PRONET AX

Loudspeaker Control Software

USER MANUAL

Summary

1. INTRODUCTION

1.1 Welcome to PRONET AX: the philosophy

PRONET AX is a proprietary software designed by PROEL to remotely control all AXIOM systems, active loudspeakers and amplifiers.

It represents a major upgrade of the existing PRONET software, released originally in 2012 and widely used by PROEL and AXIOM customers to remote control loudspeaker systems and other devices equipped with the CORE DSP platform.

PRONET AX software, which is based on the very stable and reliable CAN BUS communication protocol, has been completely redesigned, with a brand-new UI and an innovative approach to the remote control of AXIOM loudspeaker systems.

1.2 Contacts

For a help with PRONET AX or to report bugs, please send an email to info@proel.com, or call by phone or mail to:

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CAP 64027 Sant'Omero (TE) ITALY
Tel. +39 0861 81241
info@proel.com

For info and downloads about AXIOM products, please check the website
https://www.axiomproaudio.com/.

1.3 PRONET AX END USER License Agreement

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2. DOWNLOAD AND INSTALL

PRONET AX is a free software and it can be downloaded from the AXIOM website http://www.axiomproaudio.com/. For downloading PRONET AX customer's registration is required in the MY AXIOM area of the website.

2.1 Requirements

Before installing PRONET AX, you must verify that your computer meets the following minimum requirements:

- Intel Core Duo 2GHzor higher
- At least 2 GB RAM memory (depending also on the operating system)
- Screen resolution 1024 X 768 or higher
- 100 MB Hard Disk space required
- USB port 2.0 or 3.0
- Recommended O.S.: Windows™ 10 or later

Be sure not to connect any device to the PC until the end of the installation process. It is also recommended to close all applications currently in use before starting the installation.

2.2 Software installation

2.2.1 Log on as Administrator

You must be logged on as an administrator to perform the PRONET AX software installation steps, to install the required drivers and to run the program. Please, verify your authorizations before proceeding with the installation! To do that, check the Settings / Accounts page of the operating system in use.

2.2.2 Install the program

Run the installation program by double-clicking on the icon. If the computer will ask "Do you want to allow this app from an unknown publisher to make changes to your device?" answer YES. This will create a program folder called PRONETAX (or the name you have chosen). This folder can be accessed via the Start menu under Programs. The folder contains shortcuts to the program, shortcuts to the manual and uninstaller.

Step1
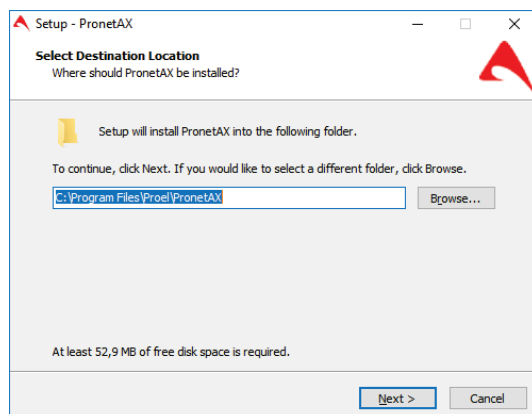
The installation program will ask you for the destination folder. If the default folder is your choice, then click on next, otherwise specify another folder using browser button.

Step 2
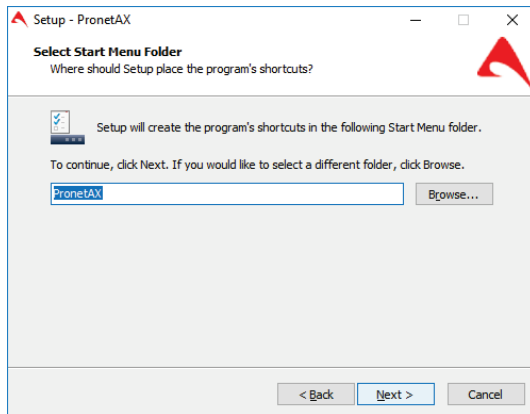
The installation program will ask you the name of the folder that will appear on the START MENU: select next if your choice is the name suggested or specify a different name.

Step 3
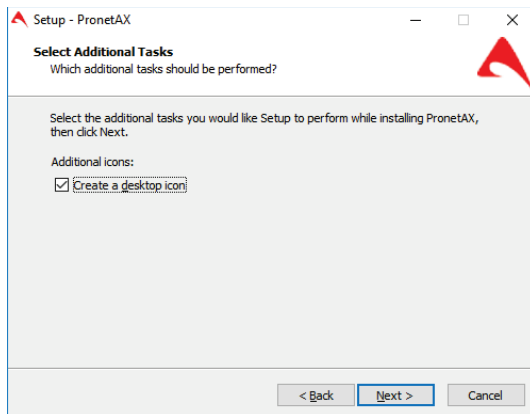
The installation program will ask you if you want to create an icon on the desktop: select next if you want to do that or uncheck the choice and press the "Next" button.

Step 4
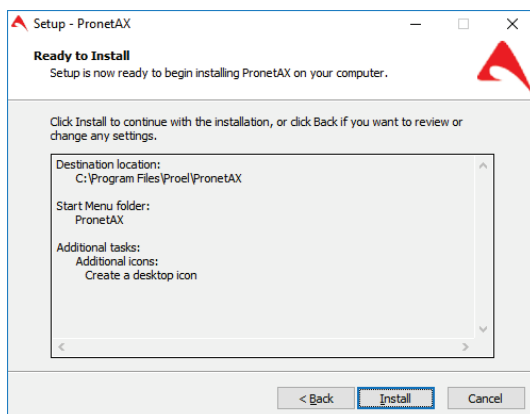
The installation program will ask you to confirm your choices: click on "Install" button or go back using "back" button.

Step 5
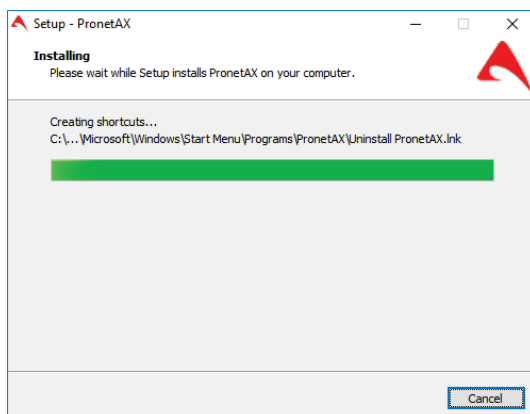
The installation program copies all files on your computer.

Step 6
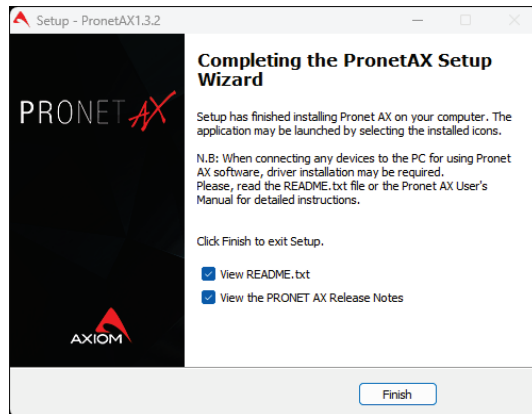
When the installation program has finished, it will ask if you want to open the readme, the user manual and the latest note files.

2.3 Antivirus Protection or System Firewall set up

If you have a software **firewall** running on your PC, the first time you open PRONET AX application, or the first time you go online and scan the PRONET AX Network (see "Connecting devices to a network" and working online/offline"), probably you will receive an Antivirus Protection or System Firewall warning regarding an application called "**vscpd.exe**". It is not a virus or malware, but just a small background application that manages the PRONET AX network communication through the USB port. Allow this program to access the network and, if you can, set the option "*Remember my answer and don't ask me again*".
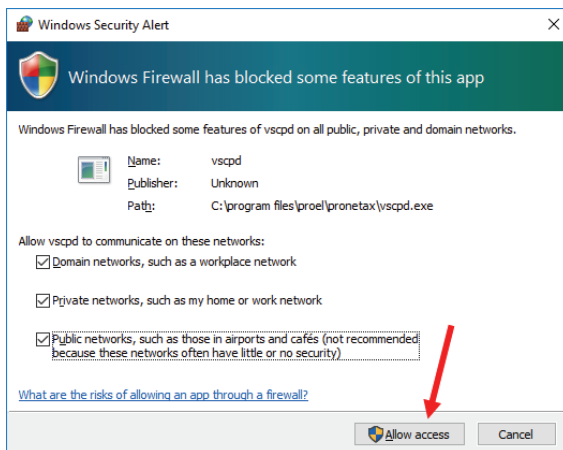
Depending on the protection software installed on your computer, a similar page can appear the first time you run PRONET AX and connect to a device.

Check all options to allow access of "vscpd.exe" then click on "Allow access" button.

2.4 Uninstall program

You can uninstall PRONET AX either by double-clicking the Uninstall PRONET AX icon in the PRONET AX folder group or by invoking the "Settings", "Systems", "Apps & Feature" and then choosing the PRONET AX item.

2.5 Update program

For program update check the AXIOM website http://www.axiomproaudio.com/.

3. USB2CAN CONVERTER

PRONET AX network is an interconnection of different types of AXIOM devices, loudspeaker and amplifiers. The network is based on a robust, reliable and fast communication protocol to interconnect every device with simple RJ45 cat.5 or cat.6 Ethernet cables. USB2CAN converter interfaces the PRONET AX software with the network.

3.1 USB2CAN converter version 2 (USB2CANDV2)

No driver installation is required for **USB2CANDV2 converter (version 2) on Windows 10 or later**. The converter will use a standard Windows driver and it will appear as **"TouCAN converter"** in the list of USB connected devices.

For older Windows operating systems, the installation of a dedicated **"WinUSB Device"** driver is needed. The path for the manual installation is: **<your installation path>\driver\USB2CANDV2**.

3.2 USB2CAN converter version 1 (USB2CAND) for Windows 7 / 8/ 10

For using USB2CAN converter version 1 (USB2CAND) the installation of dedicated driver is needed.

Before installing the driver, you must check which type of operating system is installed on your computer. To do this open the "Setting" or "Control Panel" from "Start menu" and then click to open "System/About", the following page appears:

Check
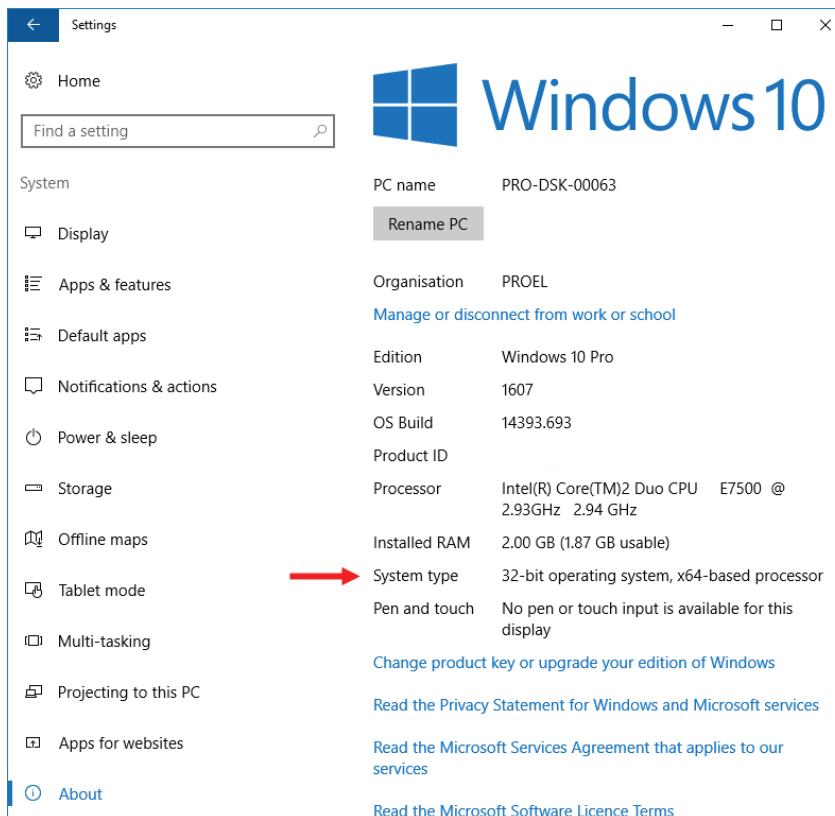
In "System Type" you can see if you are using a "32-bit operating system" or a "64-bit operating system". Take note of that because later you will have to choose the correct driver for your OS.

Connect the USB2CAN converter to the USB port of your PC. If it's the first time you connect it, the "STATUS" LED on the USB2CAN converter starts blinking, then Windows O.S. should detect the new hardware connected and ask for the drivers (see step 1). In case this does not happen, just proceed to step 2.

Step1
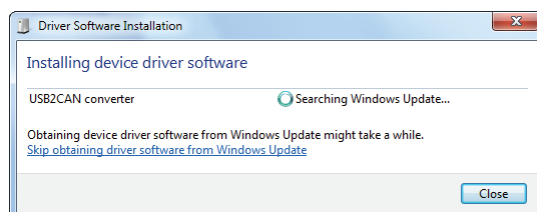
Windows will try to download the driver from Window Update repository: skip the download and proceed with the manual installation of the driver, pressing "Skip", "yes" and "Close".

Step 2
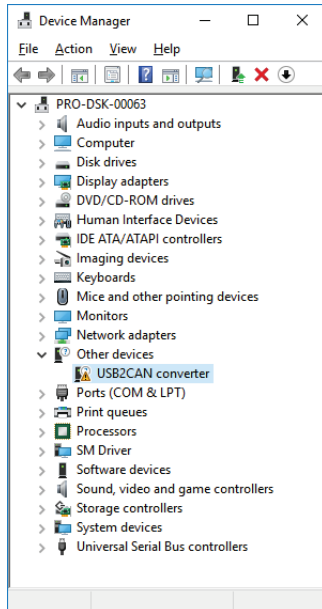
Open "Settings" or "Control Panel" from "Start menu" and then click to open "Device Manager". If you are prompted for an administrator password or confirmation, type the password or provide the confirmation.

Step 3
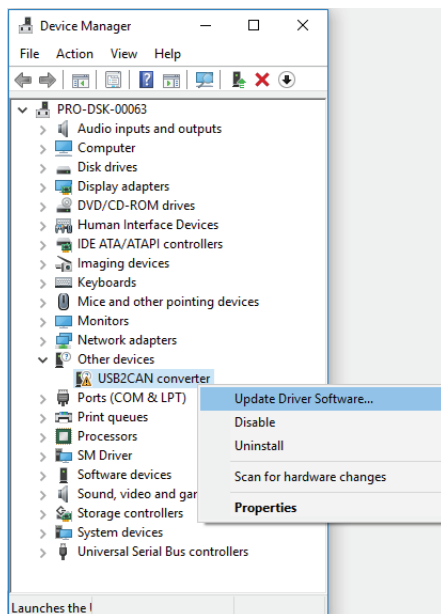
Find the "Other devices / USB2CAN converter" and then right-click on the name.

Click "Update Driver Software…" and then follow the instructions. If you are prompted for an administrator password or confirmation, type the password or provide the confirmation.

Step 4
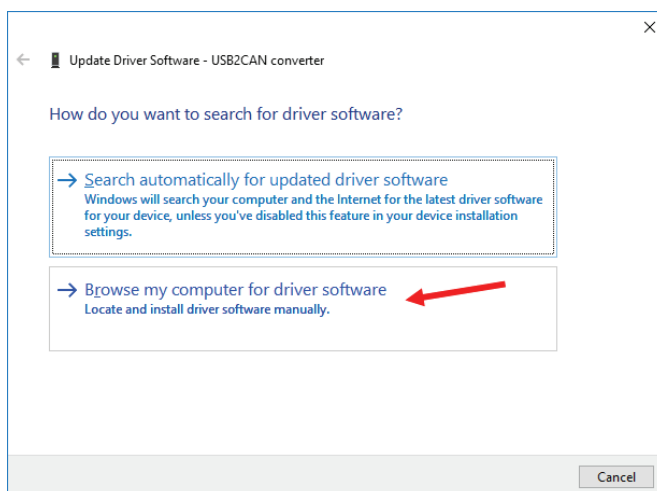
Choose to browse the computer for the driver software.

Step 5

Browse for driver software on your computer

Search for driver software in this location:

C:\Program Files\Proel\PronetAX\driver\x86-32bit

☑ Include subfolders

→ Let me pick from a list of device drivers on my computer
This list will show installed driver software compatible with the device and all driver software in the same category as the device.
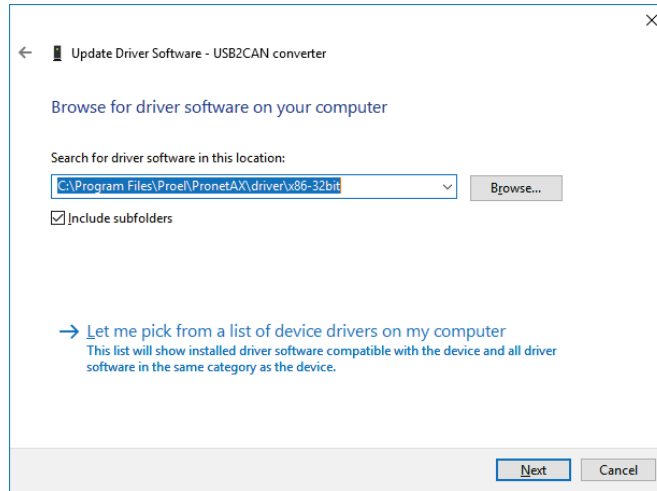
Select the path of the folder driver in the PRONET AX installation folder:

C:\Program Files\Proel\PRONETAX\Driver\USB2CAND\x86-32bit for 32bit operating systems, or

C:\Program Files\Proel\PRONETAX\Driver\USB2CAND\x86-64bit for 64bit operating systems,

If you have changed the installation folder, you need to specify the new directory path, e.g.

