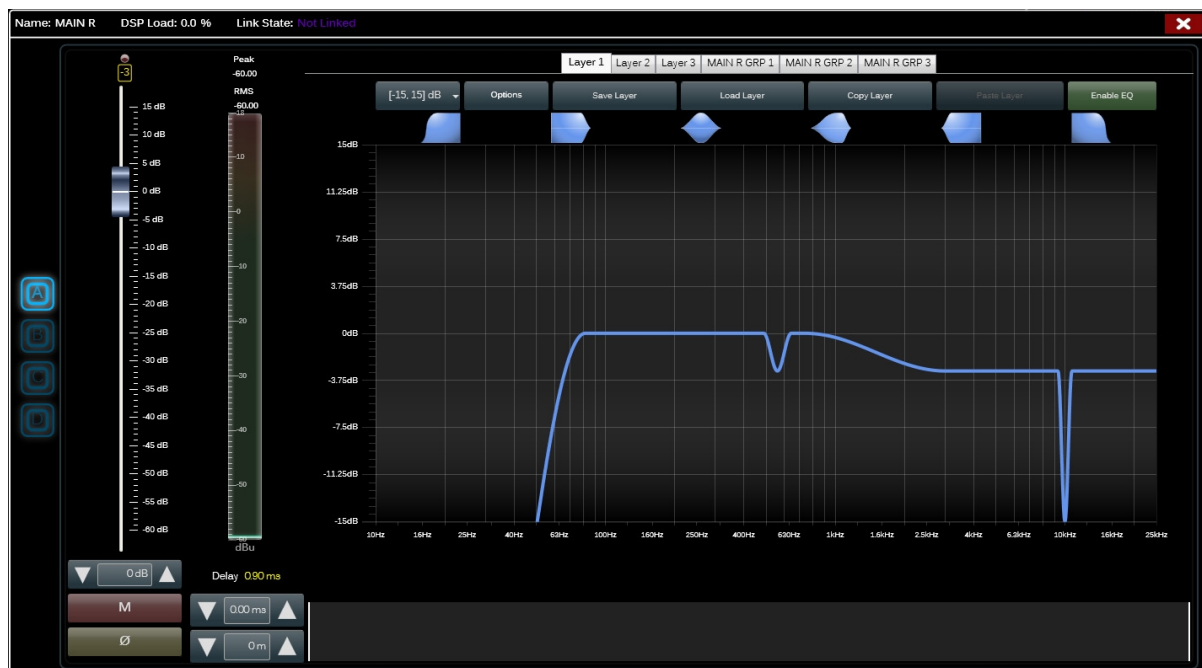


Group adjustment (level, delay, equalization) are visualized within the input processing tools:

- Group level and Group delay time add to the input level and the input delay respectively;
- Group equalization is shown as a layer that adds its equalization curve to the channel input equalization.

Advanced Processing

This section allows you to optimize the level and shape the sound of the input signals. Gain and polarity adjustment, asymmetric raised-cosine full parametric filters, delay and mute are available.



Group adjustment (level, delay, equalization) are visualized within the input processing tools:

- Group level and Group delay time add to the input level and the input delay respectively;
- Group equalization is shown as a layer that adds its equalization curve to the channel input equalization.

Speaker routing

Likewise the [Matrix](#) tool, the Speaker routing tool has been introduced with the X Series amplifier platform.

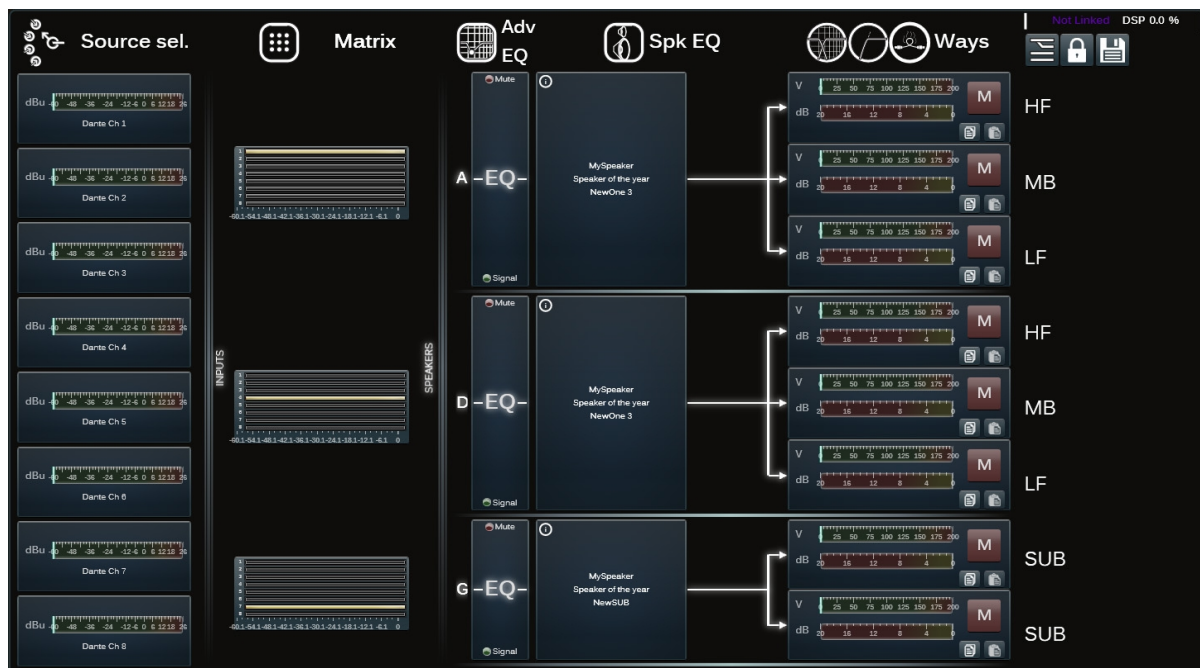
The Speaker routing is meant to group the output channels as the ways of multi-way loudspeaker, in order for the user to easily manage the speaker presets and the signal routing.



Click on the top rightmost button  to open the Speaker Routing window.



Once properly grouped, the output channels are presented to the matrix as speakers – a single row representing a speaker (actually group of ways) – allowing a high grade of granularity in signal processing.



Speaker processing / Pre-output equalizer

The speaker processing (aka pre-output processing) is a tool designed to manage the configuration presets for multi-way systems.

It applies FIR and IIR full parametric filters to multiple output channels, providing control over the performance of the entire loudspeaker.



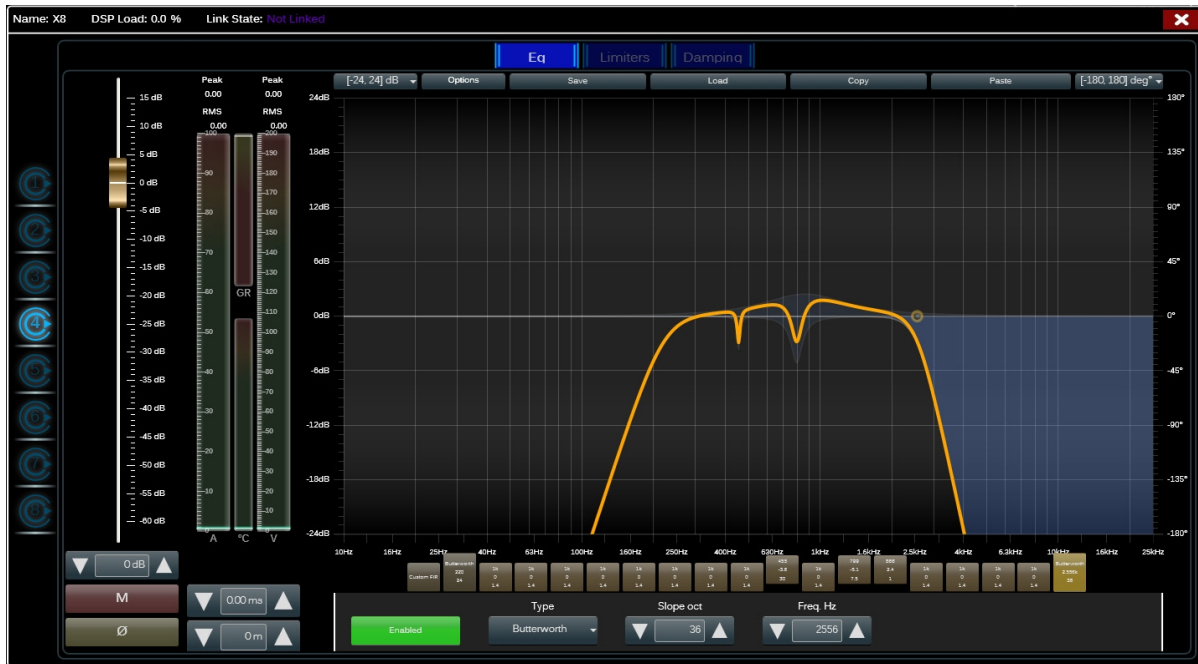
Some models provide further level and delay adjustment in the pre-output processing:



Output processing

The output processing tool allows fine-tuning of output channels, aiming to optimize power delivering and loudspeaker performance. It provides gain and polarity adjustment, IIR and FIR full parametric filters, delay and mute on each output channel. Likewise, [limiting](#) and [damping control](#) are available in output processing, but they may be implemented in separate windows or blocks.