<your installation path>\PRONETAX\Driver\USB2CAND\x86-32bit or ...**\x86-64bit**

Then click on "Next" button.

Step 6

Windows Security

Would you like to install this device software?

Name: edevices Universal Serial Bus controller...
Publisher: 8devices UAB

☑ Always trust software from "8devices UAB".   Install   Don't Install

⚠ You should only install driver software from publishers you trust. How can I decide which device software is safe to install?
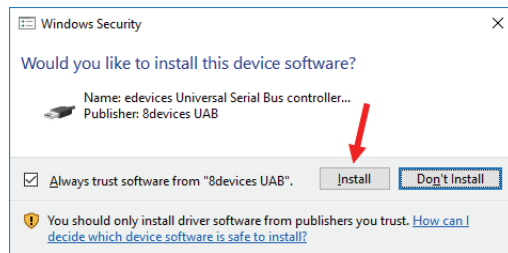
A security warning can appear, so you have to confirm the installation: check that "Always trust software from 8devices UAB" is selected then click on "Install" button.

Step 7

Update Driver Software - USB2CAN converter

Windows has successfully updated your driver software

Windows has finished installing the driver software for this device:
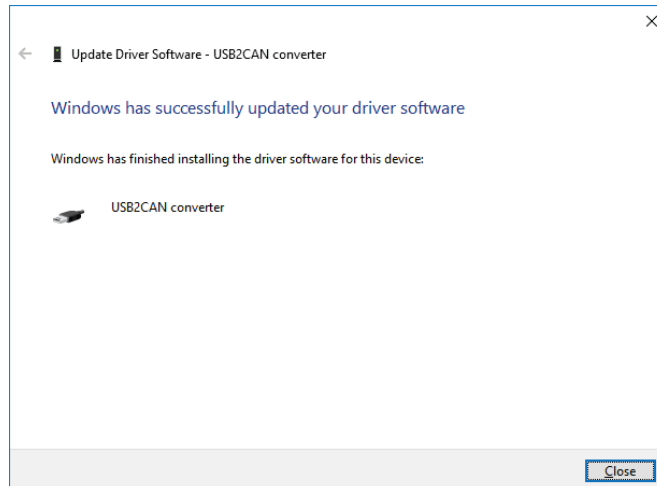
USB2CAN converter

The next page will show that the installation has been successfully completed: click on "Close" button.

Step 8

Device Manager

File Action View Help

> Monitors
> Network adapters
> Portable Devices
> Ports (COM & LPT)
> Print queues
> Processors
> SM Driver
> Software devices
> Sound, video and game controllers
> Storage controllers
> System devices
∨ Universal Serial Bus controllers
    Intel(R) N10/ICH7 Family USB Universal Host Controller - 27C8
    Intel(R) N10/ICH7 Family USB Universal Host Controller - 27C9
    Intel(R) N10/ICH7 Family USB Universal Host Controller - 27CA
    Intel(R) N10/ICH7 Family USB Universal Host Controller - 27CB
    Intel(R) N10/ICH7 Family USB2 Enhanced Host Controller - 27CC
    USB Composite Device
    USB Mass Storage Device
    USB Root Hub
    USB Root Hub
    USB Root Hub
    USB Root Hub
    USB Root Hub
    USB2CAN converter

For an additional confirmation that the driver has been correctly installed, check that the "USB2CAN converter" driver appears under "Universal Serial Bus controllers".

3.3 USB2CAN converter version 1 (USB2CAND) for Windows XP / VISTA

Though Windows XP and Windows Vista are no longer supported, PRONET AX can run also under these operating systems. In the following steps we explain how to install the driver on a Windows XP system (Vista is quite similar).

Step 1
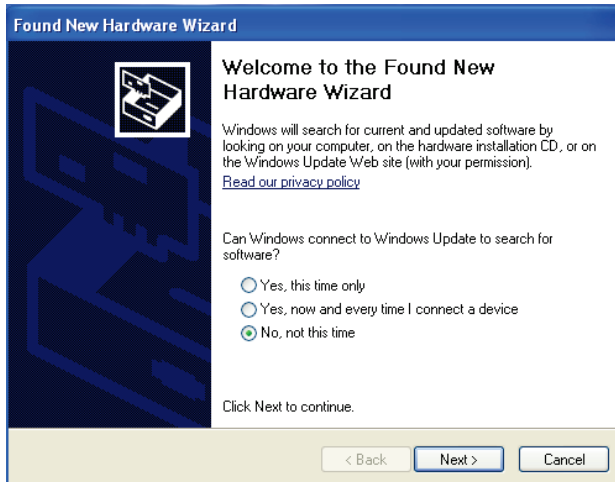
Connect the USB2CAN converter to the USB port of your PC. Windows O.S. will detect the new hardware connected and will ask for the drivers. Specify "No, not this time" and click on Next button.

Step 2
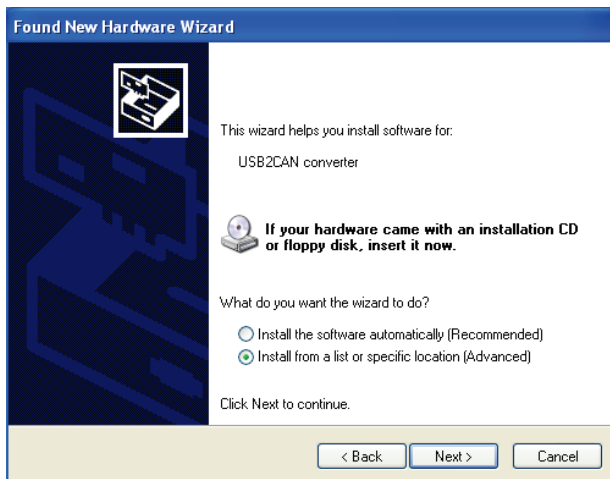
Choose "Install from a list or specific location (Advanced)" then click on Next button.

Step 3
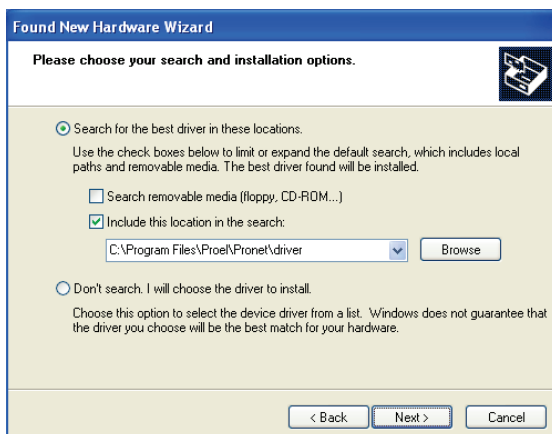
Type the path of the folder driver in the PRONET AX installation folder.

When required, skip the Windows Logo warning message and continue the installation of USB2CAN driver.

Step 4
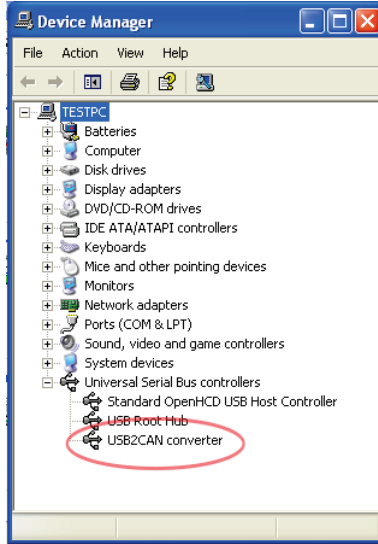
You can verify the right driver installation for the USB2CAN converter in the Device Manager Panel accessible from Control Panel.

3.4 Using USB2CAND converter

When you plug in the converter to a USB port of the PC, the STATUS LED on top lights in RED, meaning that the converter is powered but not working yet.

The first time you go "online" (see chapter 17), the PRONET AX software application starts checking the network through the USB2CAND controller, sending and receiving data from connected devices. If everything is OK, the STATUS LED on top lights in GREEN indicating the normal activities on the network.

If there is a problem with the software driver, with the network bus or in the converter, the LED flashes in RED and/or GREEN.

RED blinking	*PC USB2CAND driver is not installed (only version 1)*
RED steady	*Driver is installed but converter is not working*
GREEN steady	*Converter is online and working fine*
GREEN blinking slow	*There is a problem with the network bus (check terminations and cables)*
GREEN blinking fast	*There is a problem with the network bus (check terminations and cables)*
RED blinking slow	*There is a problem with the network bus (check terminations and cables)*
RED and GREEN	*Service upgrade mode*

4. PRONET AX NETWORK

PRONET AX network is an interconnection of different types of AXIOM devices, loudspeakers and amplifiers. PRONET AX software application, running on a PC (called "*master controller*"), can fully control every connected device (called "*slave device*"). The communication is based on a robust protocol to interconnect every device with simple RJ45 cat.5 or cat.6 Ethernet cables. Master PC uses USB2CAND converter to interface PRONET AX software with the network and following simple operations you can configure the connection properties for the devices to work properly in the network.

Each device in a PRONET AX network must have a unique Identifier Number called ID: by default, the PC has ID=0 and there can only be one PC controller in a network, any other connected device must have its own unique ID, equal to or greater than 1. Note that in a PRONET AX network there cannot exist two devices with the same ID, the IDs don't have to be sequential, they must only be unique.

You can also connect a PRONET AX network without the master PC, in this case you can control only a very limited number of operations. For example, without the master PC you can change/recall a preset from the panel of a device in the network, then the same operation also acts on all the connected devices of the same type and same model, so the operation changes/recalls the same preset number on all the connected devices of the same type and same model of the source device you are working on.

See below how to first connect all the devices in the PRONET AX network and then how to assign an ID to each device (except the PC that is always 0).

4.1 Network connections

PRONET AX network is based on a "bus-topology" connection, where the first device is connected to the network input connector of the second device, the second device's network output is connected to the network input connector of the third device, and so on.

To ensure reliable communication the first and the last device of the "bus-topology" connection must be terminated. This can be done by pressing the "TERMINATE" switch near the network connectors in the rear panel of the first and the last device.

See below some examples of connections for devices and their proper termination setup.

Example 1: the PC controller is connected in the center of the network. Both USB2CAND connectors are used.
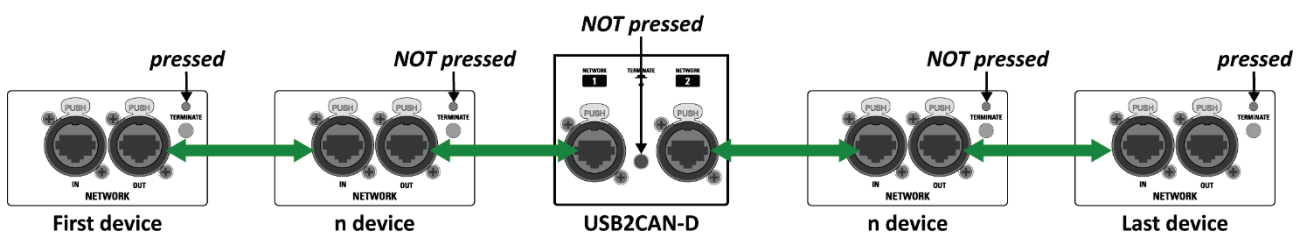
Example 2: the PC controller is connected at the beginning of the network. Only one of the USB2CAND connectors is used.
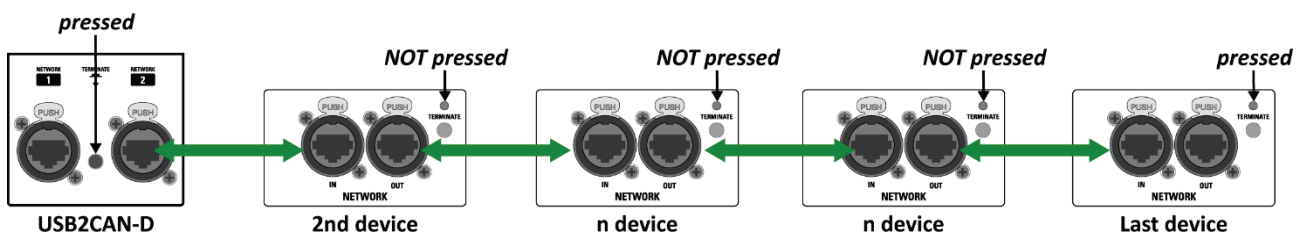
Example 3: the PC controller is connected using the older USB2CAN* interface that has only one network connector.
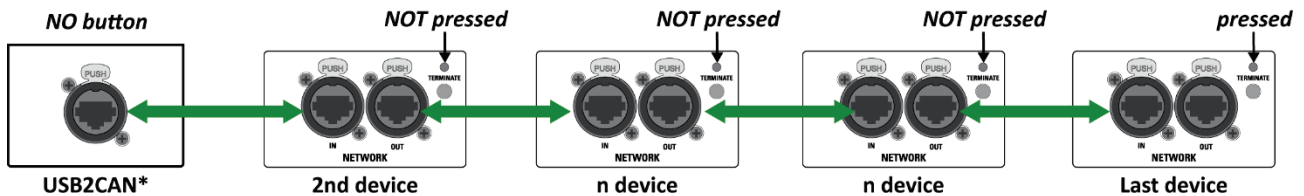
Note*: older USB2CAN has only a single network port, USB2CAN-D and newer USB2CANDV2 have two network ports.

Note that if you add a new device as the first or last device in a PRONET AX network you must re-set correctly the termination.

4.2 Assign ID

The ASSIGN ID procedure is the operation that allows to assign a correct ID number to each device (by default ID number for a standalone device is 1). This operation must be performed individually for each unit and it can be done in two different ways: "Automatic ID ASSIGN" or "Manual ID ASSIGN".

4.2.1 Automatic ID ASSIGN

The automatic ID assignment mode depends on the device type. Please, refer to the specific instructions about the procedure for each device type (hardware key on panel or software option on touch panel), then you can follow the hereafter step-by-step procedure to assign the ID, common for all devices in the network. Note that when you assign a new ID, you invoke the device to reset its current ID and you force the device to search for the first free ID in the network, starting from ID=1.

The automatic assignment of a new ID for all the devices in a network follows these steps:

1. power-off all devices;

2. connect all the devices in a network using RJ-45 networking cables and verify the right terminations;

3. power-on only the first device and activate its automatic ID assign procedure to find its new ID;

4. keep on all the previous identified devices, power-on the next device and activate its automatic ID assign procedure;

5. Repeat step 4 for all the other devices in the network;

At the end of this sequence of operations, every device has its own unique **ID**. If you need to add a new device to the network, you simply repeat the operation at step 4 with all devices already assigned turned on.

Note that for the automatic ID assign procedure indicated above the master PC with PRONET AX running software and USB2CAND converter are not needed: PRONET AX software can be working but it is not required for the automatic ID assignment.

4.2.2 Manual ID ASSIGN using PRONET AX

This procedure can be used either for assigning the first ID to the devices or it can be used to change the IDs of the devices in a working system. The procedure requires PRONET AX software working and USB2CAND connected.

For a first-time system setting the devices must be connected to the PC one by one. Proceed in this way:

1. Connect, terminate and power on a device.

2. once the device has been recognized by the PRONET AX, select the device's control panel on the workspace area and choose "**File/Tools/Remote ID change**" to assign a new ID to the device (we suggest to write down the ID number on the panel of each device).

3. remove the termination, power off and disconnect the device.

4. repeat the procedure for each device of the system, <u>taking care to assign a different ID to each one</u> of them.

For changing the ID of devices in an already working system proceed in this way.

1. connect all the devices to the PRONET AX and power them on.

2. once all the devices have been recognized by the PRONET AX and all the control panels are on the workspace area, select the control panel of the device you want to modify and choose "**File/Tools/Remote ID change**" to assign a new ID (we suggest to write down the new ID number on the panel of each device).

3. repeat the procedure for each device of the system, taking care to assign a different ID to each one of them.

5. PRONET AX APPLICATION INTERFACE

Let's take a little tour of the PRONET AX graphic interface to learn how to use it and how to use the graphic tools.

Mode Bar · View Bar · Menu Bar · Control Panel · Tool Bar · Workspace Area

Editor Panel Tabs · Info Panel · Editor Panel · Status Bar
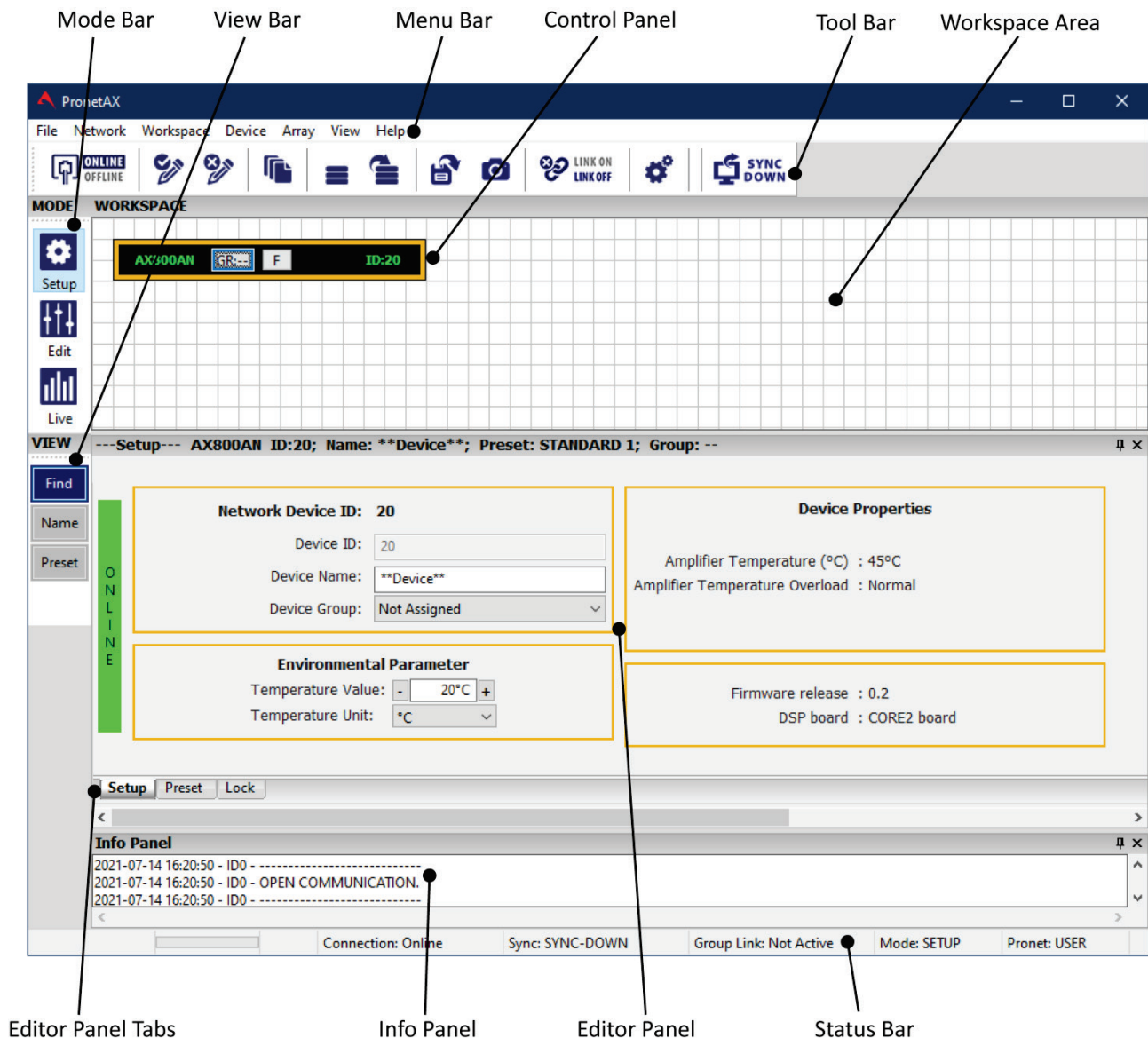
6. MENU BAR

The menu bar provides access to all available commands to manage the network.

PronetAX

File Network Workspace Device Array View Help

File

Load Snapshot
Save Snapshot

Settings
Tools   >

Print
Print Preview
Print Setup

Exit

"Load Snapshot" and *"Save Snapshot"* allow you to work with snapshots. When you save a snapshot both device position in the workspace and all device parameters are saved on the hard disk to be reloaded in a second time.
"Settings" allows you to change the application's settings (see further in this manual).
"Tools" contains two utilities: *"Firmware Update"* to update the device's firmware (as explained in chapter 14.1) and *"Remote ID Change"* to change an ID number of a connected device (as explained on chapter 4.2.2 and 14.2).
"Print", *"Print Preview"* and *"Print Setup"* allows you to print the device's parameters (see further on this manual).
"Exit" will close the program.

Network

Online
● Offline
  Network Rescan

"Online" connects the PRONET AX to the network.
"Offline" disconnects PRONET AX from the network and terminates all pending operations.
"Network Rescan" forces a scan of the network to find possible newly connected device.

Workspace

Clear Workspace

● Setup Mode
  Edit Mode
  Live Mode

"Clear Workspace" deletes all devices present in the workspace, if the PRONET AX is Online eventual connected device will be deleted and then re-added.
"Setup Mode" is for setting up the system.
"Edit Mode" is for changing the device's parameters during the system's sound check.
"Live Mode" is for monitoring the system during the show time.

Device

Add Demo Device
Remove Device
Remove All Devices

Load Preset File

Group Assign

Assign to Array
Remove from Array

"Add Demo Device" will add a demonstration device in the workspace.
"Remove Device" removes the selected devices from the workspace.
"Remove All Devices" cleans the workspace from all devices, demo virtual or real.
"Load Preset File" loads a preset from a .pcf file to the selected devices.
"Group Assign" assigns all selected devices to a group.
"Assign to Array" assigns all selected devices to an array.
"Remove from Array" removes all selected devices from an array.

Array

Create Array
Remove Array

"Create Array" creates a new array in the workspace to arrange devices.
"Remove Array" removes the array from the workspace (all the devices contained in it are also removed).

View

Open Editor
Close Editor
Dock Editor Panel

View Info Panel

"Open Editor" opens the editor window of a single device or of an array.
"Close Editor" closes the editor window.
"Dock Editor Panel" forces the editor panel window to dock in the PRONET AX app when it is floating free in the computer screen.
"View Info Panel" allows to see the status of the communications through USB2CAND.

Help

About
Help

"About" shows the application release number and other details.
"Help" opens the User's Manual file (an Internet connection is needed).

7. TOOL BAR

The tool bar includes the most used and relevant commands. Moving the mouse pointer onto the command's icon shows the command name.

"Online" and *"Offline"*.

"Open Editor" and *"Close Editor"*.

"Group Assign".

"Create Array" and *"Remove Array"*.

"Load Snapshot" and *"Save Snapshot"*.

"Disable Group Link" and *"Enable Group Link"*.

"Settings" opens the configuration window.

Show the sync mode as: "Sync Down" or "Read Up" (use "Setting" to change).

8. MODE BAR

This bar is to select the PRONET AX operating mode:

SETUP *Mode is for setting up the system.*

EDIT *Mode is for changing the device's parameters during the system's sound check.*

LIVE *Mode is for monitoring the system during the show time.*

9. WORKSPACE AREA AND CONTROL PANELS

The workspace area is where the devices' control panels are located. Control panels are compact windows that display main features, configurations and status (protections, signal/clipping, currently loaded preset, etc...) of the devices in the workspace.

The devices can be DEMO, VIRTUAL or CONNECTED and they can be viewed as single units or in an Array.

When OFFLINE, DEMO devices can be added using the "Device" menu (only in SETUP mode). When ONLINE, the DEMO devices are removed and, if the software detects that there are devices connected to the network, it automatically opens the Control Panels in the workspace. Devices can be removed from the workspace when ONLINE (only in SETUP mode), but if they stay connected their Control Panel is reopened.

In SETUP mode you can add or remove Arrays using the "Array" menu or the buttons in the tool bar.

Both Devices and Arrays can be removed just by selecting and using Delete button on the PC keyboard.

DEMO devices added when OFFLINE show on the left side of the control panel the label DEMO followed by a sequential number. To identify easily each type of unit in complex systems, the color of control panels' borders is different, depending on the type of device:

   Devices with YELLOW borders are LINE ARRAY systems

   Devices with DARK BLUE borders are SUBWOOFERS

   Devices with ORANGE borders are POINT SOURCE systems

   Devices with LIGHT BLUE borders are STAGE MONITORS

   Devices with DARK GREEN borders are SUBWOOFERS with power outputs

   Devices with RED borders are Q-NEX or QC amplifiers
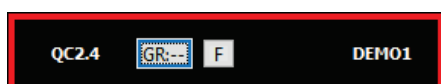
A DEMO device does not contain any parameter and it can be converted into a VIRTUAL device just by loading a preset file into it ("Load Preset File" in the "Device" menu or "Load Preset File" button in the Editor).

A VIRTUAL device shows on the left side of the control panel a WHITE label "ID:X", where X is the unit's ID number.

When the PRONET AX goes ONLINE, all DEMO devices are removed. If the VIRTUAL devices on the workspace correspond to real units connected to the network (model and ID), then the device becomes CONNECTED and the label becomes GREEN, with a wrong correspondence a warning message will appear.

If there is any communication problem with a CONNECTED device, then the label becomes RED.
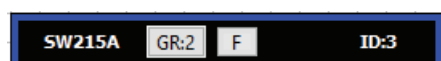
   VIRTUAL device with ID:X label in WHITE color.

   CONNECTED device with ID:X label in GREEN color.

CONNECTED device with communication problems: ID:X label is in RED color.

This is an Array made of four Line Array modules and one subwoofer. For details about how to work with Arrays see chapter 20.6 further in this manual.

The device's control panels can be selected and moved using the typical graphical ways:
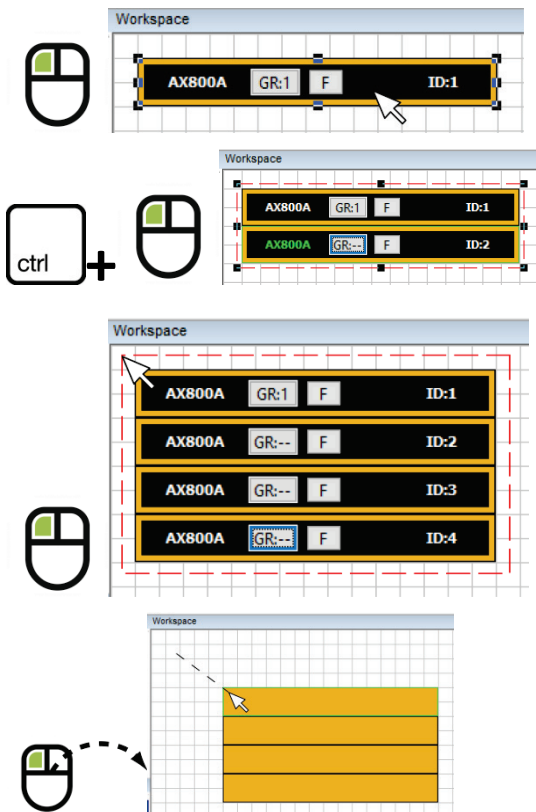
- *Select single control panel by clicking onto it.*

- *Select multiple control panels by clicking onto them while pressing CTRL key.*

- *Select multiple control panels by selecting an area of the workspace containing all of them while you press and hold the left mouse button.*

- *The selected device Controls Panels can be moved and arranged in the workspace using the drag-and-drop method.*

Other information reported on control panels depends on the type of devices displayed: please, refer to the specific section of each type of device in this manual for more detailed info.

10. VIEW BAR

This bar, which is different according to the operating mode, changes the view in the device's control panel:

FIND allows you to identify a specific device in the audio system network. Pressing the "**F**" button on the Control Panel a visual indication highlights the selected device in the network.
Find is available in SETUP and EDIT modes.

NAME view allows you to show the username of each device on the Control Panel.
Name is available in SETUP and EDIT modes.

PRESET allows you to show on the Control Panel the preset loaded in each device.
PRESET VIEW is available in SETUP and EDIT modes.

SIGNAL allows to show on the Control Panel the signals' status in EDIT and LIVE mode: GREEN = signal present, ORANGE = too high signal/limited signal, RED = muted section.
Only in EDIT mode, if clicked the squares work as MUTE buttons.

11. EDITOR PANEL

With the Editor Panel you can control the parameters of the selected device or of several devices of the same type being part of the same group.
The parameters that can be edited depend on the operating mode selected on MODE BAR.
Clicking on the Editor Panel tabs, different parameters can be visualized and edited: parameters and proprieties depend on the type of device. Please, refer to the specific sections on this manual for a detailed description of the editable parameters of the devices.

2 CLICKS
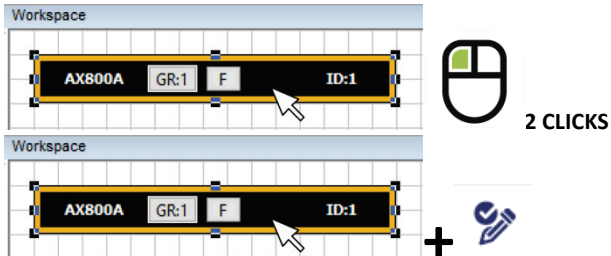
To open the Editor Panel double click on the Control Panel of the device you want to edit

Select with one click the Control Panel of the device you want to edit and then click on the "Open Editor" icon of the Tool bar

Example of an Editor panel for a loudspeaker device
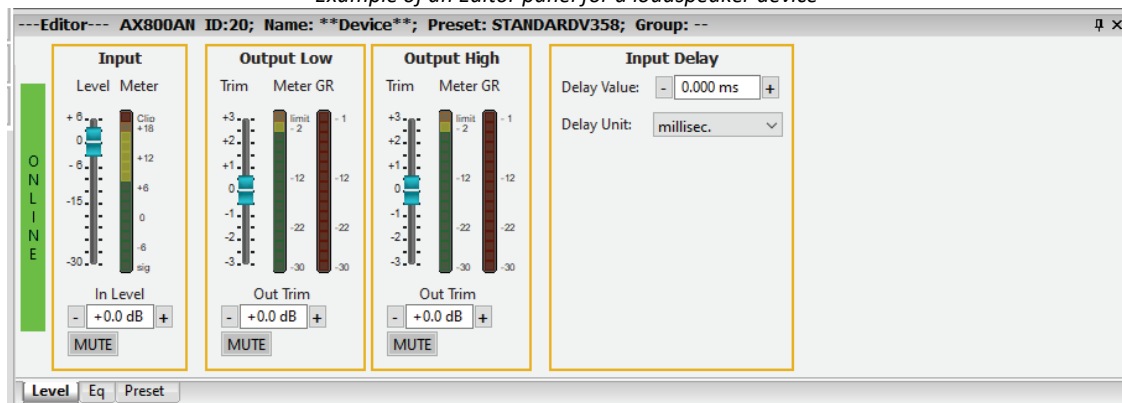
12. STATUS BAR

At the bottom of the application interface appears the status bar that shows some useful information:

| Device Syncing... | ▮▯▯▯▯ | Connection: Online | Sync: SYNC-DOWN | Group Link: Active | Mode: EDIT | Pronet: USER |

The status bar displays some useful information:

- *A green flow bar shows that the PRONET AX is syncing data with one or more devices.*
- *Current connection status: ONLINE or OFFLINE.*
- *Current Sync Mode: SYNC-DOWN or READ UP.*
- *Group Link status: "Active" or "Not Active"*

  Currently selected Mode: SETUP, EDIT or LIVE
- *PronetAX mode: "USER" is the standard mode.*

13. SETTINGS MENU

In this window you can set the options for PRONET AX.

- *Group Link option enables or disables the "**GROUP LINK**" option.*
- *Sync option set it as "**Sync Down**" or "**Read Up**".*
  - *if sync mode is "**Sync Down**" the parameters are downloaded from the workspace to the CONNECTED device*
  - *if the sync mode is "**Read Up**" the parameters are uploaded from the CONNECTED device into the workspace*
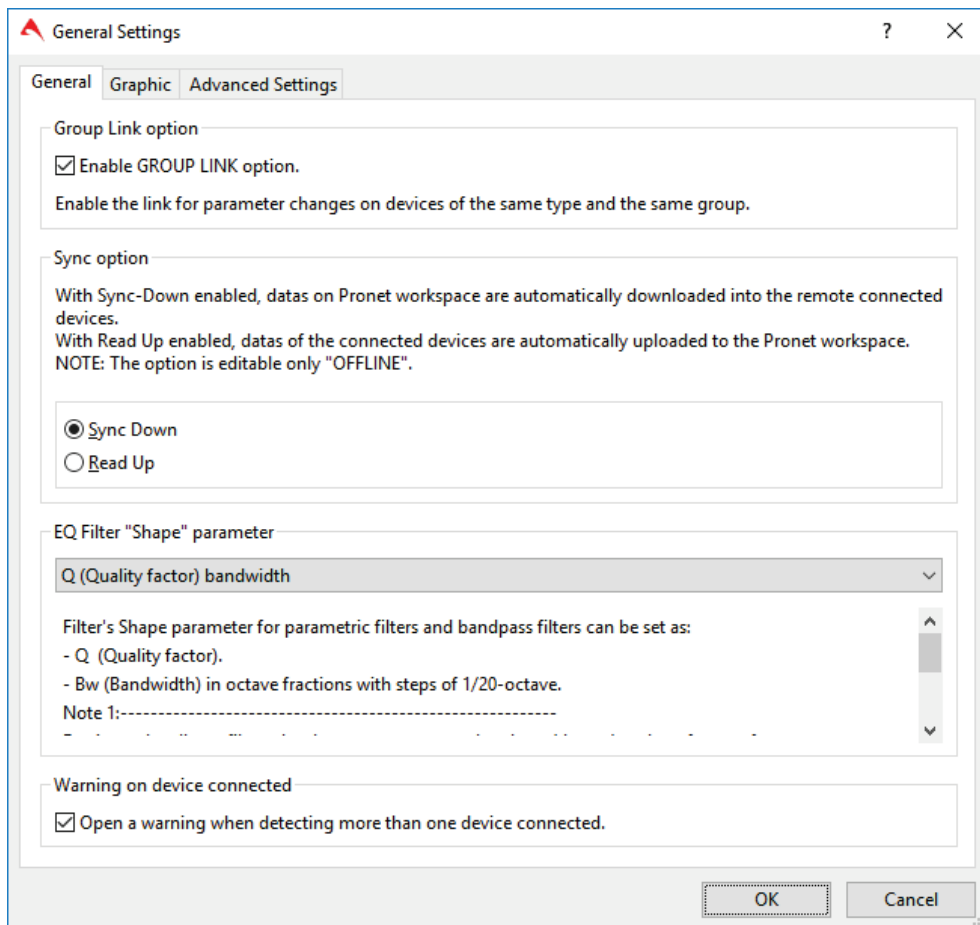- *EQ filter "**Shape**" parameter sets the parameter "width of the bell" for parametric EQ filters. The parameter can be Q, defined as the ratio of the center frequency (reference frequency) of the filter and the bandwidth measured at the -3 dB points, or it can be Bw (Bandwidth) in octave fractions with steps of 1/20-octave (at -3dB points).*
- ***Warning on device connected** enables or disables a reminder/warning when PRONET AX detects more than one device connected to the network (this warning reminds you, before changing any parameter, to check that all the units of the same type, belonging to the same system/group, have the same preset or a right common state).*
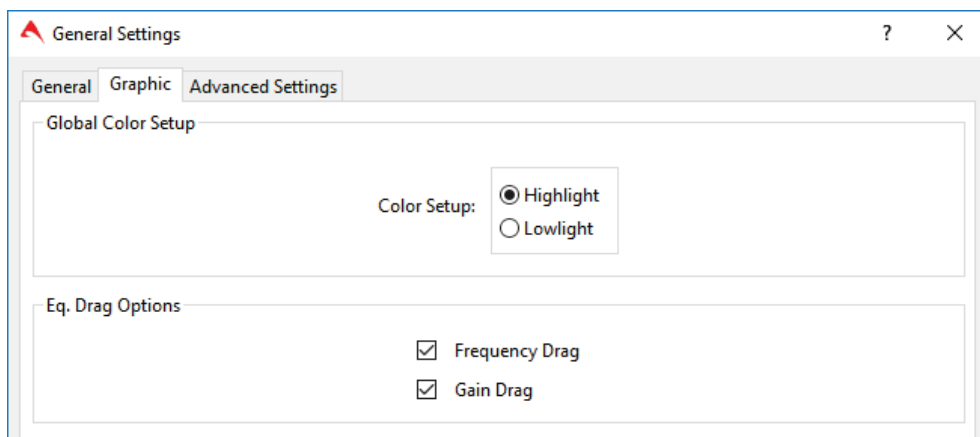
- ***Global Color Setup** selects two different colors schemes for the visualization in a high or low light environment.*
- ***Eq. drag options** sets which parameters can be dragged and edited with mouse in the graphic editing of equalization curves.*

14. TOOLS MENU

In the "File/Tools" menu some important utilities are available.