This is the tool where you may introduce the loudspeaker manufacturers presets, tailoring the system performance to the current sound system.



Limiters

The output processing provides each channel of the amplifier with separate limiters for power, voltage and current.

The function of the amplifier's limiter is to shape the sound in order to limit the power delivered to the load, aiming to protect loudspeakers from accidental damage.



The adjustable parameters

Threshold

When the input signal level exceeded the threshold the limiter starts to reduce the input gain. The gain is reduced of an amount equal to the overshoot of the input signal respect to the threshold

Attack time

It's the time the limiter takes to get full input signal reduction after exceeding the threshold level. In applications where we want to avoid speaker damage, the longer the attack time, the higher the risk of damaging the equipment. However settings with a too fast attack time will generate distortion or a deep modification to the transient of the signal; since transient information in the attack portion conveys brightness character, especially with percussive sounds, immediately reducing it with the compressor will result in a poor perceived sound quality. On the contrary too slow attack time may result in inadequate speaker protection. Typically a good compromise is setting an attack time no longer of the lowest frequency you have to protect (for example, 1 ms for 1 kHz).

Release time

It's the time that the gain takes to go from the maximum reduction to no reduction. In general, the release time, has to be adequate to avoid pumping effect and protect the speaker. The release time should be set between 1 to 32 times the attack time.

Soft knee

A soft knee slowly increases the compression ratio as the level increases, in this way the changing from un-compressed to compressed sound is less audible.

Limiter types

To avoid mechanical and temperature damage two kinds of limiters can be used:

- **Peak limiter:** Protects against mechanical damages. The peak limiter may also be used to control amplifier clipping. Designers should set this limiter's parameters as a function of both the maximum displacement of the diaphragm as well as the speaker's maximum tolerated voltage.
- **RMS limiter:** Protects speakers against thermal damage when excessive power is applied for extended periods of time, resulting in overheating and eventually burning. Designers should be aware of the maximum long term power safely applicable to speakers (AES power rating). An interesting approach to RMS limiting is one that uses coil temperature control. A complete knowledge of the driver's limits allows to keep the temperature level in a safe interval not only to avoid damage but to maintain the speaker in a "linear" zone that avoids power compression.
- **TruePower limiter:** The Powersoft TruePower limiter is the limiter that modulate the gain tracking the impedance curve (with a square factor) allowing to control the real output power and thus the temperature of the voice coil controlling the voice coil resistive component

An important thing to consider is that peak limiting can raise up the RMS power level. For this reason is very important use two limiters, one for over-excursion protection and one for thermal protection (RMS power).

Peak limiter

The peak limiter avoid potentially dangerous displacement of the cone (larger excursion respect to allowed values), and it's based only on the measured output peak voltage. We suggest, to use the declared Peak power or twice the program power

The peak limiter is independent from the number of parallel wired speakers (voltage is applied to all the components in a parallel circuit). Thus, in a parallel circuit of speakers the peak power that has to be taken is from only one loudspeaker.

The time constant shouldn't affect the musical signal (it's not a "colouring" dynamic compressor) therefore it tries to keep unaltered the shape of sound, avoiding modification of the fast transients and limiting only if the phenomena persists for more than one/two periods.

RMS (power) limiter

The RMS - power - limiter is intended to avoid melting the voice coils of drivers while at the same time exploiting their maximum performance. All the power limiters are basing their operations on the temporal behavior of the voltage and the current, this means that the amplifier knows the true amount of real power delivered to the load. It may be difficult and a little bit empirical to decide thresholds and time constants. Power limiters behavior is based on a mix composed by threshold, temporal behavior of the output readings (voltage and/or current) and the type of output readings monitored.

In some Powersoft models is available the Cross-Limiting Function. This feature is useful in multiway system (e.g. Bi-Amp system) because maintains equilibrated the level between the ways if only a driver is in the protection state and thus the gain is reduced.

TruePower limiter

The voltage RMS limiter acts as a gain control to limit the RMS voltage applied to the transducer with the appropriate time constants.

If the "density" of the voltage signal driving the transducer exceeds the estimated maximum continuous power being delivered to transducer itself, the voltage gain of the signal is reduced. This is done in an attempt to keep the "estimated" load power within safe thermal limits of the transducer itself. The term "estimated" is due to the fact that we have an unknown variable: in the audio frequency range the impedance of the transducer plus cabinet combination varies considerably, both in module and in phase, especially at low frequencies.

The consequence is that trying to limit the output power acting only on the voltage has some limits in terms of predictability and control of the real power delivered to the load.

The TruePower limiting is a Powersoft technology useful to avoid overheating of the voice coil and can be used to avoid power compression. The DSP provides the measurement of the real power delivered (and then dissipated) to the coil, not the apparent power handled by the line.

Empirically, it can be stated that the real power can be calculated as one-third of the AES power (or the RMS power) handled by the loudspeaker (estimating the AES power 6 dB lower than the peak power - namely $\frac{1}{4}$ of the peak power).

Keep in mind that with the TruePower limiter it's necessary to keep in the calculation how many speakers you need to drive, this is because the real power is based not only on the output voltage but also on the output current.

Setting the time constraints may be very empirical and could lead to headaches. Use the following table as a guideline.

Driver voice coil (inches) and application	True Power threshold (W)	Attack time (ms)	Decay time(ms)
1" Tweeter	10-20	100	300
2" Horn driver	20-40	200	400
3" Horn driver	30-50	300	500
4" Horn driver	40-60	500	3000
2" Midrange	30-100	500	3000
3" Midbass	50-150	1000	5000
4" Woofer	100-200	2000	5000
4" Woofer	150-250	4000	8000
6" Woofer	250-500	6000	10000

Power vs V @ 8 ohm

This is a pure voltage RMS limiter based only the voltage module read from the amplifier output. Differently from the TruePower limiter this processing does not know anything about the real part of the power but has the advantage that is independent from the number of cabinets linked together like the peak limiter.

Albeit the RMS power is a value related to the max manageable power, it should be verified because the value can be higher of the real manageable power. Often constructors declare the AES/RMS power in the minimum impedance point of the speaker which may leads to an overestimation of the real values. In any case to preserve the driver in the long term time a further reduction of the power should be considered, the suggestion is to take into account a further reduction up to 3 dB respect to the calculated value.

To set the value you need to recalculate your driver threshold with the equivalent power at 8 ohm.

Power vs I @ 8 ohm

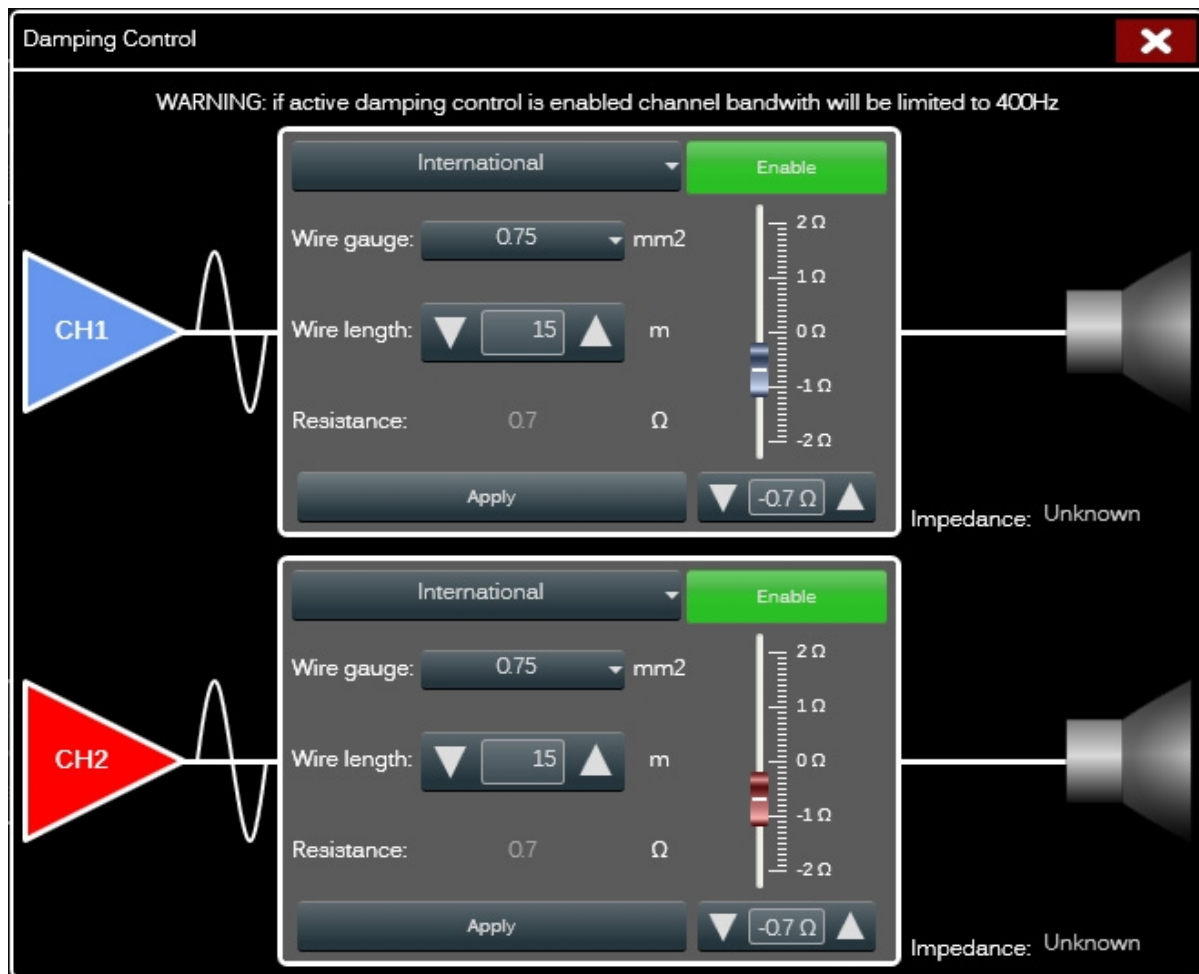
This limiter is very similar to the case Power vs V @ 8 ohm with the difference that the reading variable is the current and not the voltage.

Active DampingControl

The effect of cable resistance on a high power amplifier's performance becomes significant at low frequencies, as the cable resistance can affect the output stage's damping factor.

The Powersoft Active DampingControl technology compensates for cable resistance. Cable parameters may be entered, and the system calculates and applies the appropriate correction.

Note: Active DampingControl should only be enabled on output channel driving low frequency loudspeakers, since the bandwidth is limited to 400 Hz.



Alarms and GPO

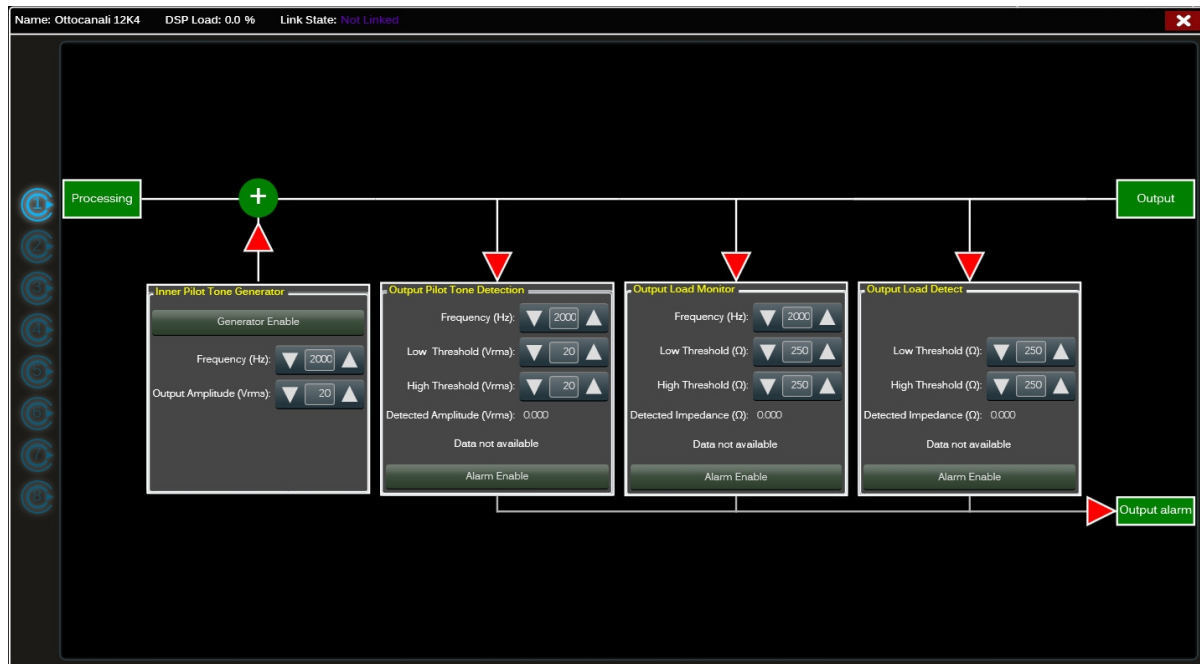
Powersoft amplifiers continuously send status messages to Armonía, as well as system alerts and error warnings.

Depending on the type of alert, Armonía may trigger different actions, e.g. highlight the unit in the [LivingWorkspace™](#) and send an email or an sms to a specified recipient (refer to the [Event](#) window for further information on this topic).

Furthermore, some Powersoft units implement a General Purpose Output – GPO – system that can be configured to trigger broadcast alarms.

The interface may vary with the model, including following parameters:

- Inner pilot tone detection;
- Outer pilot tone detection;
- Load monitoring.



Powersoft Ottocanali and Duecanali Series provide a pair of paralleled general purpose output connections per channel: one Normally Open (NO) \oplus and one Normally Closed (NC) \ominus . These contacts are used to report to any external monitoring system, potentially dangerous faults or generally unsafe operation conditions.

The following events toggle the alarm switches:

- No AC mains (i.e. system shutdown);
- Thermal stress: the system temperature reaches 70°C, thermal protections are going to be engaged;
- Short circuit in output wiring: either the loudspeaker or the line is in short;
- DC presence at the output: a continuously stationary signal is present at output terminals.

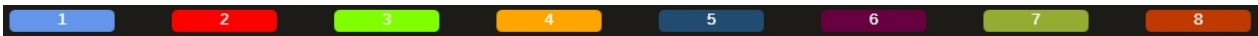
Color Codes

- [Channel Color Code](#)
- [Amplifier Status Color Code](#)
- [Alarm Color Code](#)
- [Signal Status Color Code](#)

Channel Color Code

Armonía assigns a default color to the output channels of a multichannel device.

2-channel, 4-channel and 8-channel units use the following color code for channel identification:








Channel number	Color	
1	light blue	
2	red	
3	light green	
4	yellow	
5	dark blue	
6	purple	
7	green	
8	orange	

Equalization curves are colored according to the above channel color code.




Amplifier Status Color Code

The amplifiers in the Workspace are highlighted by a colored border whose color changes depending on the unit status.

Color		Meaning	Description
Purple		Virtual unit	There is no remote entity linked to this unit.
Green		Unit on-line	The remote entity linked to the unit in the Workspace is properly connected.
Red		Unit off-line	The remote entity linked to the unit in the Workspace is not properly connected.
Yellow		Unit calling back	The remote entity linked to the unit in the Workspace is calling back Armonía in order for the operator to recognize the link between the entity and the unit.
White/Red		Unit busy	The remote entity linked to the unit in the Workspace is busy: the communication is temporarily unavailable.






Alarm Color Code

The background color of the unit changes when an alarm is engaged.

Color		Meaning
Transparent		Normal
Red		Warning alarm
Yellow		Minor alarm

Signal Status Color Code

The channel status is highlighted by the LEDs positioned above the amplifier name:

Color		Meaning
Grey		<i>No signal</i>
Green		<i>Signal presence</i>
Red slash		<i>Mute</i>
Orange		<i>Gain reduction</i>
Red		<i>Clipping</i>

Appendix

This section collects further topics related to Powersoft devices and Armonía Pro Audio Suite.

- [SmartCard](#)
 - [Firmware update](#)
 - [Step-Up](#)
- [IP address recovery on Powersoft M Series](#)

SmartCard

K Series and Duecanali Series power amplifiers implement a SmartCard reader in the front panel.

The SmartCard – provided and initialized by Powersoft – is a tool meant for storing and sharing setup configurations and presets: up to 150 presets can be stored into a single card and easily shared among different amplifiers.

- [Updating the SmartCard](#)
- [Firmware update](#)
 - [KFRONT + KCNTRL + KDSP firmware update procedure](#)
 - [KAESOP firmware update procedure](#)
- [Step-Up](#)



Updating the SmartCard

Starting from version 1.1.32, the Powersoft Firmware Updater Software is capable to overwrite the content of the SmartCard using a Powersoft K Series or Duecanali amplifier as a SmartCard writer. Once updated, the Powersoft Firmware Update Smart Card can be further used to update other Powersoft amplifiers (update once, use many).

A package of firmwares for KFRONT, KCNTRL and KDSP boards of K Series or Duecanali amplifier in a PFF file format must be used. The update process is driven by the Powersoft Firmware Updater Software. Download the firmware package (containing the Powersoft Firmware Updater software) from the [Armonía Support Forum](#) at <http://www.powersoft-audio.com/armonia-forum>.

Unpack the files and install the Powersoft Firmware Updater software (FirmwareUpdater_[version]_Setup.zip) in your PC. Be sure that the Powersoft Firmware Updater software version is higher than 1.1.32.