14.1 Firmware Update

If a firmware update is released for an AXIOM product, you can use this utility to update your equipment. Contact info@proel.com or access the SUPPORT section of the http://www.axiomproaudio.com web site for information about the latest software releases. Once you have gotten the firmware update you need, unzip the file in a folder of your computer.
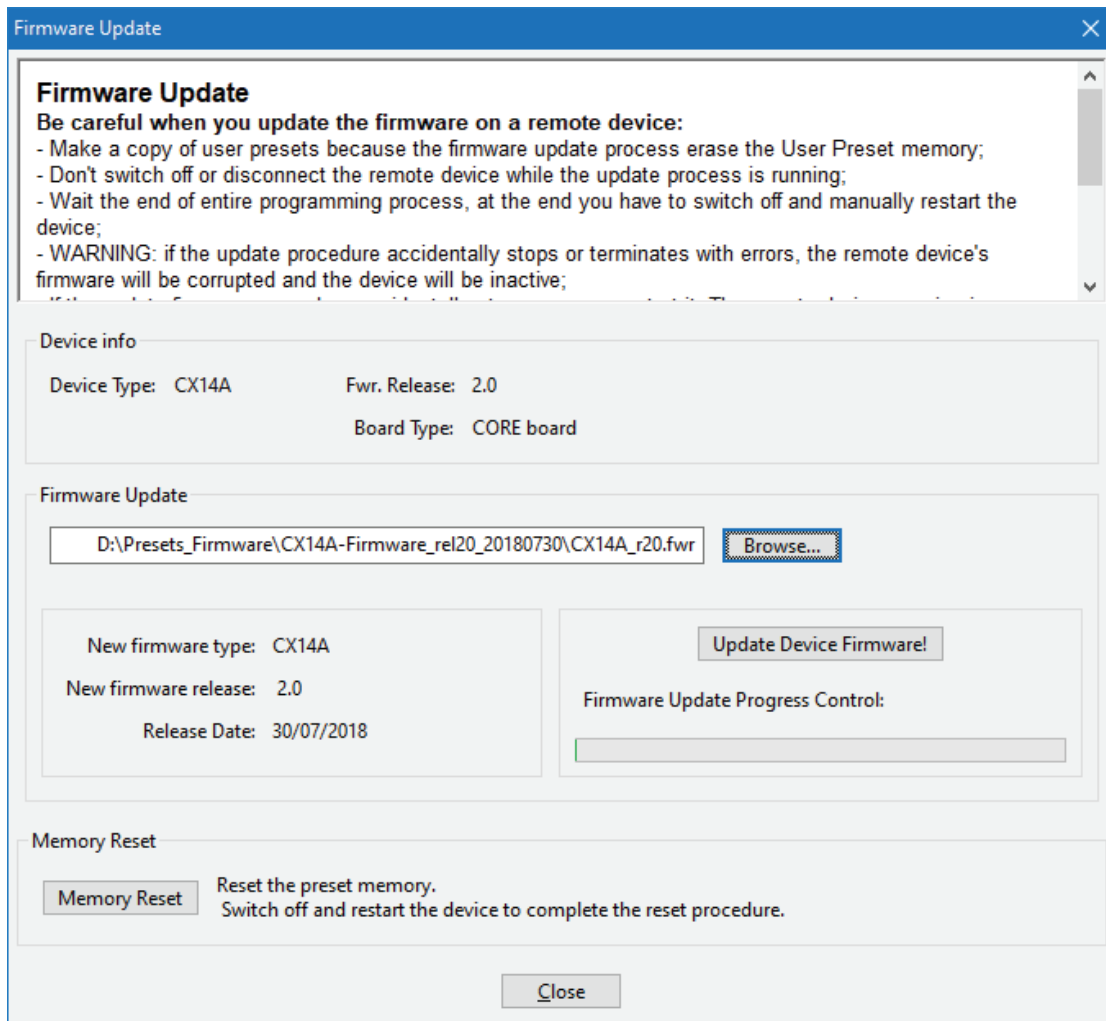
Select a device, then choose "File/Tool/Firmware Update" from the menu and the above panel appears. Choose the .fwr file in the folder where you have unzipped the file. Press "Update Device Firmware" to start the process. The Firmware Upgrade Progress Control bar will show the progress and, after about 15 minutes, if the operation has been completed successfully, the following box will appear:
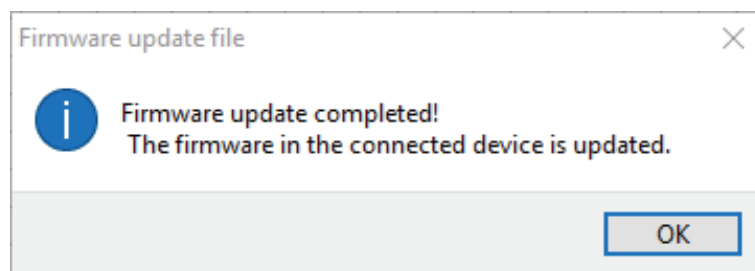
Be careful when you update the firmware on a device:
- *To speed up and ensure the process it is recommended to connect only one device.*
- *If you connect more devices, check that the first and last device in the network connection are terminated.*

- *Make a copy of user presets because the firmware update process erases the User Preset memory.*
- *Don't switch off or disconnect the remote device while the update process is running.*
- *Wait for the end of the entire programming process: at the end you have to switch off and on the device.*
- *WARNING: if the update procedure accidentally stops or terminates with errors, the remote device's firmware will be corrupted and the device will be inactive: contact a service center.*
- *If the update firmware procedure accidentally stops, you can restart it. The remote device remains in "firmware update mode" until a new complete firmware is downloaded for older devices (CORE board), for newer devices (CORE2 board) you can power-off and power-on to restore the older firmware.*
- *The Update Process of one device will take several minutes: please, take a cup of tea and be patient!*
- *To avoid errors and conflicts during the firmware update process, close all the other applications running and **disable the screen saver/sleep mode/standby options**.*
- *Rescan the network if the device does not appear online at the end of the update process.*

In the Firmware Update Dialog there is also an option for erasing the User Memory.

To reset the memory of a connected device, press the **Memory Reset button**: after this, to complete the reset procedure you must **switch off the device**. When the device is switched on, a memory reset cycle is performed that cleans all the user memory locations.

*Note: when performing a memory reset, be sure that PRONET AX is set in "**Read UP**" mode or that you have canceled the virtual device with the same ID on the workspace. If the device is still on the workspace and PRONET AX is set in "**Read UP**" mode, when you switch on again the reset device and it goes online, all data contained in the virtual device will be sent again to it.*

14.2 Remote ID Change

This command allows you to change the ID of a specific device. Select a device, then choose "File/Tool/Remote ID Change" and the below panel will appear (see also chapter 4.2):

Be careful when changing an ID:
- *Check that the first and last devices in the network connection are terminated.*
- *If some devices are turned off, be careful not to assign an existing ID of a switched off device.*
- *If you use this command to solve an ID conflict you must turn off the devices involved except for the one you want to re-assign.*
- *If you want to keep the unit's current parameters, we suggest to save the current preset before changing ID.*
- *After sending a new ID, this panel will be closed, the remote device will be automatically disconnected and then reconnected with the new ID.*

NOTE: with this tool you cannot change the ID of a virtual device (not connected device).

15. PRINTING MENU

With the "print" menu option you can print the parameters of your devices. Data printed depends on the type of device selected.

A "preview" menu option is also available for a rapid check of your prints.
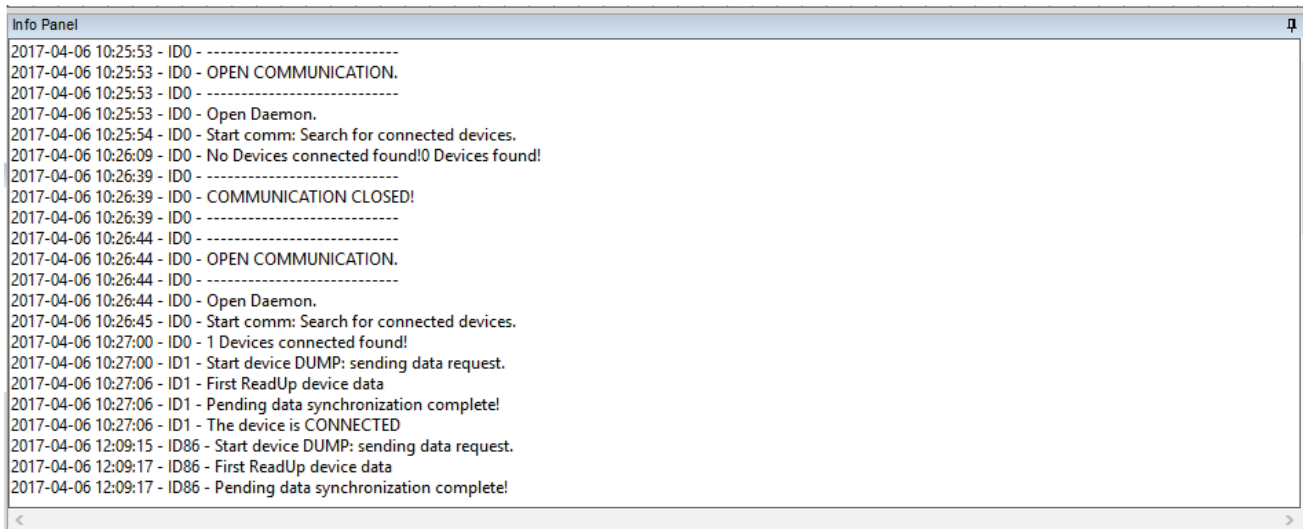
16.   INFO PANEL

You can activate the "Info Panel" from the "View" menu. In this window appears the list of main communication protocols messages that occur between PRONET AX app and the network devices. ID0 messages are from PC master, IDx messages with x greater than or equal 1 are info about specific operations on a device.

The "Info Panel" shows a list of the communication commands from/to the USB2CAND and the devices connected at the network. This list can be useful for solving problems or for debugging.

17. WORKING ONLINE / OFFLINE

PRONET AX application can be in two different connection states: **ONLINE** or **OFFLINE**.

When **ONLINE**, PRONET AX workspace can contain both VIRTUAL and CONNECTED devices in a true network. The software reads all the parameters of CONNECTED devices and continuously checks their status.

When **OFFLINE**, PRONET AX workspace can contain both DEMO and VIRTUAL devices in a "virtual network" and there are no connected devices.

17.1 Going ONLINE

Clicking on "**Online**" button PRONET AX changes its status from OFFLINE to ONLINE and the software performs the following operations:

- It removes any DEMO device from the workspace.

- It searches for any device connected to the network. If any VIRTUAL device already present in the workspace is the same model and has the same ID of a CONNECTED one, it changes its status from VIRTUAL to CONNECTED, the ID label in the control panel turns GREEN and:

  o if sync mode is "Sync Down" the parameters are downloaded from the workspace to the CONNECTED device

  o if the sync mode is "Read Up" the parameters are uploaded from the CONNECTED device into the workspace

- When ONLINE PRONET AX application constantly checks the status of connected devices: if one of them loses the connection (the network cables are unplugged or broken, the device is turned off, there is a hardware problem...), the ID label in the control panel turns RED. When the connection is restored the ID label turns back GREEN.

- PRONET AX can also detect if a new device has been connected. If the new device has a valid ID, then PRONET AX starts to download or upload the device's data ("Sync Down" or "Read Up") and a new control panel appears in the workspace.

- In situations when there is an ID conflict, a warning message appears that forces you to go OFFLINE. The ID conflict must be:

  o Between a VIRTUAL and a CONNECTED device: in this case, the VIRTUAL device is deleted and, when the software is set ONLINE again, the correct control panel of the CONNECTED device is opened.

  o Between two CONNECTED devices: in this case, after going OFFLINE, the correct ID must be assigned to the devices in conflict before the software is set again ONLINE (refer to the "ID assignment" procedures explained in this manual).

17.2 Force "Network Rescan"

In some cases (for example when you connect a new device, or you solve an ID conflict, or you temporarily disconnect the USB2CAN converter), you might want to force a "**Network Rescan**" with the proper command in the "Network" Menu, to speed up the operation.

17.3 Going OFFLINE and using virtual devices

Clicking on "**Offline**" button PRONET AX status changes from ONLINE to OFFLINE and the software performs the following operations:

- All the CONNECTED devices in the workspace change their status to VIRTUAL and the ID label in their control panels turns WHITE.

- Some functions are not available when OFFLINE (for example the Find function).

The OFFLINE mode can be useful to remotely set up and edit the system even if it is not connected, store all the parameters in SNAPSHOTS and then download all of them into the devices when the system is connected again (Sync Down mode).

18. GROUPS

In PRONET AX you can assign several devices to a Group so that, when the Link option is activated, any parameter's change in any device of the group will be performed on all the devices of the same type belonging to the group. In a typical vertical array setup, for example, the Groups can be very useful to edit together the LONG-THROW units, the STANDARD units, the DOWN-FILL units and all the SUBWOOFERS.
To create a group of devices you can proceed in two ways:
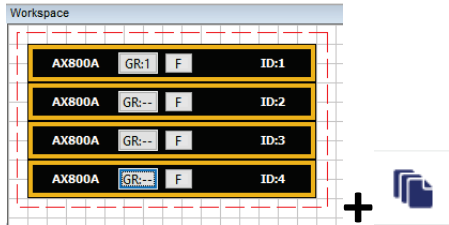
Select the devices you want to assign, then press the "Group Assign" button or the menu option "Device" / "Group assign" and a panel will appear where you can assign the devices to a group.

Click on the "Group" button of each device to assign it to a group in the panel that will appear.

The Link option can be enabled using the "Settings" panel or with the toolbar button:
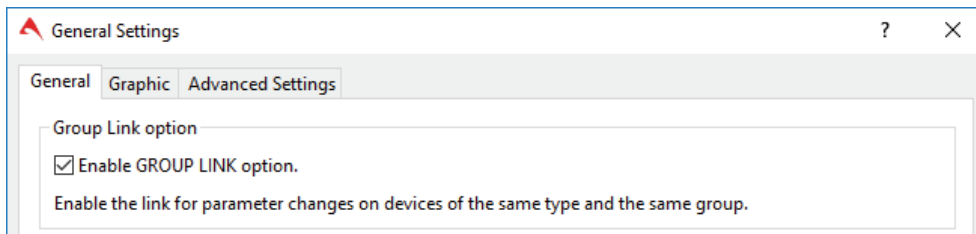
Or clicking on the Tool bar button:

Note: when you connect several devices to a PRONET AX network, they can have different presets or parameters. Assigning these devices to the same group and enabling the link does not automatically align all the parameters of them, the parameter will be aligned only when they are modified. A good method to align all the devices in a group can be by recalling a preset: after this operation, all devices will be aligned.

WARNING: if some devices, member of the same group, are "Locked" they will not be affected by any parameter or preset change.

19. SNAPSHOTS

The snapshots allow you to store and recall your whole AXIOM audio system for each venue or show performance, or to recall a good starting setup in each new location where the AXIOM audio system will be used.