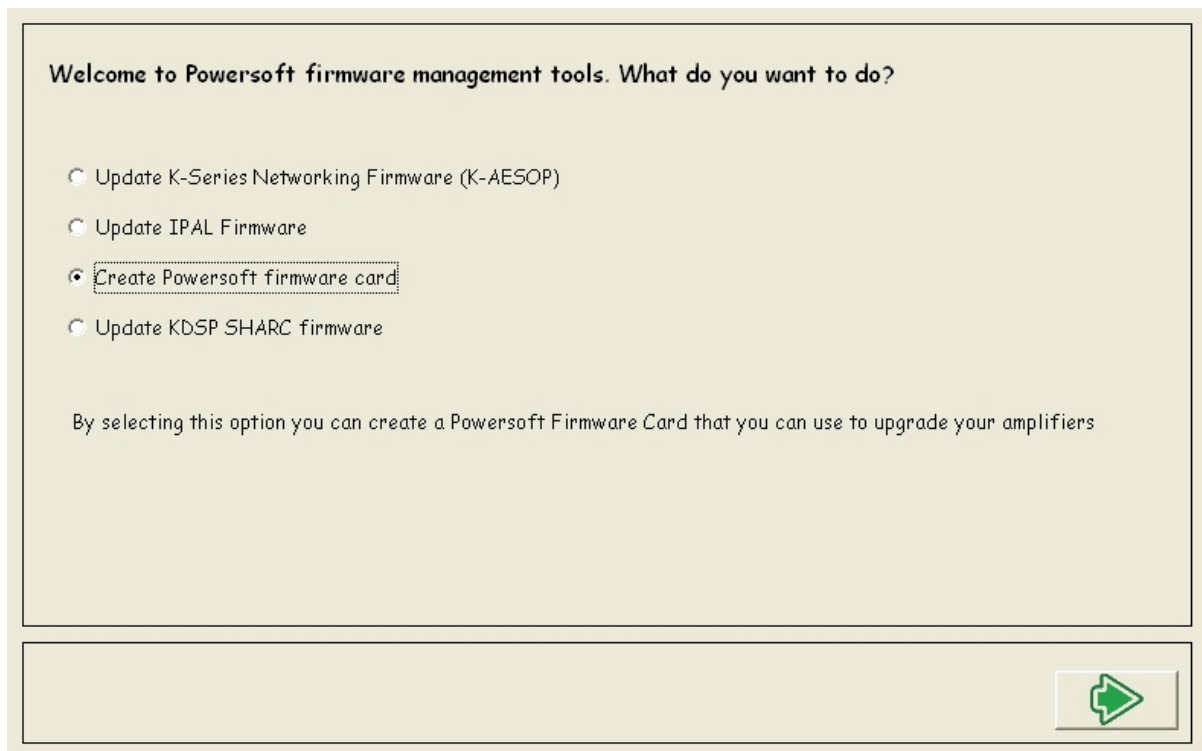
You can connect the PC to the amplifier either via the RS485 plug (use the Powersoft USB to RS485 converter) or via the Ethernet plug in case the KAESOP board is installed (recommended).

Please consider that the SmartCard update process is pretty long: it takes about 40 minutes when performed via Ethernet connection (through the KAESOP board) and up to 1 hour via the RS485 serial connection.

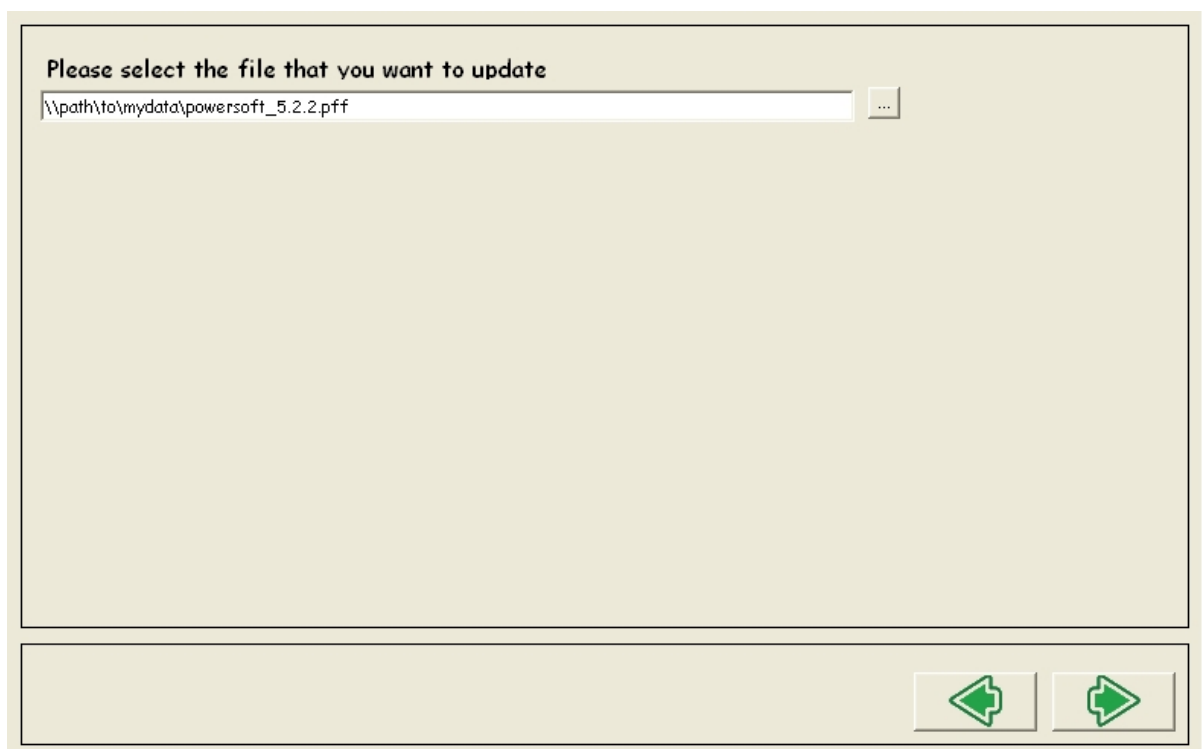
Only Powersoft formatted SmartCard such as Preset cards and Firmware cards after version 3.26.4 are eligible to be updated.

In order to load the firmware into the Powersoft Firmware Update SmartCard follow these steps:

1. Connect the amplifier to a PC running Microsoft Windows, via an Cat5 Ethernet cable or RS485.
2. Switch the amplifier(s) on.
3. On the amplifier, press the MENU button and insert the smart card into the slot.
Be careful in this step since if you don't **press the MENU button BEFORE** inserting the smart card, the display will show "Remove smart card" and the update procedure fails.
4. Launch the Firmware Updater Software on your PC.
5. Select Create Powersoft firmware card.



6. Insert path and filename of the .PFF package file stored on your local file system.





7. Select "Use RS485" only if the amplifier is connected to the PC via the RS485. In case the KAESOP board is installed, we recommend to perform the update via the Ethernet connection.

If you want to update devices connected via RS485 you have to check the following option and select the com port to use.

In this case the 485 scan can take some minutes. Otherwise you can skip this step by clicking next.