Snapshots are accessible through the "File" menu with a "Save Snapshot" and a "Load Snapshot" menu option or using the correspondent buttons on the Tool bar:

- *When you save a snapshot in the computer's HD, the entire workspace is stored as it is, so you store the position of controls panels, arrays, groups, link status, and all the parameters of each device.*
- *When you recall a snapshot from the HD, this restores in the workspace the position of controls panels, arrays, groups, link status, and the parameters of each device.*
- ***NOTE: the snapshots can be stored and recalled only in SETUP mode.***

- ***The preferred method of synchronization when using the snapshots is "Sync Down".*** *With this method and using the same audio system, when you recall a snapshot in the workspace and go ONLINE, all parameters of the workspace are download and synchronized to each unit in the audio system.*
  Example: *if you set the AXIOM audio system in a venue, optimize it and then store a snapshot, when you came back in the same venue and install the same audio system, you can recall the same snapshot to have a good starting point for the new show.*
- *If the PRONET AX is set as "**Read Up**", when recalling a snapshot all the units contained in the snapshot are arranged in the workspace, but in this case the parameters are uploaded from the CONNECTED devices into the workspace.*

Each snapshot is composed of a file named SNAPSHOT_USERNAME.sph, which contains the workspace data, and a folder with the same name (SNAPSHOT_USERNAME) containing for each device included in the snapshot one different *.pcf file (preset file with all the device's parameters). If the snapshot includes Arrays, in the folder there is one subfolder for each Array, containing the *.pcf files for the Array and for each device.

IMPORTANT NOTE: the snapshot *.sph file must be always kept in the same location as its folder, otherwise the Snapshot cannot be loaded correctly in the PRONET AX.

When you load a snapshot, PRONET AX goes OFFLINE (if it is ONLINE) and clears all the items present in the workspace. A confirmation will be required to proceed:

Snapshot

Warning:
to load a snapshot, PRONET must go automatically OFFLINE, clear the workspace and then, after recalling the snapshot, go ONLINE again.
Do you confirm to load the snapshot?

[Yes] [No]
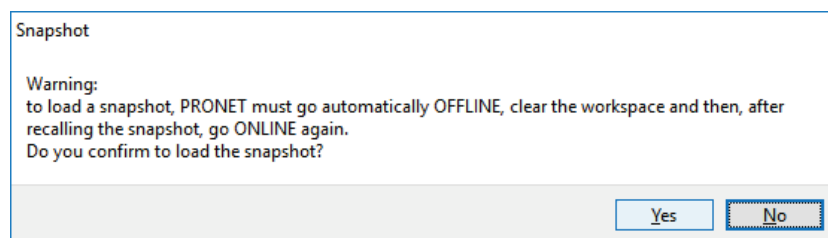
After the confirmation, PRONET AX loads the snapshot and then goes back automatically ONLINE (if it was ONLINE when the snapshot is recalled).

20. ACTIVE LOUDSPEAKER SETUP AND EDIT

20.1 Automatic ID assignment procedure

On active loudspeakers you can enable the procedure of automatic assignment of a new ID by **powering-on the device while keeping pressed the "PRESET" button on the rear panel**.

20.2 Control Panel info

The control panels are compact windows that display main features, configurations and status (protections, signal/clipping, currently loaded preset, etc...) of devices in the workspace.

AX2065A AX2065A	*The model's name of the device is shown on the left side of each panel. If the unit's Editor Panel is open, the model's name of the current selected device blinks white/green.*
GR:-- GR:1 GR:2	*The GR button identifies the group the device is assigned to. When PRONET AX is in SETUP mode, a click on this button opens the group list so you can assign the device. "- - "means not assigned.*
F	*If FIND view is selected, the control panels show the F button (SETUP or EDIT mode). Pressing the "F" button all preset LED on the rear panel will blink to identify the device. When present, the device's front LED will also blink.*
username	*If NAME view is selected the control panels show the "username" of the device (SETUP or EDIT mode).*
STANDARD	*If PRESET view is selected the control panels show the preset loaded in the device (SETUP or EDIT mode).*
I L H	*If SIGNAL view is selected, these buttons he signals' status in EDIT and LIVE mode. Only in EDIT mode, if clicked the three squares work as MUTE buttons.* *"I" shows the input signal: GREEN = signal present, ORANGE = too high signal, RED = mute input.* *"L" shows the low output signal: ORANGE = signal is limited, RED = low out muted.* *"H" shows the high output signal: orange = signal is limited, RED = high out muted.*
DEMO4 ID:1 ID:1 ID:1 ID:1	*The device's ID is shown on the right side of each Control Panel:* *"DEMO#" identifies a DEMO device (device with no parameters).* *"ID: #" in WHITE color identifies a VIRTUAL (device with parameters but disconnected from the network).* *"ID: #" in GREEN color identifies a device CONNECTED to the network.* *"ID: #" in RED color identifies a device that was previously CONNECTED, but that is temporarily disconnected from the network due to connection problems.* *"ID: #" in BLACK color on red background identifies a temperature OVERLOAD or other protection status that generally mutes the device outputs.*

20.3 Setup Mode parameters

20.3.1 Setup panel

Loudspeaker Setup panel

The Setup panel shows several information on the status of the device:
- The device's ID.
- The device Name: here you can give a custom name to the device.
- The Group the device is assigned to, here you can assign the device to a group.
- Mains Supply Voltage (as percentage of the nominal voltage).
- The Amplifier temperature (if the amplifier has this sensor).
- Temperature overload: it can be "Normal" or "Overload", in case of overload the amplifier is temporarily muted until normal conditions are restored.
- Firmware version contained in the CORE DSP.
- The Environmental Parameters allow you to set the temperature for the exact calculation of delay time, when the delay is expressed in length units, and to set the temperature units (°C or °F), see the specific box.

Environmental parameters

Sound travels at different speeds depending on the density of the surrounding air it is traveling through. Cold air is denser than warm air, thus the sound travels slower than it would if the air was warmer. Temperature can have a major influence on greater distances, particularly with respect to widely separated speaker arrays surrounding the audience. A simplified formula to find the average speed of sound for any given temperature (Celsius) is:

$$Vm/s = 331 + (0.6 * T)$$

Where **V** is the speed of sound and **T** is the temperature of the air. The speed of sound is also affected by other factors such as humidity and air pressure.

Temperature: sets the ambient temperature. This parameter is used to calculate the speed of sound for converting distances into delay times.

Temperature unit: sets the temperature unit scale (Celsius or Fahrenheit unit scale).

NOTE: the temperature parameter influences all the delay parameters if they are set in length units (mm, m, inch, feet). When you recall a preset, the stored delay is displayed according to the general temperature value. You can set the delay parameters in time units if you don't want this conversion.

20.3.2 Preset panel

A Preset is a specific set of CORE DSP parameters values that are optimized for a specific device or audio system.

The current preset is the set of parameter values currently in use and running on the device with the CORE DSP.

The current preset can be "Stored" and "Recalled" to/from the internal memory of the device, but it can also be "Saved" and "Reloaded" to/from the memory of your computer.

The preset of **AXIOM active loudspeaker systems** can be of two types (a letter after the number and before its proper name identify the type):

- **F - Factory Preset**: these presets are stored permanently in the memory locations 1/2/3 of each device and are designed by the factory to optimize the response of each model of loudspeaker. In these presets, the OUTPUT section has partial or full restrictions (some parameters cannot be edited or viewed), while the INPUT section is completely editable by the user. These presets cannot be overwritten.

  Factory presets for AXIOM active loudspeaker systems are also available for download from the **MYAXIOM** section of the https://www.axiomproaudio.com/ website.

- **U - User Presets**: these are Factory presets that have been edited by the user (INPUT section only) and stored in one of the available user memory locations. User presets that are a copy of Factory preset no. 1 are saved in all the user memory locations of the device.

NOTE: the first four presets (three Factory + 1 User) can be recalled also from the rear panel of the speaker, while the remaining positions can be recalled only from the PRONET AX.

WARNING: the 'Recall', 'Store' and 'Load' operation will affect all devices of the same model that are element of the same GROUP if the GROUP LINK option is enabled, so you must pay attention to define correctly the groups in your audio system and be careful if the link option is enabled or disabled before using these commands.

Loudspeaker Preset panel
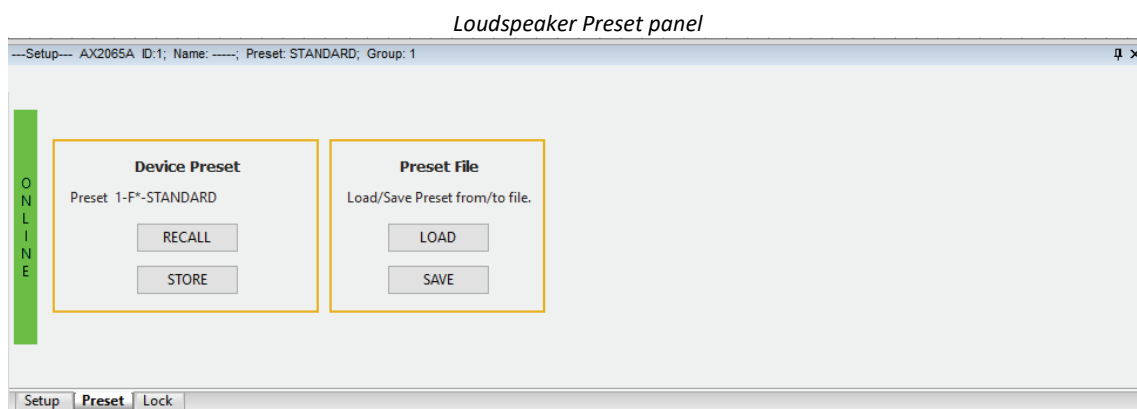
*In the **PRESET** panel you can store or recall presets in the device's memory or load and save presets in your computer HD as *.pcf files (NOTE: in DEMO devices only the "Load Preset File" is available). The buttons open their respective panels:*

Device Preset Recall

Current Preset

Preset 1-F*-STANDARD

Choose and Double Click to recall a preset in the Preset List or press Recall button.

- Preset 1-F-STANDARD
- Preset 2-F-LONG THROW
- Preset 3-F-SINGLE-DOWN
- Preset 4-U-STANDARD
- Preset 5-U-STANDARD

[Recall] [Close]

Device Preset

Preset 4-U*-STANDARDV358

[RECALL]
[STORE]

TO RECALL A PRESET FROM THE DEVICE MEMORY:
1) *Click on "RECALL" button.*
2) *Select the preset in the upper section.*
3) *Confirm clicking on "Recall" button or undo clicking on "Close" button.*

Device Preset Store

Current Preset

Preset 1-F*-STANDARD

Choose a User preset location in the Preset List, insert a new name and press Store button.

- Preset 2-F-LONG THROW
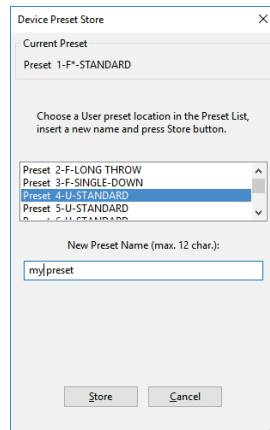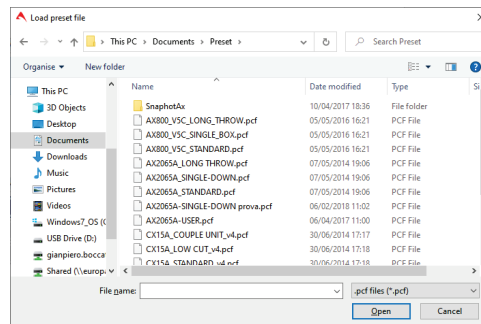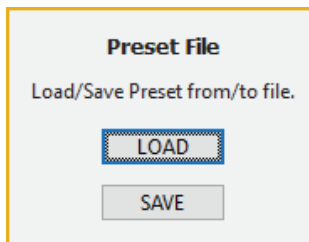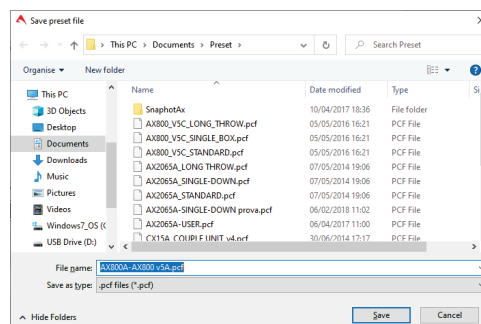- Preset 3-F-SINGLE-DOWN
- Preset 4-U-STANDARD
- Preset 5-U-STANDARD

New Preset Name (max. 12 char.):

my preset

[Store] [Cancel]

Device Preset

Preset 4-U*-STANDARDV358

[RECALL]
[STORE]

TO STORE A PRESET INTO THE DEVICE MEMORY:
1) *Click on "STORE" button.*
2) *Select the memory location in the upper section.*
3) *Specify the name in the lower section (12 characters are available).*
4) *Confirm clicking on "Store" button or undo clicking on "Cancel" button.*
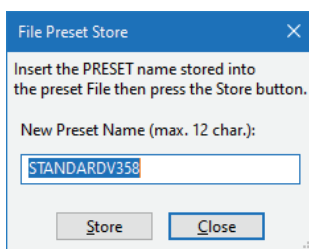

Load preset file

This PC › Documents › Preset

Organise   New folder

- This PC
- 3D Objects
- Desktop
- Documents
- Downloads
- Music
- Pictures
- Videos
- Windows7_OS (C:)
- USB Drive (D:)
- gianpiero.bocca
- Shared (\\europ)

Name	Date modified	Type
SnaphotAx	10/04/2017 18:36	File folder
AX800_VSC_LONG_THROW.pcf	05/05/2016 16:21	PCF File
AX800_VSC_SINGLE_BOX.pcf	05/05/2016 16:21	PCF File
AX800_VSC_STANDARD.pcf	05/05/2016 16:21	PCF File
AX2065A_LONG THROW.pcf	07/05/2014 19:06	PCF File
AX2065A_SINGLE-DOWN.pcf	07/05/2014 19:06	PCF File
AX2065A_STANDARD.pcf	07/05/2014 19:06	PCF File
AX2065A-SINGLE-DOWN prova.pcf	06/02/2018 11:02	PCF File
AX2065A-USER.pcf	06/04/2017 11:00	PCF File
CX15A_COUPLE UNIT_v4.pcf	30/06/2014 17:17	PCF File
CX15A_LOW CUT_v4.pcf	30/06/2014 17:18	PCF File
CX15A_STANDARD_v4.pcf	30/06/2014 17:18	PCF File

File name: .pcf files (*.pcf)

[Open] [Cancel]

Preset File

Load/Save Preset from/to file.

[LOAD]
[SAVE]

TO LOAD A PRESET FROM THE COMPUTER HD:
1) *Click on "LOAD" button.*
2) *Select the PCF file containing the preset.*
3) *Confirm clicking on "Open" button or undo clicking on "Cancel" button.*

Preset File

Load/Save Preset from/to file.

[LOAD]
[SAVE]

Save preset file

This PC › Documents › Preset

Organise   New folder

- This PC
- 3D Objects
- Desktop
- Documents
- Downloads
- Music
- Pictures
- Videos
- Windows7_OS (C:)
- USB Drive (D:)

Name	Date modified	Type
SnaphotAx	10/04/2017 18:36	File folder
AX800_VSC_LONG_THROW.pcf	05/05/2016 16:21	PCF File
AX800_VSC_SINGLE_BOX.pcf	05/05/2016 16:21	PCF File
AX800_VSC_STANDARD.pcf	05/05/2016 16:21	PCF File
AX2065A_LONG THROW.pcf	07/05/2014 19:06	PCF File
AX2065A_SINGLE-DOWN.pcf	07/05/2014 19:06	PCF File
AX2065A_STANDARD.pcf	07/05/2014 19:06	PCF File
AX2065A-SINGLE-DOWN prova.pcf	06/02/2018 11:02	PCF File
AX2065A-USER.pcf	06/04/2017 11:00	PCF File
CX15A_COUPLE UNIT_v4.pcf	30/06/2014 17:17	PCF File

File name: AX800A-AX800 v5A.pcf

Save as type: .pcf files (*.pcf)

[Save] [Cancel]

Hide Folders

TO SAVE A PRESET INTHECOMPUTER HD:
1) *Click on "SAVE" button.*
2) *Specify the preset name in the box section (12 characters are available).*
3) *Specify the PCF file name.*
4) *Confirm clicking on "Save" button or undo clicking on "Cancel" button.*

File Preset Store

Insert the PRESET name stored into the preset File then press the Store button.

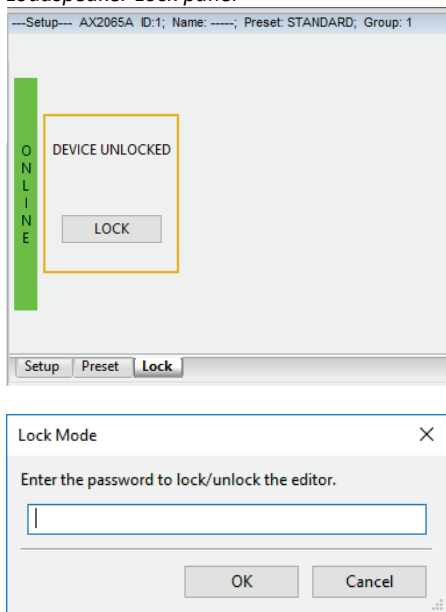New Preset Name (max. 12 char.):

STANDARDV358

[Store] [Close]

NOTE: Preset name is the short name (max 12 characters) stored in the device memory, instead the .pcf file name uses the same conventions as the windows operating system with a more extensive description.

20.3.3 Lock panel

The **LOCK** panel allows you to lock the device. Click on "LOCK" and enter the password:

Loudspeaker Lock panel

Up to 12 characters can be used for the password. The password is stored in the device's memory, so **it is very important to write down this password in a secure place, to recover it in case it is forgotten**.
When a device is protected with a password you can edit no parameters, and its control panel appears as follow:

*LK:X is shown instead of ID:X and the "Group" button is deactivated.*
Note: the only way to erase the password is by resetting the device, see chapter 14.1.