☐ Use RS485

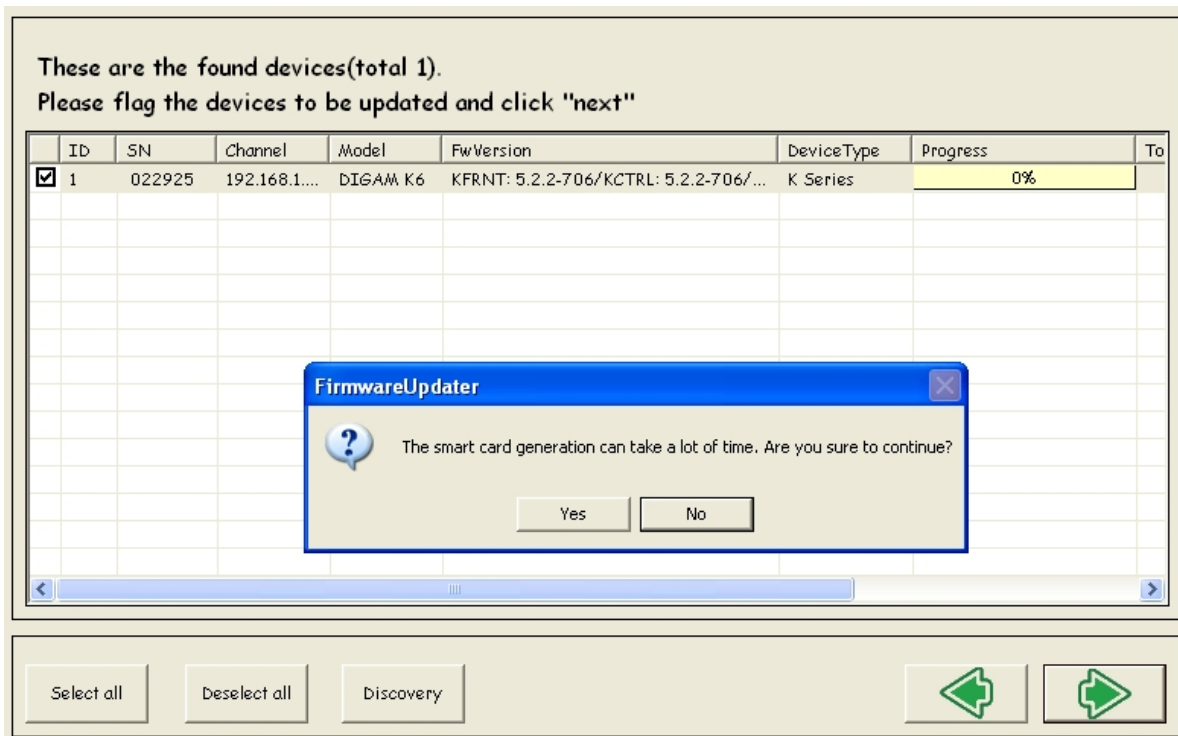
Comm. Port

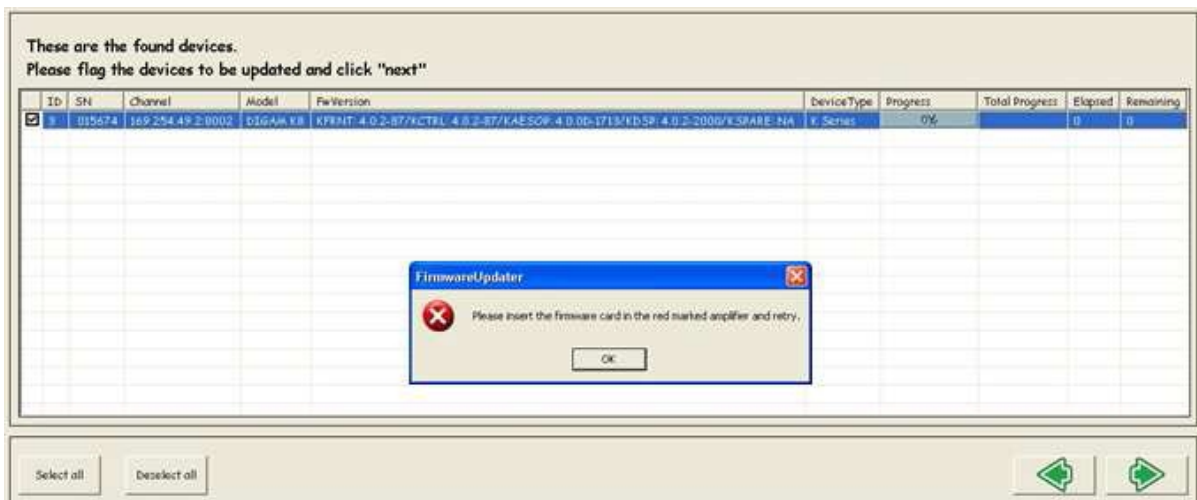
8. Select the device that hosts the SmartCard. Please be patient if the connected amplifiers are not listed immediately: the detecting process can be quite slow even with an Ethernet connection.

[illegible]

9. Launch the update and wait until the firmware has been completely uploaded into the SmartCard.



10. If you want verify the firmware loaded into the SmartCard, consider that the process takes more than one hour.



11. Remember to mark the SmartCard according to the firmware version.

Firmware update (K Series and Duecanali Series)

The SmartCard can be converted into firmware card – losing the storage capacity – allowing to update the internal firmware of the amplifier.

- [KFRONT + KCTRL + KDSP firmware update procedure](#)
- [KAESOP firmware update procedure](#)

K Series and Duecanali amplifiers are based on a flexible architecture that has been developed to meet specific expansability criteria.

The minimum configuration is based on two boards, named KFRONT and KCNTRL.

KFRONT handles the front panel display and the smart card reader/writer, while KCNTRL supervises the amplifier and the power supply, performing the remote control through the RS485 port. Each board has its own microcontroller and its own firmware microchip.

An optional DSP board can be installed: the KDSP hosts one powerful SHARC DSP processor – supported by one microcontroller – and the related firmware microchips.

Into the amplifier can be installed a further optional Ethernet remote control board, the KAESOP. With this board the amplifier is able to manage 2 streams of AES3 digital audio. KAESOP board houses one more microcontroller along with its own firmware microchip.

In regard to the number and the type of installed boards there are four possible K Series amplifier configurations:

Configuration	Model Name*		Installed Boards
Basic amplifier	<i>Knn</i>	Duecanali <i>mmmm</i>	KFRONT + KCNTRL
DSP amplifier	<i>Knn</i> DSP	Duecanali <i>mmmm</i> DSP	KFRONT + KCNTRL + KDSP microc ontroller & processor
AESOP amplifier	<i>Knn</i> AESOP	Duecanali <i>mmmm</i> AESOP	KFRONT + KCNTRL + KAESOP (w ithout KDSP)
DSP+AESOP amplifier	<i>Knn</i> DSP+AESOP	Duecanali <i>mmmm</i> DSP+AESOP	KFRONT + KCNTRL + KDSP microcontroller & processor + KAESOP

* *nn* stands for 2, 3, 6, 8, 10, 20 i.e K2, K3, K6, etc;
mmmm stands for 3904 or 5204.

The fully populated configuration is formed by a total of 5 CPUs and 5 related firmwares microchips. The microcontrollers' firmware name is labeled as follow:

- K Series firmware name: powersoft_XY.Z-B
- Duecanali Series firmware name: duecanali_XY.Z-B

where XY.Z is the version number, and B the build count.

The SHARC processor has a progressive version number (for example 3041).

Firmware update package consists of:

- Powersoft Firmware Update SmartCard labeled with the firmware version of the microcontrollers – KFRONT, KCNTRL, KDSP – and the SHARC processor (i.e. PC000112 Firmware card FW 5.3.2 3041) – provided by Powersoft.
- Powersoft Firmware Updater software – downloadable from the Armonia forum.
- kaesop_XY.Z.bin firmware file for the KAESOP microcontroller – downloadable from the Armonia forum.
- possibly the powersoft_XY.Z.pff file for updating the smart card – downloadable from the Armonia forum.

Please consider that if the firmware update process is interrupted before its completion (because of mains drop or any other problem) you must restart the procedure from the beginning (switching the amplifier off and back on) as different firmware versions could be present at the same time on diverse boards in the device, causing possible problems to the amplifier.

KFRONT + KCNTRL + KDSP firmware update procedure

The procedure will update the firmware of the KFRONT, KCNTRL and KDSP board (if installed).

Before starting the update procedure, take care to connected the amplifier to a reliable power source. The use of an UPS (Uninterruptible Power Supply) is recommended (never use the PowerControlHub for powering the amplifier during firmware update procedures!). In case of mains failure during the firmware update, the procedure needs to be re-started, switching the amplifier off and back on. If the firmware update fails for any reason, no damage will be caused to the amplifier.

Do not remove the firmware smart card during the update procedure; always wait until the amplifier is completed up to date.

- [Checking the current firmware version](#)
- [Updating KFRONT, KCNTRL and KDSP firmwares](#)

Checking the current firmware version

Check the current firmware versions to avoid to downgrade the unit. For both K Series and Duecanali the procedure is:

1. Power on the amplifier
2. Press the MENU button
3. Scroll down to SETUP and confirm with OK
4. Press OK to enter the HARDWARE INFO
5. The display will show the amplifier model and serial number
6. Press MORE and the following info will appear:

KFRONT:	X.Y.Z-B	
KCNTRL:	X.Y.Z-B	
KDSP:	X.Y.Z-S	[if KDSP optional board is NOT installed this row displays KDSP: N.A. (not available)]
(in the following page)		
KAESOP:	X.Y.ZW-V	[if KAESOP optional board is NOT installed this row displays KAESOP: N.A. (not available)]

7. Write down the version numbers and compare them against those on the SmartCard and the KAESOP file.

Updating KFRONT, KCNTRL and KDSP firmwares

Updating the KFRONT and KCNTRL will take about 5 minutes; if KDSP board is installed, KDSP firmware update starts before KCNTRL firmware update and the whole procedure lasts in about 12 minutes.

1. Switch off the amplifier.
2. Holding the Firmware Update Smar Card with Powersoft logo facing up and the electric contacts facing down, insert it softly into the SmartCard slot just above the display of the amplifier.
3. Be sure to completely insert the card reaching the end of the slot. Please consider that electrical contact can fails because of the SmartCard does not fill the slot completely or dust and debris prevent the contact.
4. While keeping pressed the first and second buttons on the left of the front panel, turn on the amplifier and wait 3 to 6 seconds.



The fan test (full throttle blow) is performed and after a while the yellow LEDs on the panel start blinking: release the two front panel buttons in order to start the KFRONT firmware update. The KFRONT update takes about three minute to complete: the yellow LEDs continue to blink and the LCD display still light on but no messages are shown (during KFRONT update the board is unable to manage the display).

Once the KFRONT firmware is up to date, the system looks for the presence of the DSP board:

- If the KDSP board is **not installed** the display shows a warning message informing that the KDSP firmware update can not be performed: press a confirmation button to proceed.
 - If the KDSP board is **installed**, the KDSP firmware update takes place: on the display appears the message "Updating KDSP" and a progress bar. The KDSP firmware update requires a few minutes to complete.
 - After completing the KDSP firmware update the display shows the message "Do you want to update SHARC DSP?": pressing YES the SHARC processor firmware update starts, lasting in about 20 minutes.
5. After completing the firmware update of KFRONT and possibly KDSP, the KCNTRL firmware update starts automatically: a message and a progress bar is shown on the display.