VERY IMPORTANT WARNING: the "Lock" operation affects all the devices of the same GROUP if the GROUP LINK option is enabled, so you must pay attention to define correctly the groups in your audio system and be careful if the link option is enabled or disabled before using this command.

20.4 Edit Mode parameters
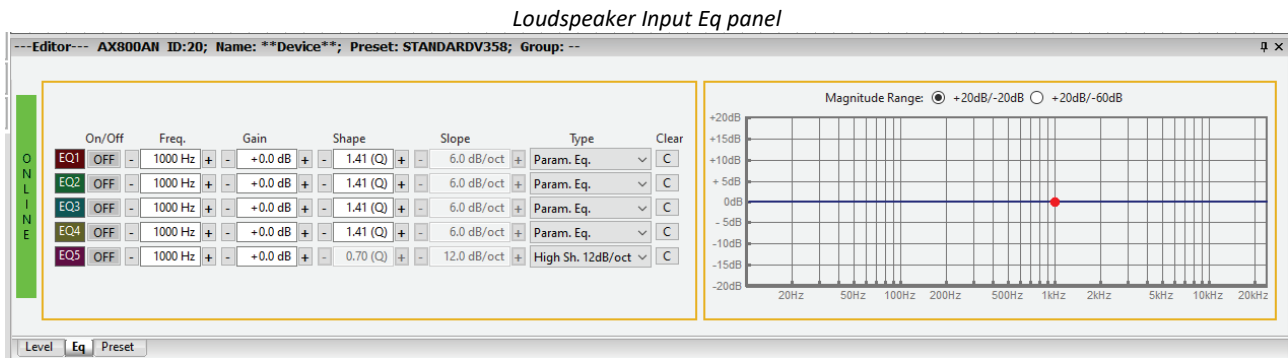
20.4.1 Level panel

Loudspeaker Level panel
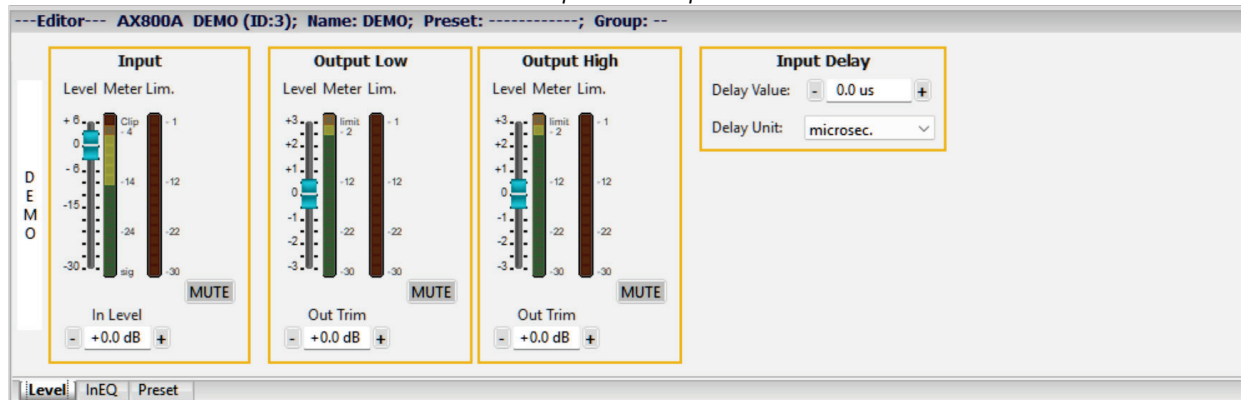
In the Loudspeaker Level panel you can control the following parameters:

- **Input**
  The input signal level can be controlled with the graphic slider or with the edit box clicking on + or − buttons or typing the value.
  The "MUTE" button shuts up the device: when active it turns RED (NOTE: when the RED Clip LED lights on input meter reduce the input level to avoid clipping).
  The Gain Reduction of the input Compression/Limiter is also shown here.

- **Output Low**
  The low output level can be trimmed here in a short range of +/-3dB.
  The "MUTE" button in this case shuts up only this output, typically used in conjunction with the Output High "MUTE" to check the speakers.
  The Gain Reduction of the Low Output Compression/Limiter is also shown here.

- **Output High**
  The high output level can be trimmed here in a short range of +/-3dB.
  The "MUTE" button in this case shuts up only this output, typically used in conjunction with the Output Low "MUTE" to check the speakers.
  The Gain Reduction of the High Output Compression/Limiter is also shown here.

- **Input Delay**
  Type it in the box or set it using +/- buttons. The input delay is typically set to align a sound source with another sound source, for example subwoofers with full-range speakers.
  Here you can also set the Delay Unit. Note that selecting unit of measurement for length (mm, m, inch, feet...) the amount of delay (distance value) depends on the air temperature as indicated in the "environmental settings".

20.4.2 Eq panel

Loudspeaker Input Eq panel

In the EQ panels you can control the five full-parametric equalizer cells available.

The graphic window plots the frequency response for the whole EQ block and for a single equalizer cell (the thin and colored line visualized selecting an equalizer cell). For each equalizer cell you can set many parameters and some of them can also be easily controlled by the mouse within the graphic window, just dragging the colored dots and rotating the mouse wheel if present.

Right-Clicking with mouse on the edit area of the EQ panel you can open a contextual menu that gives you the possibility of storing/recalling an EQ preset to/from a file or gives you the possibility of copying/loading the preset to/from the computer Clipboard. In this way you can store your favorite settings for the block of all 5 filters or exchange in a faster way the EQ settings between different devices.

- **Frequency**
  Sets the reference for the equalizer filters, in steps of 1/20 octave from 15.6Hz to 32kHz. For shelf filters the frequency is referred on "Gain dB/2" point, to obtain a slope-variable shelving filter from 6dB/oct to 12dB/oct with a "pivot" point at the reference frequency.
  Frequency can be edited in the numeric edit box, can be scrolled by the spin buttons or by the up/down arrow keys of your keyboard, or can be edited moving the colored graphic dots marked on the frequency response window.

- **Gain**
  Gain of equalizer filter, from +15dB to -15dB in 0.2dB steps.
  This parameter is not available with notch filter; All Pass filter and LP/HP/Band Pass filter types.
  Gain can be edited in the numeric edit box, can be scrolled by the spin buttons or by the up/down arrow keys of your keyboard, or can be edited moving the colored graphic dots marked on the frequency response window.

- **Shape**
  Controls the aspect of equalization filter, depending on the filter type selected.
  For Parametric, Band Pass and Notch filter types the parameter assumes the meaning of "width of the bell shape" of the filter, usually defined as "Q" or "Bandwidth":
  Q (Quality factor) is the ratio of the center frequency of filter and the bandwidth measured at the -3 dB points.
  Bw (Bandwidth) in octave fractions with steps of 1/20-octave (measured at -3dB points).
  In PRONET AX "Settings" you can select if you use the "Q" or "Bw" representation of the filter's shape.
  For 1st-order All Pass filters the shape parameter set the phase (degree) at the reference frequency.
  For 2nd-order All Pass filters and Resonant LP and HP filters the shape parameter can set only Q (quality factor) as in analog filters.
  This parameter is not available for Shelving filters.
  Shape can be edited in the numeric edit box, can be scrolled by the spin buttons or by the up/down arrow keys of your keyboard, or can be edited with mouse by a combination of left-click and wheel on the frequency response window.

- **Slope**
  Controls the slope of variable shelving filters from 6dB/oct to 12 dB/oct in 0.5dB steps (not available for other filter types).
  Slope can be edited in the numeric edit box, can be scrolled by the spin buttons or by the up/down arrow keys of your keyboard, or can be edited with mouse by a combination of left-click and wheel on the frequency response window.

- **Type**
  This drop-down menu selects the type of filter used and it is available only when the filter cell is bypassed (OFF). Note that changing the filter type restores a default setup condition for many parameters of the filter cell.
  Filter types available are: Parametric, Notch, High and Low Shelving 6dB/oct, High and Low Shelving 12dB/oct, High and Low variable slope Shelving, Resonant High Pass and Low Pass, Band Pass, 1st order All pass, 2nd order All Pass.

- **On/Off**
  Clicking ON/OFF button bypasses the equalizer cell.

- **C button**
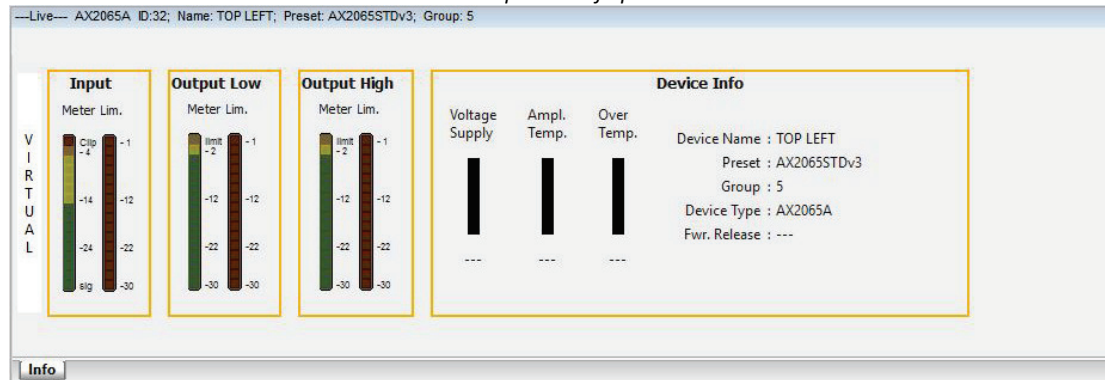 Pressing this button clears the filter's parameters.

20.4.3 Preset panel

See chapter 20.3.2.

20.5 Live Mode parameters

20.5.1 Info panel

Loudspeaker Info panel

In the **INFO** panel you can monitor the following systems parameter during the show time.

- Input Signal Level and Gain Reduction
- Output Low Signal Level and Gain Reduction
- Output High Signal Level and Gain Reduction
- Mains Supply Voltage - as percentage of the nominal voltage
- Amplifier temperature (Loudspeaker and QC amplifier)
- Temperature overload: it can be "Normal" or "Overload"
- Additional device's information is displayed, including:
- Device Name
- Loaded Preset
- Group
- Device Type
- Firmware release and DSP board info

20.6 Arrays

Array is a special grouping function for loudspeakers included in the PRONET AX to manage arrays of speakers in a very simple and effective way:

- *To create an Array, use the menu command "Array/Create Array" or use the tool bar icon.*

- *To assign devices to an Array select the device and use the menu command "Device/Assign to Array" or use the tool bar icon or drag with the mouse the devices into the Array.*

- *To remove devices from an Array, use the menu command "Device/Remove from Array" or drag it out from the Array.*

- *To remove an Array, use the menu command "Array/Remove Array" or select the Array and use the DEL button on the PC keyboard. A confirmation panel will appear:*
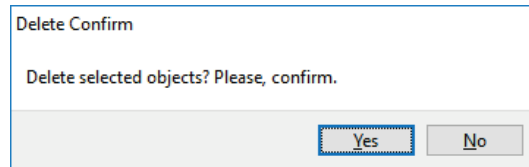
- *When you delete an Array also all the device contained will be deleted. If you don't want to delete the devices, you must remove them before deleting the Array.*

The behavior of Array is similar to that of the Group explained in the previous chapter, but an Array can contain units from different Groups and units of different types, and it is not affected by the status of the Link option. The Array function can be used, for example, to edit together all the tops and sub of the LEFT SIDE, of the RIGHT SIDE and of the CENTER ARRAY.

For editing an Array, you must open the Array Editor Panel.
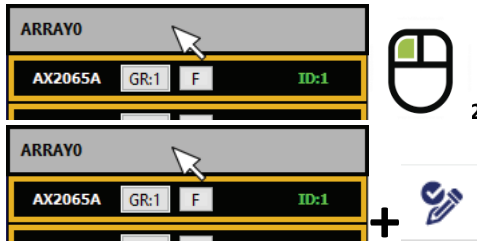
*To open the Array Editor Panel double click on it or*

Select with one click the Array you want to edit and then click on the "Open Editor" Icon of the Tool bar

An Array is a set of devices within the network that has a graphical correspondence within the workspace. An Array can be defined with different device models, but any change of common parameters will be performed only in the Array Editor Panel. In case of an EQ cell, you have to enable it clicking on the "ENABLE" button that turn on GREEN, From this moment and until it remains enabled, its parameters are send to all devices included in the array, substituting the EQ cell parameters of any single device alone.

In the Array Editor Panel you can edit some parameters (LEVEL, MUTE, EQ) of all the devices included, no matter the type or the group to which they are assigned.
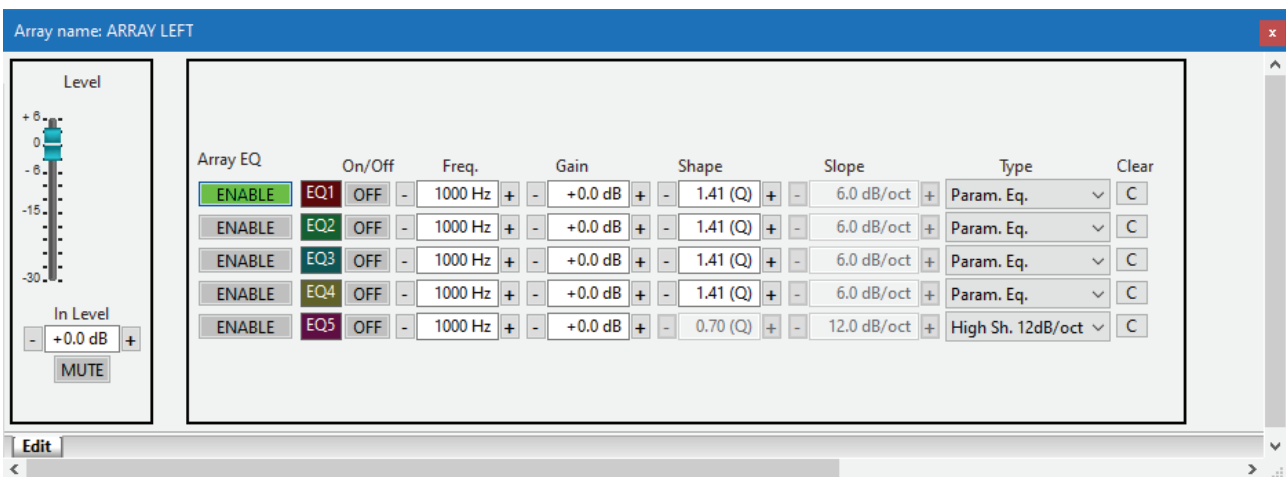
20.6.1 Array setup mode
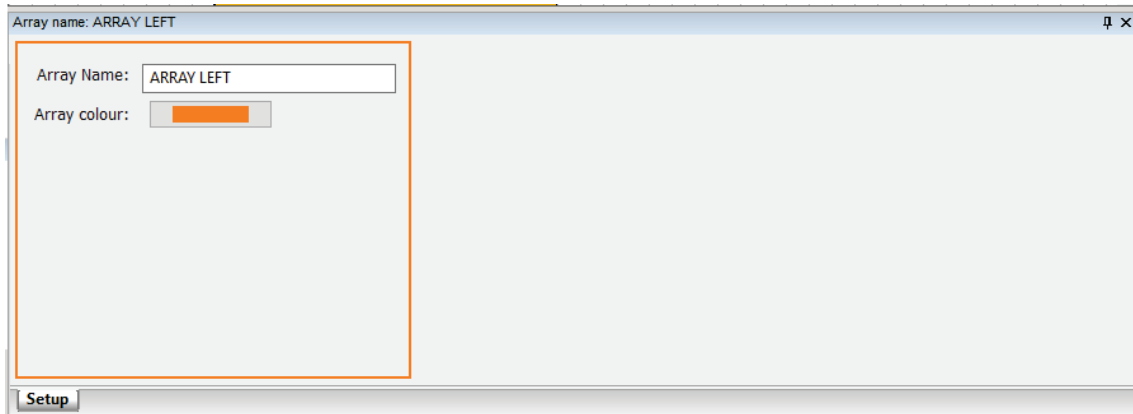
Array Name
You can assign a name to each Array, to identify them better.

Array Color
You can assign a name to each Array, to locate them better on the workspace.

20.6.2 Array edit mode

In this panel you can control the parameters of the Array.
Level
*Sets the level of the input signal of the Array: it can be controlled from the graphic slider or from the edit box clicking on + or –
buttons or typing the value. The "MUTE" button shuts up all devices that form the Array, when active it turns RED.*
Array EQ
*With the Array EQ panel you can control the five full parametric equalizer cells available on the input channel of each device that
forms the Array.*
*Since you might want to reserve some of the EQ cells for adjusting the individual devices, an "ENABLE" button is available for
selecting the cells that you want to use in the Array editing.*
See chapter 20.4.2 for other controls of the EQ strip.

Here after you can see an example about how to arrange multiple units of complex systems into GROUPS
and ARRAYS to control them more quickly and easily.