At the end the message "Firmware update completed, press OK to restart" indicates that the procedure has been successfully completed. Remove the firmware card before restarting the amplifier.

KAESOP firmware update procedure

If a KAESOP board is installed, follow this procedure to update its firmware.

Take care to get the SmartCard and the KAESOP firmware file with exactly the same version number. K Series and Duecanali share the same KAESOP firmware.

- [Powersoft Firmware Updater software](#)
- [Updating KAESOP firmware](#)

Powersoft Firmware Updater software

The update procedure must be performed using the Powersoft Firmware Updater software – provided by Powersoft.

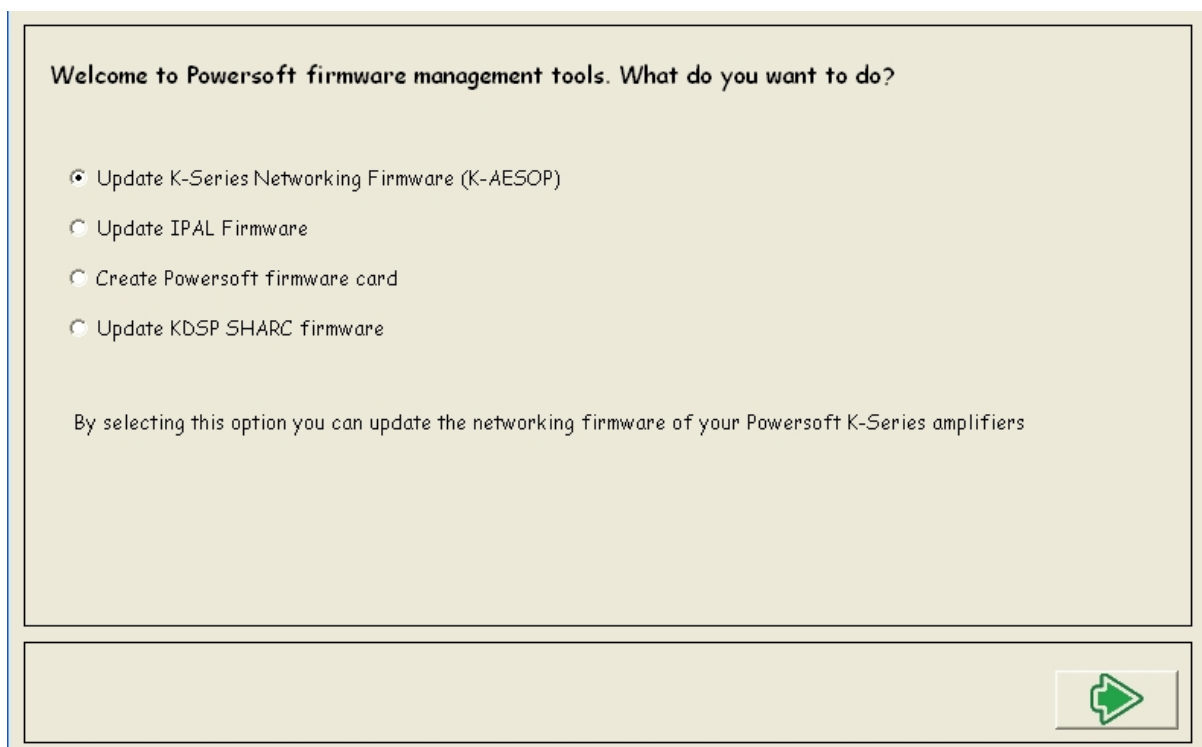
The Powersoft Firmware Updater software is a zipped Windows executable file: it has to be unpacked and installed in the PC in order to perform the update. In a networking environment the software can perform the updating of an unlimited number of amplifiers at the same time, taking just a couple of minutes to complete the operation.

Download the firmware package (containing the Powersoft Firmware Updater software) from the [Armonía Support Forum](#) ¹² at <http://www.powersoft-audio.com/armonia-forum> ¹².

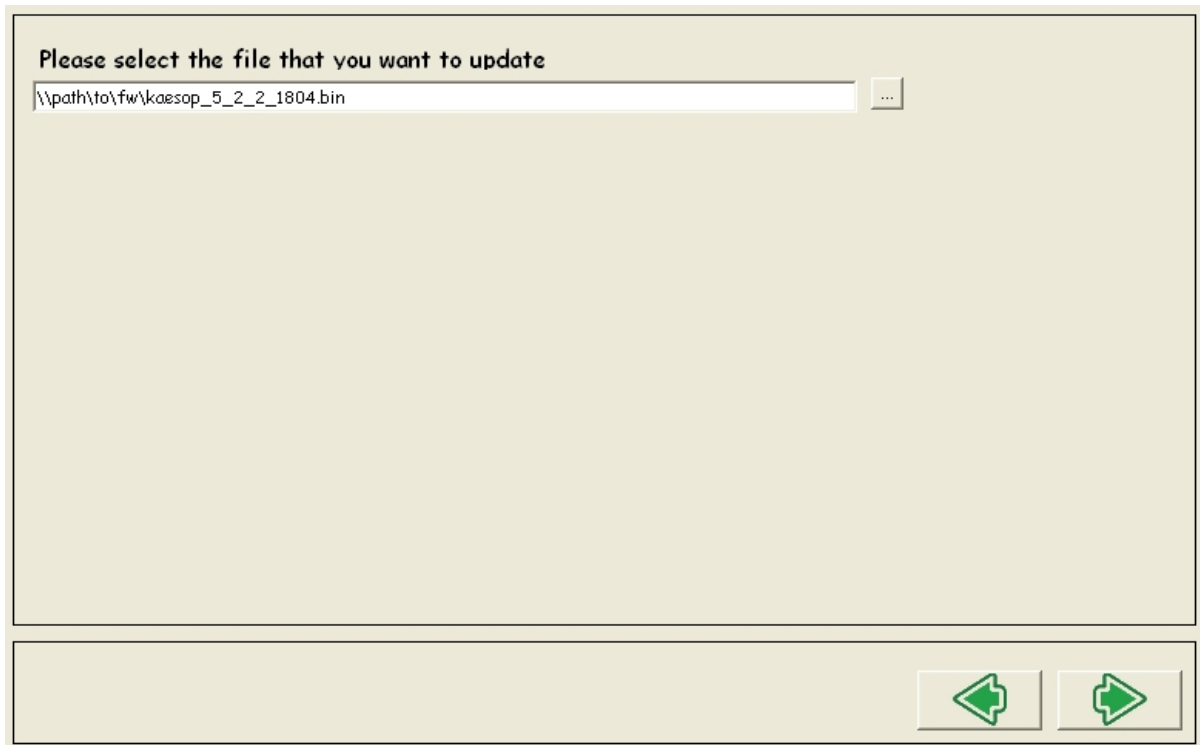
Unpack the files and install the Powersoft Firmware Updater software (FirmwareUpdater_[version]_Setup.zip) in your PC.

Updating KAESOP firmware

1. Connect the amplifier(s) to a PC running Microsoft Windows, via an Cat5 Ethernet cable (point-to-point, daisy-chain and star Ethernet topologies are allowed).
2. Switch the amplifier(s) on.
3. Launch the Firmware Updater Software.
4. Select Update K-Series Networking Firmware (K-AESOP).



5. Insert path and filename of the .bin firmware file stored on your local file system.

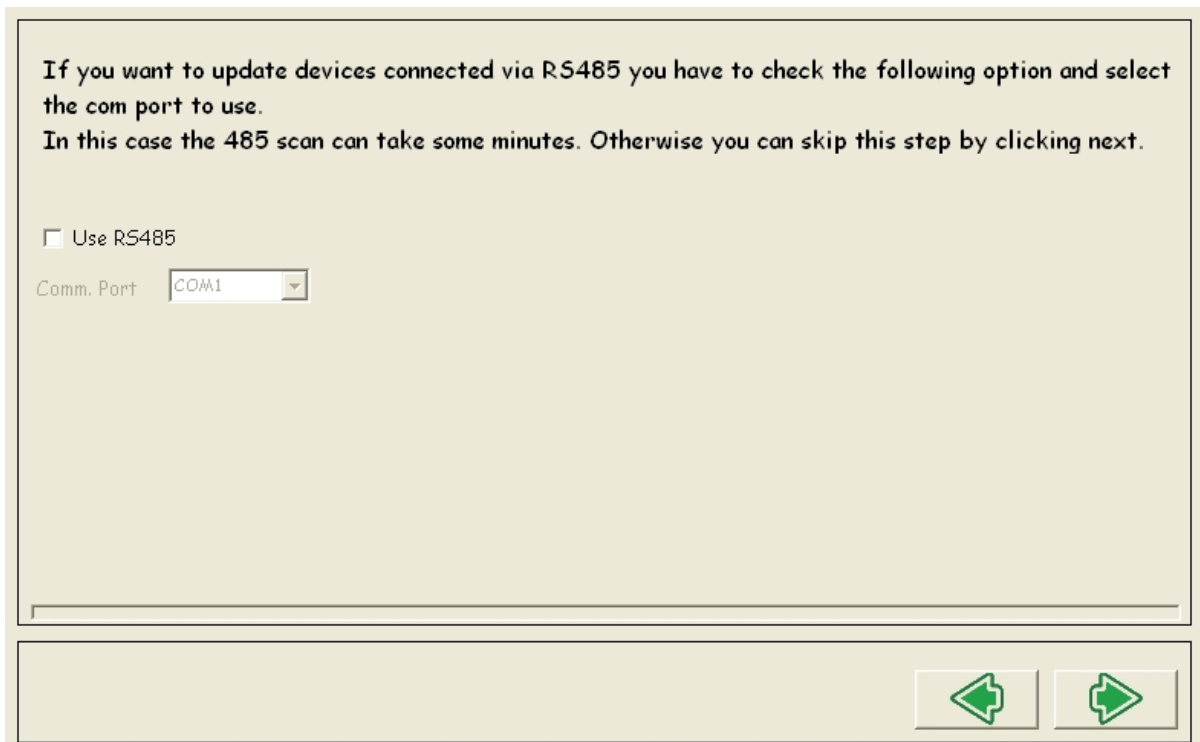


Please select the file that you want to update

\\path\to\fw\kaesop_5_2_2_1804.bin

Navigation buttons: Previous (left arrow) and Next (right arrow).