For editing EQ + LEVEL of LEFT ARRAY

GROUP1 for editing all the LONGTHROW UNITS

GROUP2 for editing all the STANDARD UNITS

GROUP3 for editing all the SINGLE-DOWN UNITS

ARRAY LEFT

AX800A	GR:1	LONGTHROW	ID:41
AX800A	GR:1	LONGTHROW	ID:42
AX800A	GR:2	STANDARD	ID:43
AX800A	GR:2	STANDARD	ID:44
AX800A	GR:2	STANDARD	ID:45
AX800A	GR:3	SINGLEDOWN	ID:46
SW1800A	GR:4	STANDARD	ID:61
SW1800A	GR:4	STANDARD	ID:62
SW1800A	GR:4	STANDARD	ID:63
SW1800A	GR:4	STANDARD	ID:64

For editing EQ + LEVEL of CENTER ARRAY

ARRAY CENTER

AX800A	GR:1	LONG THROW	ID:53
AX800A	GR:2	STANDARD	ID:54
AX800A	GR:2	STANDARD	ID:55
AX800A	GR:3	SINGLEDOWN	ID:56

For editing LEVEL of all STAGE MONITORS

STAGE MON

CX15A	GR:5	NORMAL	ID:71
CX15A	GR:5	NORMAL	ID:72
CX15A	GR:6	COUPLE	ID:73
CX15A	GR:6	COUPLE	ID:74
CX15A	GR:6	COUPLE	ID:75
CX15A	GR:6	COUPLE	ID:76

For editing EQ + LEVEL of RIGHT ARRAY

ARRAY RIGHT

AX800A	GR:1	LONGTHROW	ID:47
AX800A	GR:1	LONGTHROW	ID:48
AX800A	GR:2	STANDARD	ID:49
AX800A	GR:2	STANDARD	ID:50
AX800A	GR:2	STANDARD	ID:51
AX800A	GR:3	SINGLEDOWN	ID:52
SW1800A	GR:4	STANDARD	ID:65
SW1800A	GR:4	STANDARD	ID:66
SW1800A	GR:4	STANDARD	ID:67
SW1800A	GR:4	STANDARD	ID:68

GROUP4 for editing all the SUB-WOOFERS (including DELAY adjust)

GROUP5 for editing all the NORMAL MONITORS

GROUP6 for editing all the COUPLED MONITORS

AXIOM

21. QC AMPLIFIER SETUP AND EDIT

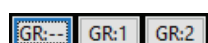## 21.1 Automatic ID assignment procedure

For a QC amplifier you can enable the procedure of automatic assignment of a new ID by **powering-on the device while keeping pressed the "ID" button on front panel**.

21.2 Control Panel info

The control panels are compact windows that display main features, configurations and status (protections, signal/clipping, preset currently used, etc...) of devices in the workspace.
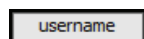
QC4.4 **QC4.4**	*The model's name of the device is shown on the left side of each panel. If the unit's Editor Panel is open, the model's name of the current selected device blinks white/green.*
GR:-- GR:1 GR:2	*The GR button identifies the group the device is assigned to. When PRONET AX is in SETUP mode, a click on this button opens the group list so you can assign the device. "--"means not assigned.*
F	*If FIND view is selected, the control panels show the F button (SETUP or EDIT mode). Pressing the "F" button the ID led on the frontal panel of the selected device will blink.*
username	*If NAME view is selected the control panels show the "username" of the device (SETUP or EDIT mode).*
STANDARD	*If PRESET view is selected the control panels show the preset loaded in the device (SETUP or EDIT mode).*
I1 I2 O1 O2 I3 I4 O3 O4	*If SIGNAL view is selected, these buttons he signals' status in EDIT and LIVE mode. Only in EDIT mode, if clicked the three squares work as MUTE buttons.* *"I1" ..." I4" show the input signals of QC amplifiers channels 1 to 4: GREEN = signal present, ORANGE = too high signal, RED = mute input.* *"O1" ..." O4" show the output signals of QC amplifiers channels 1 to 4: orange = signal is limited, red = channel is muted.*
DEMO4 ID:1 ID:1 ID:1 ID:1	*The device's ID is shown on the right side of each Control Panel:* *"DEMO#" identifies a DEMO device (device with no parameters).* *"ID: #" in WHITE color identifies a VIRTUAL (device with parameters but disconnected from the network).* *"ID: #" in GREEN color identifies a device CONNECTED to the network.* *"ID: #" in RED color identifies a device that was previously CONNECTED, but that is temporarily disconnected from the network due to connection problems.* *"ID: #" in BLACK color on red background identifies a temperature OVERLOAD or other protection status that generally mutes the device outputs.*

21.3 Setup Mode parameters

21.3.1 Setup panel

QC Amplifier Setup panel

The Setup panel shows several information on the status of the device:

- The device's ID.
- The device Name: here you can give a custom name to the device.
- The Group the device is assigned to: here you can assign the device to a group.
- Mains Supply Voltage (as percentage of the nominal voltage).
- The Amplifier temperature (if the amplifier has this sensor).
- Temperature overload: it can be "Normal" or "Overload", in case of overload the amplifier is temporarily muted until normal conditions are restored.
- Firmware version contained in the CORE DSP.
- The Environmental Parameters allow you to set the temperature for the exact calculation of delay time, when the delay is expressed in length units, and to set the temperature units (°C or °F), see the specific box.
- Channel's name for each QC amplifier channel.
- The routing configuration and ganging for each couple of channels of QC amplifier.
  NOTE: the ganging is separated between DSP sections as "Input Ganging" and "Output Ganging", this allows the user to set properly the ganging on input section for input signal (parallel or stereo), and to set a different ganging on the output section for the two channel that can drive the same type of speakers, different speakers or a two way system.
  NOTE: the signal summing for parallel and bridge configuration is made just after the input connectors.

Environmental parameters

Sound travels at different speeds depending on the density of the surrounding air it is traveling through. Cold air is denser than warm air, thus the sound travels slower than it would if the air was warmer. Temperature can have a major influence with greater distances, particularly with respect to widely separated speaker arrays surrounding the audience. A simplified formula to find the average speed of sound for any given temperature (Celsius) is:

$$Vm/s = 331 + (0.6 * T)$$

Where **V** is the speed of sound and **T** is the temperature of the air. The speed of sound is also affected by other factors such as humidity and air pressure.

Temperature: sets the ambient temperature. This parameter is used to calculate the speed of sound for converting distances into delay times.

Temperature unit: sets the temperature unit scale (Celsius or Fahrenheit unit scale);

NOTE: the temperature parameter influences all the delay parameters if they are set in length units (mm, m, inch, feet). When you recall a preset, the stored delay is displayed according to the general temperature value. You can set the delay parameters in time units if you don't want this conversion.

21.3.2 Preset panel

A Preset is a specific set of CORE DSP parameters values that are optimized for a specific loudspeaker system.

The current preset is the set of parameter values currently in use and running on the device with the CORE DSP.

The current preset can be "Stored" and "Recalled" to/from the internal memory of the device, but it can be also be "Saved" and "Reloaded" to/from the memory of your computer.

The presets of QC amplifiers can be of three types, a letter after the number and before its proper name identifies the type:

- **D - Default Preset**: this is the preset **no. 1** and it is a fully free preset with defaults CORE DSP parameters, to be used as a starting point for setting up a new audio system. This preset cannot be overwritten.

- **U - User Preset**: these are presets that can be fully edited by the user and saved in one of the available internal user memory locations. In the QC amplifiers there are **16 user presets** and in a new unit all of them are the same as Default preset no. 1.

- **P - Protected Preset**: AXIOM provides for QC amplifiers Factory presets optimized for different AXIOM passive loudspeaker systems. These presets can be loaded into the QC's internal user memory using the LOAD command and after loaded they become Protected presets. For Protected presets only the INPUT section can be edited.

The AXIOM Factory Presets have been accurately designed to optimize the response of AXIOM loudspeaker systems, so the OUTPUT section has partial or full restrictions (some parameters cannot be edited or viewed), while the INPUT section is completely editable by the user. When a Factory Preset is saved into a User memory, the OUTPUT section keeps partial or full restrictions (some parameters cannot be edited or viewed).
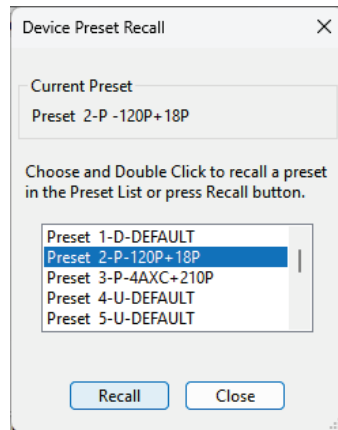
QC amplifier factory presets for different AXIOM passive systems are available for download from the **MYAXIOM** section of the https://www.axiomproaudio.com/ website.

> **WARNING: the "Recall", "Store" and "Load" operations will affect all devices of the same model that are element of the same GROUP if the GROUP LINK option is enabled, so you must pay attention to define correctly the groups in your audio system and be careful if the link option is enabled or disabled before using these commands.**
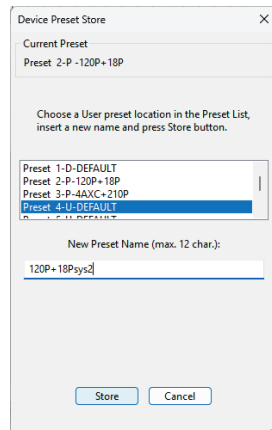

QC Amplifier Preset panel

*In the **Preset** panel you can store or recall preset in the device's memory or load and save presets in your computer HD as *.pcf files (NOTE: in DEMO devices only the "Load Preset File" is available). The buttons open their respective panels:*
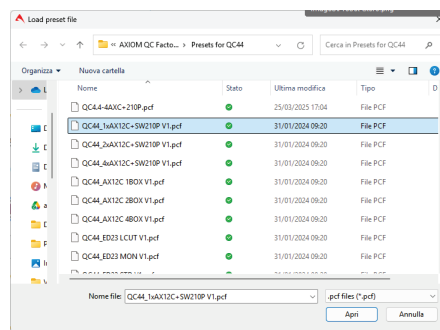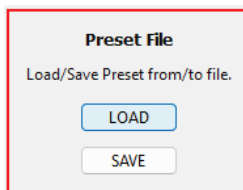
TO RECALL A PRESET FROM THE DEVICE MEMORY:
1) Click on RECALL button.
2) Select the preset in the upper section.
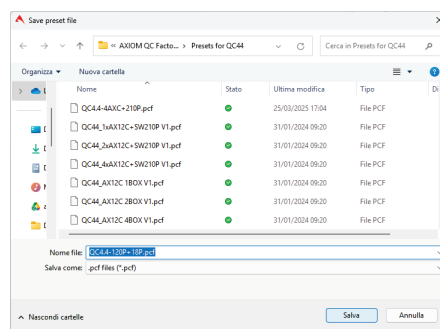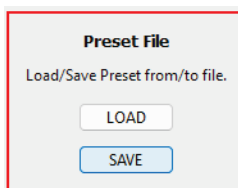3) Confirm clicking on Recall button or undo clicking on Close button.

TO STORE A PRESET INTO THE DEVICE MEMORY:
1) Click on STORE button.
2) Select the memory location in the upper section.
3) Specify the name in the lower section (12 characters are available).
4) Confirm clicking on Store button or undo clicking on Cancel button.

TO LOAD A PRESET FROM THE COMPUTER HD:
1) Click the LOAD button.
2) Select the PCF file containing the preset.
3) Confirm clicking on Open button or undo clicking on Cancel button.

TO SAVE A PRESET INTHECOMPUTER HD:
1) Click on the SAVE button.
2) Specify the preset name in the box section (12 characters are available).
3) Specify the PCF file name.
4) Confirm clicking on Save button or undo clicking on Cancel button.
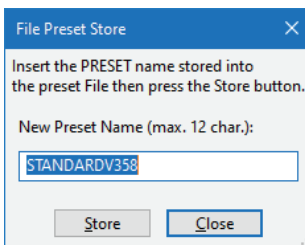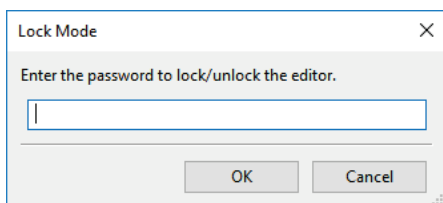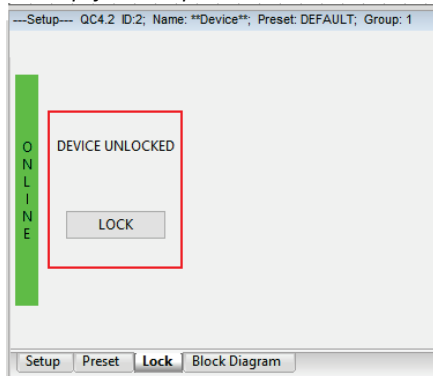
NOTE: Preset name is the short name (max 12 characters) stored in the device memory, instead the .pcf file name uses the same conventions as the windows operating system with a more extensive description.

21.3.3 Lock panel

The **LOCK** panel allows you to lock the device. Click on "LOCK" and enter the password:

QC Amplifier Lock panel

Up to 12 characters can be used for the password. The password is stored in the device's memory, so **it is very important to write down this password in a secure place, to recover it in case it is forgotten**.
When a device is protected with a password you can edit no parameters and its control panel appears as follow:

LK:X is shown instead of ID:X and the "Group" button is deactivated.
Note: the only way to erase the password is resetting the device (see chapter 14.1).

VERY IMPORTANT WARNING: the "Lock" operation affects all the devices of the same GROUP if the GROUP LINK option is enabled, so you must pay attention to define correctly the groups in your audio system and be careful if the link option is enabled or disabled before using this command.
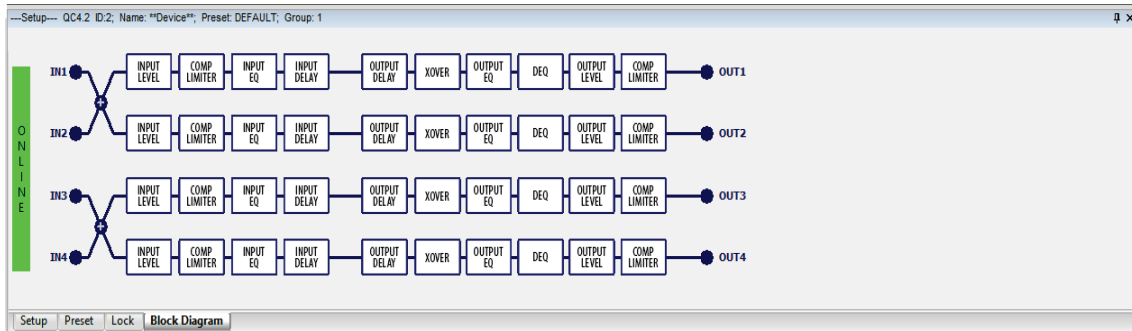
21.3.4 Block diagram panel

This panel shows the internal signal routing that varies depending on STEREO, PARALLEL or BRIDGE operation modes, selected in the first SETUP panel. The Block Diagram panel is available in SETUP and EDIT mode.
Note that in most of the factory presets the operation mode of QC amplifier is locked.
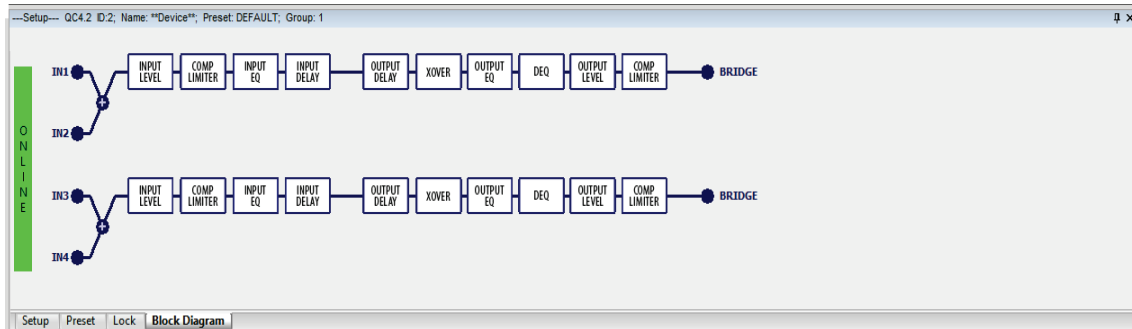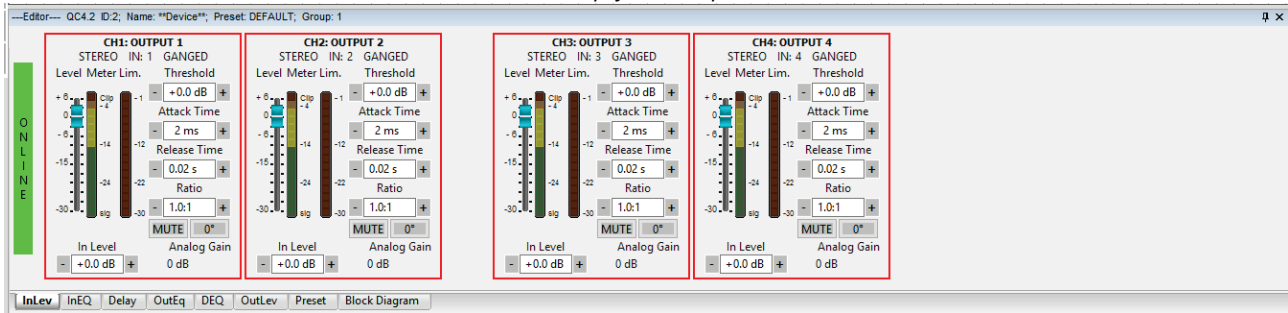
Stereo Mode:
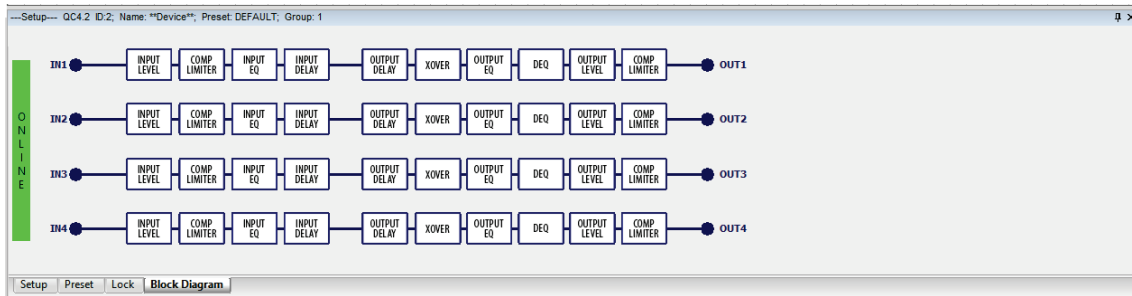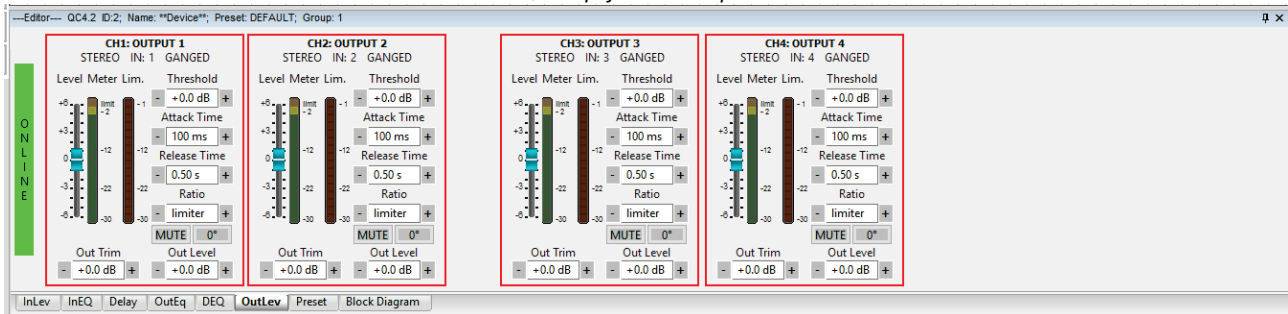