6. Since the update procedure is performed via the Ethernet connection, leave unselected the “Use RS485” check-box and move to the next step.



If you want to update devices connected via RS485 you have to check the following option and select the com port to use.
In this case the 485 scan can take some minutes. Otherwise you can skip this step by clicking next.

☐ Use RS485

Comm. Port: COM1

Navigation buttons: Previous (left arrow) and Next (right arrow).

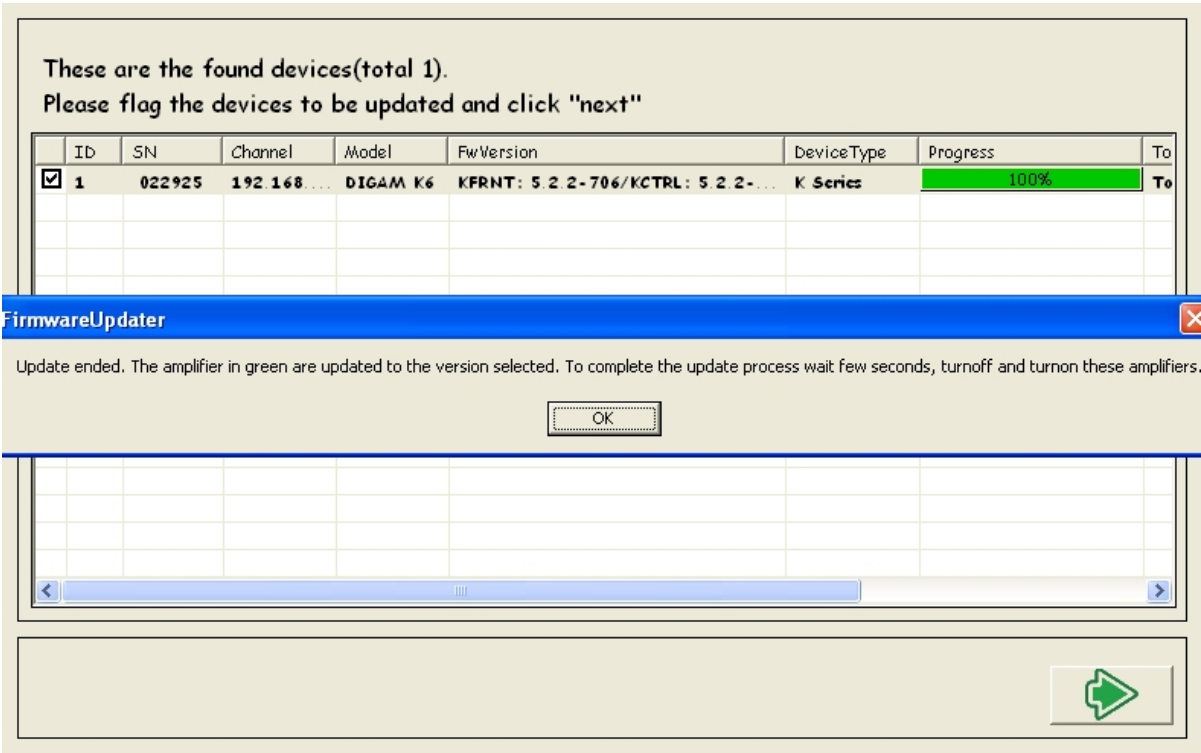
7. Select the devices you want to update.

[illegible]

- Wait until the firmware has been completely loaded.

[illegible]

9. At the end of the KAESOP update procedure a status message is shown.



Step-Up

The hardware platform of Powersoft K Series amplifiers allows great power management.

Powersoft K4 to K10 amplifiers share the same hardware platform: the power output is firmware limited. A Step-Up card allows to upgrade a K4, K6 and K8 to the closer higher model (from K4 to K6, from K6 to K8, from K8 to K10). Similarly, K2 can be upgraded to a K3 power amplifier, but since the hardware architecture is different, it is not possible to further upgrade a K3 to a K4.

K20 have dedicated hardware platform.

The upgrade - Step-Up - procedure can be performed by means of a Step-Up SmartCard provided by Powersoft.

The Step-Up SmartCard allows one-step upgrade: once the procedure has been performed, the Step-Up card is useless and can not be re-used. In order to perform more than one upgrade on the same amplifier (e.g. upgrading K6 to K10), more than one Step-Up card are necessary. Please remember that any subsequent upgrade can be performed only after having finalized the first step-up through the K Series website, as detailed below here.

It is not possible to downgrade a K Series amplifier nor transfer an upgrade to a different amplifier.

The after having upgraded the amplifier, the Step-Up process must be finalized by registering the upgrade on the website <http://www.powersoft-audio.com/en/k-series-step-up>.

If the upgrade is not registered within 50 working hours after the Step-Up has been used – the so called temporary Step-Up period – the amplifier will automatically return to its original setting, losing the upgrade: a new Step-Up card have to be purchased in order to newly upgrade the amplifier.

- [Checking the current firmware version](#)
- [Step-Up Procedure](#)
- [Internet Activation Procedure](#)

Checking the current firmware version

The Step-Up process can be performed on K Series amplifiers with proper firmware version: 3.8.5 or higher.

1. Power on the amplifier
2. Press the MENU button
3. Scroll down to SETUP and confirm with OK
4. Press OK to enter the HARDWARE INFO
5. The display will show the amplifier model and serial number
6. Press MORE and the following info will appear:

KFRONT:	X.Y.Z-B	
KCNTRL:	X.Y.Z-B	
KDSP:	X.Y.Z-S	[if KDSP optional board is NOT installed this row displays KDSP: N.A. (not available)]
(in the following page)		
KAESOP:	X.Y.ZW-V	[if KAESOP optional board is NOT installed this row displays KAESOP: N.A. (not available)]

If either KFRONT or KCNTRL versions are older than 3.8.5 you need to perform a [firmware update](#) via a dedicated Firmware Update SmartCard.

Step-Up Procedure

1. Power on the amplifier; if the amp is brand new, keep it on for at least 15 minutes before proceeding to next step.
2. Holding the Firmware Update Smart Card with Powersoft logo facing up and the electric contacts facing down, insert it softly into the SmartCard slot just above the display of the amplifier. Be sure to completely insert the card reaching the end of the slot.
3. "Checking upgrade card" should appear on the display; if no messages are displayed, consider that electrical contact can fail because of the SmartCard does not fill the slot completely or dust and debris prevent the contact.
4. The message "Upgrade available!" will then appears: confirm the upgrade. Depending on the model, the message "K2→K3?", "K4→K6?", "K6→K8?" or "K8→K10?" is shown.
5. Push the OK button or cancel by pressing the BACK button.
6. If you confirm to proceed, after few seconds "Upgrade Complete" appears on the display. The amplifier automatically restarts: it switches off and then back on.

At the end of this process the amplifier enters in the *temporary Step-Up period*, behaving as a higher model – K2 will become a K3, K4 will become a K6, K6 will become a K8, K8 will become a K10 – offering immediately larger power handling.

Nevertheless, the upgrade must be permanently confirmed within 50 hours of operation, completing the [Internet activation procedure](#). This means that after the Step-Up you own a more powerful amp in a glance, but if the Internet activation procedure will not complete within 50 working hours, the amplifier will automatically downgrade to the original model, losing the possibility to use the Step-Up card again, and a new Step-Up card must be purchased in order to complete the upgrade.

Thanks to the Step-Up procedure the amplifier can deliver a higher MAX OUTPUT VOLTAGE: this value must be manually set by the user to the desired value.

In order to set the max output voltage:

1. Push the MENU button
2. Select the SETTINGS menu and press OK.
3. Select AMPLIFIER SETTINGS and press OK.
4. Scroll down the menu and select MAX OUTPUT VOLTAGE, press OK to open.
5. Adjust the value of both channels and confirm pressing OK.
6. The same setting can be performed via the Power Control Manager software, through the dedicated SETTINGS tab.

Internet Activation Procedure

During the *temporary Step-Up period*, at the start-up the display of the amplifier shows the request "Activate now?" and a countdown, informing the user about the hours remaining to perform the activation and finalize the upgrade.

If you are ready for the activation procedure, press OK, otherwise press the BACK button.

Please note that the amount of working time will be deducted from the counter. Every time the amplifier power on before completing the Internet activation procedure, the remaining time is updated and shown.

1. Select OK: three couples of 8 hexadecimal digits numbers are displayed showing the ID code of the amp, as in the following example:

```
728C3079 - 5B0FFABE
FF6CDCDA - 9480E45A
36184F35 - BB52CE96
```

2. Carefully write down all those numbers (no mistakes allowed!).
3. Access the Internet and go to <http://www.powersoft-audio.com/en/k-series-step-up>.
4. Enter your username and password (or register).
5. Go to the ACTIVATION CODES section .
6. Fill in the form.
7. If the information provided are correct, the web page will display two activation code, as in the following

example:

ACTIVATION CODE 1	12234-35067
ACTIVATION CODE 2	83589-75928

8. A copy of the activation codes is sent to your mail box as a remainder. In case you forget the codes or you can't access your email you can find all your generated codes history on the website, under the section Step-Up Log.

You are now ready to finalize the Step-Up procedure on your amplifier:

9. Press any button in the front panel of the amplifier.
10. Insert the ACTIVATION CODE 1
11. Confirm pressing the OK button
12. Insert the ACTIVATION CODE 2
13. Confirm pressing the OK button

To enter the codes in a K series amplifier's display, follow these simple steps:

- press + or – to select the right digit
- press SEL to confirm and go to the next digit (if you make a mistake press the SEL button until you reach the digit you want to changed and correct it)
- confirm and close with OK

If one or both the codes you enter are wrong, the message "INVALID CODES. RETRY?" appears on the display.

You can try again pressing OK or cancel the activation procedure pressing BACK. In the latter case, you can still use the amplifier, but remember that the amp will automatically downgrade to the original model if you don't finalize the Step-Up procedure within 50 hours of usage.

If both codes you enter are correct, the activation procedure is complete and the message "Upgrade Confirmed!" appears on the display. Starting from this point your amplifier is permanently upgraded. If with this upgrade your amp becomes a K3 or a K10 model, no further step-up are available.

K Series Amplifier Front Label

The Step-Up kit contains the front panel labels that you can put on the upgraded amplifier in order to identify it with the proper name.

On the front panel, open the left-side dust filter cover by removing the screw positioned near the RJ45 sockets; remove the old label by pulling it out from the left edge and replace it with the new one with the correct model name.

Troubleshooting

Error message	Troubleshooting
Card read error!	<p>The card was not recognized, either because it was not inserted correctly or, especially on used amplifier, the slot contacts are not clean.</p> <p>Try to insert and remove the card several times to scratch the dust.</p>
Error authenticating upgrade card!	<p>The card is OK but has been programmed for another product: you need a different Step-Up card for your amplifier</p>
Upgrade not available	<ul style="list-style-type: none"> • Either the card has been already used, • or the amplifier has been upgraded but the Internet activation procedure has not been performed (the amp is still in temporary Step-Up period), • or 5 attempts to upgrade have been made. <p>If the amplifier is brand new, keep the amplifier on for not less than 15 minutes before starting upgrade procedure.</p>
This model can't be upgraded	<p>The amplifier is already the most powerful in the family: K3, K20 or K10 can not be upgraded. Check the amplifier model in menu / SETUP / HARDWARE INFO.</p>

IP address recovery on Powersoft M Series

Through Armonía Pro Audio Suite you can easily set the IP configuration of your M Series amplifiers as long as they are in DHCP or are configured with a static IP on the same Armonía subnet.

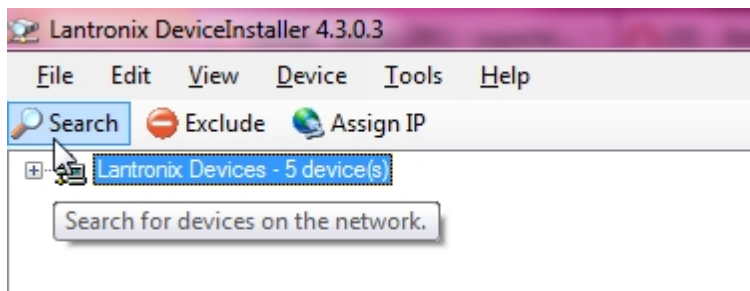
It may happen that a [static IP](#) has been assigned to your M Series HDSP+ETH amplifier (i.e. 10.0.x.y versus 169.254.x.y) and Armonía is not capable to discover the amplifier within the network: for proper operating you have to **reset the IP configuration** of your M Series HDSP+ETH amplifier.

In order to reset the IP configuration of your M Series HDSP+ETH amplifier you have to work outside the Armonía environment.

M Series HDSP+ETH amplifiers implement one RJ45 port on the rear panel for remote device communication. Factory default settings are DHCP/AutoIP, but a fixed IP policy can also be adopted. Static IP addressing (or any other IP policy) of Adau based devices can be configured with an external software program provided by Lantronix™: the DeviceInstaller™.

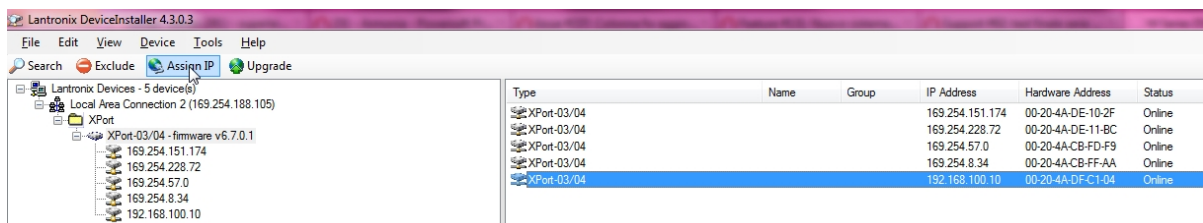
1. Download and install the DeviceInstaller™ software from the Lantronix™ web site on your PC: see <http://www.lantronix.com/device-networking/utilities-tools/device-installer.html>. Please refer to Lantronix™ documentation.
2. Connect the device to your PC.
3. Shutdown any M Series client (Armonía or third-party client).
4. Launch the DeviceInstaller™: it should automatically scan your network. If not, manually initiate the scan by clicking the *Search* button.

NOTE: The DeviceInstaller™ uses the Ethernet layer, so no IP set up is necessary.




5. All the available devices should appear. Please note that devices that are not compatible with the IP network mask of your network interface should appear too.

WARNING! Take care to connect M Series units only: other type of equipment (e.g. printers) may be revealed by the DeviceInstaller™, making them prone to be modified. Powersoft is not responsible for any damage suffered by third-party products.



6. Select the target device (whose IP address policy you want to change) and press the button *Assign IP*.
7. Follow the Device Installer wizard. Any kind of IP policy can be set.
 - For **AUTO IP addressing** select *Obtain an IP address automatically* and click *Next*:



Assignment Method


Would you like to specify the IP address or should the unit get its settings from a server out on the network?

☒ Obtain an IP address automatically
☐ Assign a specific IP address

[TCP/IP Tutorial](#)

[< Back](#)
[Next >](#)
[Cancel](#)
[Help](#)

Set DHCP and Auto IP assignment:



IP Discovery Settings


What protocols should the device use to discover its IP address from the network?

☒ DHCP
☐ BOOTP
☐ RARP
☒ Auto-IP ☒ Clear Gateway

It is recommended that the "Auto-IP" Check Box be checked if the "DHCP" Check Box is checked. It is also recommended that the "Clear Gateway" Check Box be checked if the "Auto-IP" Check Box is checked. If DHCP fails or is not enabled, the device needs to revert to Auto-IP. If Auto-IP is not set, then DeviceInstaller will not be able to detect the device. Also, if Auto-IP is set and the gateway is set, DeviceInstaller will not be able to detect the device.

[< Back](#)
[Next >](#)
[Cancel](#)
[Help](#)

- For **FIXED IP addressing** select *Assign specific IP* and click *Next*:



Assignment Method


Would you like to specify the IP address or should the unit get its settings from a server out on the network?

☐ Obtain an IP address automatically
☒ Assign a specific IP address

[TCP/IP Tutorial](#)

[< Back](#)
[Next >](#)
[Cancel](#)
[Help](#)

Select IP address and subnet mask compatible with your PC. Specifying the gateway address is not mandatory:



IP Settings

Please fill in the IP address, subnet, and gateway to assign the device. The subnet will be filled in automatically as you type, but please verify it for accuracy. Incorrect values in any of the below fields can make it impossible for your device to communicate, and can cause network disruption.

IP address:
 Subnet mask:
 Default gateway:

Configuration information is not available for this device. The subnet mask and default gateway will not be able to be set. After the IP Address has been set successfully, then return to this Assign IP Address wizard to set the subnet mask and default gateway.

[< Back](#)
[Next >](#)
[Cancel](#)
[Help](#)

8. When done, the device network will restart automatically.