Parallel Mode:

Bridge Mode:

21.4 Edit Mode parameters

21.4.1 InLev panel, OutLev panel

QC Amplifier InLev panel

QC Amplifier OutLev panel

In the QC Amplifier In and Out Level panel you can control the following parameters for each channel:

- *The channel input signal **level** can be controlled with the graphic slider or with the edit box clicking on + or – buttons or typing the value.*
- *The **MUTE** button shuts up the channel: when active it turns RED.*
- *The **Meter Bar** shows the level of the input signal, reduce the input level if Clip is reached.*
- *The **Lim. Bar** shows the level reduction of the input signal that exceeds the threshold. Each input channel has a dynamic processor placed after the input level control, which can work as compressor or as limiter.*
- ***Threshold** set the activation level for the compressor/limiter. Below the threshold non compression/limiting occurs, above the threshold the processor starts to compress or to limit the signal as indicated in the bar. The threshold level is referred to the maximum input signal or sensitivity, (for QC4.2 is +3dBu, for QC4.4 is +6dBu, for QC2.4 is +3dBu), 0dB means "compressor disabled" (over the maximum signal level)".*
  NOTE: the input sensitivity can be increased or reduced using the input level.
- ***Attack Time:** attack time for the compressor, determines how quickly the compressor reacts to signals above the threshold.*
- ***Release Time:** release time for the compressor, determines how quickly the compressor restores its normal gain after the signal goes below the threshold.*
- ***Ratio:** sets the amount of compression for the signal. This parameter determines the input/output ratio for signals above the threshold: for example, a 5:1 ratio means that a signal exceeding the threshold by 5 dB will be compressed to 1 dB above the threshold. When this parameter is set at maximum it works as "Limiter" with the compression ratio set to∞:1.*
- ***0°/180°:** changes the polarity of the channel, i.e. reverses the phase of the signal.*
- ***Analog Gain (InLev panel only):** the Analog Gain shows the attenuation defined from the position of the correspondent channel potentiometer in the front panel of the QC Amplifier. We suggest using this potentiometer to check or vary the level on the fly and set it at maximum (0dB attenuation) when the system is set up regularly.*

21.4.2 Delay panel
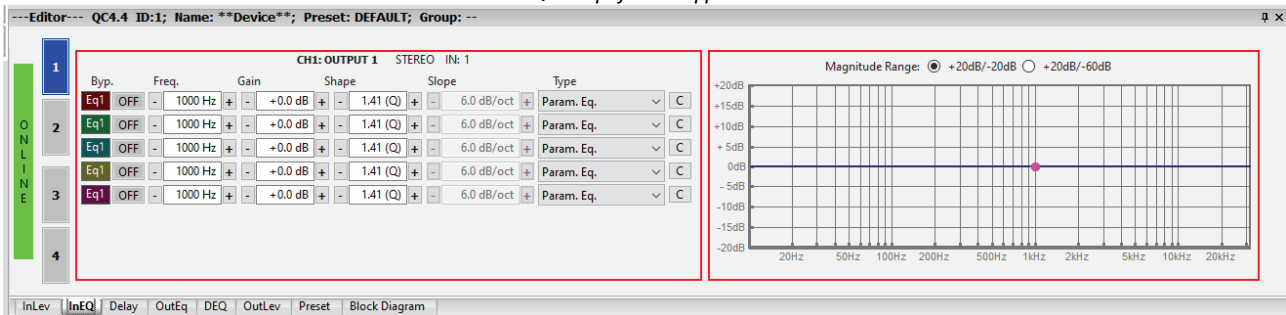
QC Amplifier Delay panel
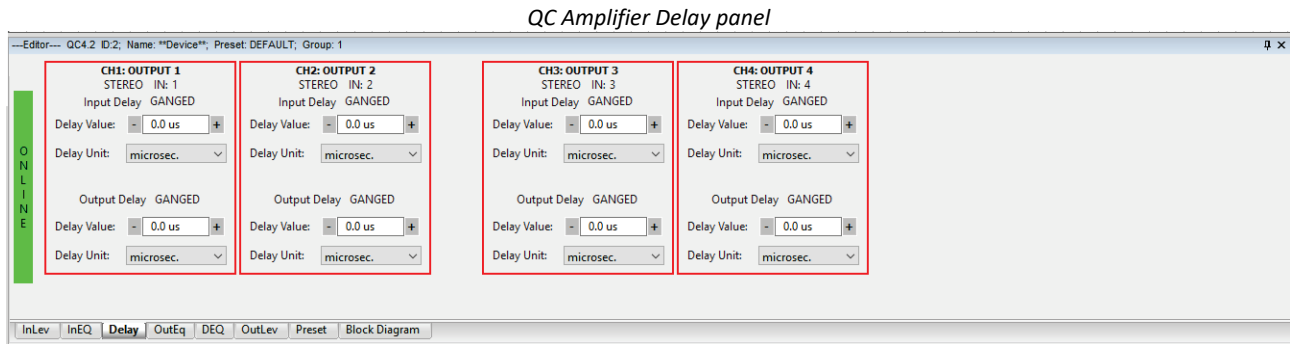
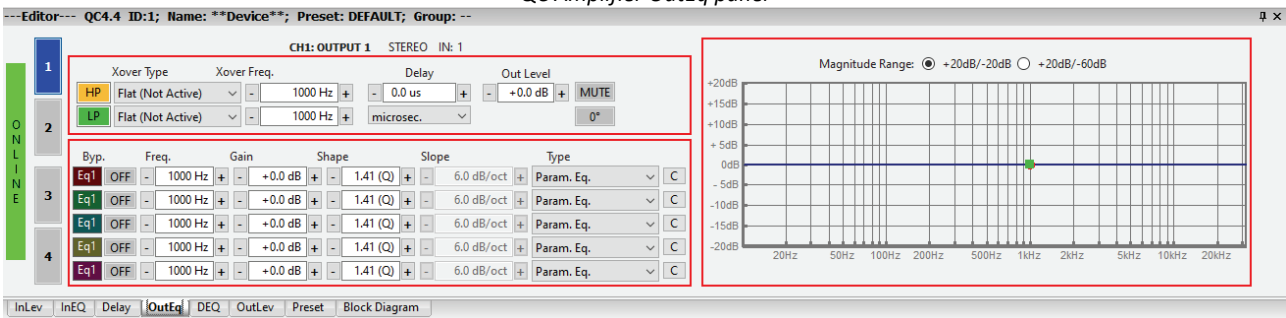*In this page you can enter a specific delay for each channel:*

- **Input Delay:** *the input delay is a parameter always editable that can be used to align the sound sources connected to one channel to the sound sources connected to another channel. A typical use is the delay between a floor sub and a suspended sat system or between a stage speaker and a middle room speaker and so on.*
- **Output Delay:** *the output delay is a parameter editable only in an unprotected preset, it is typically used to align the sound sources of a two-way system.*
- **Delay Unit:** *unit of measurement for the delay. Note that selecting unit of measurement for length (mm, m, inches, feet...) of delay (distance value) depends on the air temperature as indicated in the "environmental settings" (see "Setup panel").*

21.4.3 InEq, OutEq panel

QC Amplifier InEq panel

QC Amplifier OutEq panel

In the **Eq** panels you can control the five full-parametric equalizer cells available.

The graphic window plots the frequency response for the whole EQ block and for a single equalizer cell (the thin and colored line visualized selecting an equalizer cell). For each equalizer cell you can set many parameters and some of them can also be easily controlled by the mouse within the graphic window, just dragging the colored dots and rotating the mouse wheel if present.

Right-Clicking with mouse on the edit area of the EQ panel you can open a contextual menu that gives you the possibility of storing/recalling an EQ preset to/from a file, or gives you the possibility of copying/loading the preset to/from the computer Clipboard. In this way you can store your favorite settings for the block of all five filter or exchange in a faster way the EQ settings between different devices.

- **Frequency**
  Sets the reference for the equalizer filters, in steps of 1/20 octave from 15.6Hz to 32kHz.For shelf filters the frequency is referred on "Gain dB/2" point, to obtain a slope-variable shelving filter from 6dB/oct to 12dB/oct with a "pivot" point at the reference frequency.
  Frequency can be edited in the numeric edit box, can be scrolled by the spin buttons or by the up/down arrow keys of your keyboard, or can be edited moving the colored graphic dots marked on the frequency response window.

- **Gain**
  Gain of equalizer filter, from +15dB to -15dB in 0.2dB steps.
  This parameter is not available with notch filter; All Pass filter and LP/HP/Band Pass filter types.
  Gain can be edited in the numeric edit box, can be scrolled by the spin buttons or by the up/down arrow keys of your keyboard, or can be edited moving the colored graphic dots marked on the frequency response window.

- **Shape**
  Controls the aspect of equalization filter, depending from the filter type selected.
  For Parametric, Band Pass and Notch filter types the parameter assumes the meaning of "width of the bell shape" of the filter, usually defined as "Q" or "Bandwidth":
  Q (Quality factor)is the ratio of the center frequency of filter and the bandwidth measured at the -3 dB points.
  Bw (Bandwidth) in octave fractions with steps of 1/20-octave (measured at -3dB points).
  In PRONET AX "Settings" you can select if you use the "Q" or "Bw" representation of the filter's shape.
  For 1st-order All Pass filters the shape parameter set the phase (degree) at the reference frequency.
  For 2nd-order All Pass filters and Resonant LP and HP filters the shape parameter can set only Q (quality factor) as in analog filters.
  This parameter is not available for Shelving filters.
  Shape can be edited in the numeric edit box, can be scrolled by the spin buttons or by the up/down arrow keys of your keyboard, or can be edited with mouse by a combination of left-click and wheel on the frequency response window.

- **Slope**
  Controls the slope of variable shelving filters from 6dB/oct to 12 dB/oct in 0.5dB steps (not available for other filter types).
  Slope can be edited in the numeric edit box, can be scrolled by the spin buttons or by the up/down arrow keys of your keyboard, or can be edited with mouse by a combination of left-click and wheel on the frequency response window.

- **Type**
  This drop-down menu selects the type of filter used and it is available only when the filter cell is bypassed (OFF). Note that changing the filter type restores a default setup condition for many parameters of the filter cell.
  Filter types available are: Parametric, Notch, High and Low Shelving 6dB/oct, High and Low Shelving 12dB/oct, High and Low variable slope Shelving, Resonant High Pass and Low Pass, Band Pass, 1st order All pass, 2nd order All Pass.
- **On/Off**
  Clicking ON/OFF button bypasses the equalizer cell.
- **C button**
  Pressing this button clears the filter's parameters.
- **Xover type (QC amplifier OutEq only)**
  This drop-down menu selects the type and the order of Low Pass and High Pass filter. The type can be chosen from Butterworth, Linkwitz-Riley, Bessel with 6, 12, 18, 24, 48 dB/oct orders.
- **Xover frequency (QC amplifier OutEq only)**
  Sets the reference frequency for the crossover filters, in steps of 1/20 octave from 15.6Hz to 22627Hz. Frequency can be edited in the numeric edit box, can be scrolled by the spin buttons or by the up/down arrow keys of your keyboard, or can be edited moving the colored graphic dots marked on the frequency response window.
- **OutLev (QC amplifier OutEQ only)**
  This additional level control is useful to align the levels between different channels, particularly in case of a two-way system where one channel is dedicated to a cone speaker and the other to a horn speaker with very different sensitivity.
- **Delay, Phase, MUTE (QC amplifier OutEQ only)**
  Same output parameters already show in other panels.
  NOTE: all output panels are locked when an AXIOM factory preset is loaded.
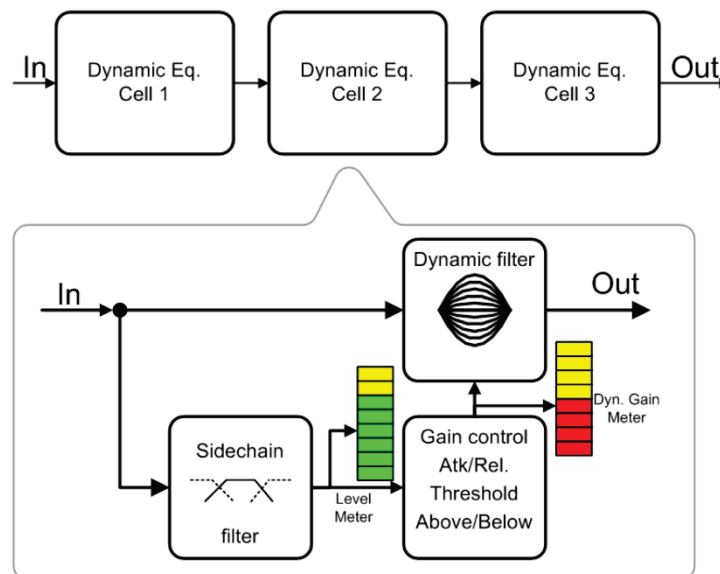
21.4.4 DEQ panel
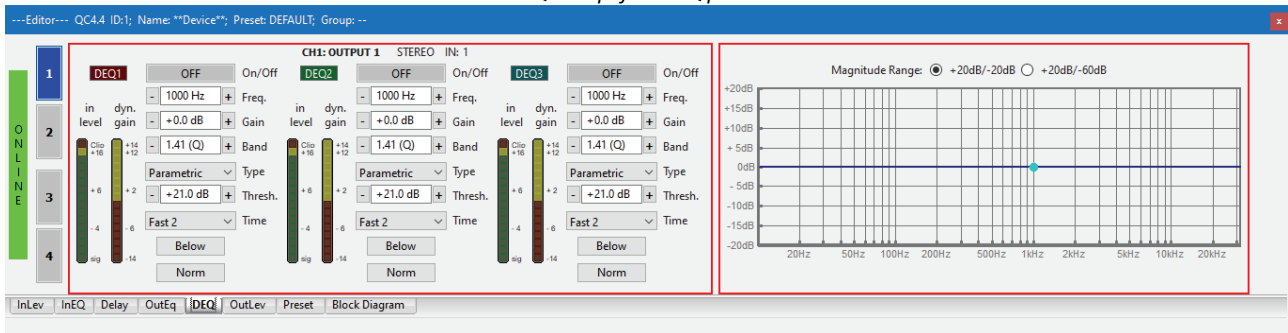
In DEQ panel you can control the 3 Dynamic Equalizer cells available on each output channel.

The graphic window plots the maximum frequency response for the whole DEQ block and for a single equalizer cell (the thin and colored line visualized selecting an equalizer cell). For each equalizer cell you can set many parameters and some of them can also be easily controlled by the mouse within the graphic window just dragging the colored dots on the frequency response curve.

NOTE: right-clicking with mouse on the edit area of the DEQ page you can open a contextual menu that gives you the possibility of storing/recalling a DEQ processor preset to/from a file, or gives you the possibility of copying/loading the preset to/from the computer clipboard.

How Dynamic Equalization works: The Dynamic EQ processor is a cascade of three dynamic equalizing cells. Each cell is an EQ filter where the gain parameter is dynamically controlled by the level of the input signal. The block diagram below can help you to understand it.

55

Parameters:

- **Frequency**
  Sets the frequency for the equalizer filters, in steps of 1/20 octave from 15.6Hz to 22627Hz.
- **Gain**
  Maximum gain of the dynamic equalizer filter, from +15dB to -15dB in 0.2dB steps. Inside the working region the gain value of the filter is dynamically controlled by the level of the input signal and it can vary from 0dB (no action) to the Gain value defined by the parameter. The amount of gain/reduction is visualized by the dyn. gain meter.
- **Band**
  Controls the aspect of the parametric equalization filter: this parameter is not available for shelving filters.
- **Type**
  This drop-down menu selects the type of filter used. Note that changing the filter type restores a default setup condition for the parameters of the filter cell. Filter types available are: Parametric, Low Shelving 6dB/oct, High Shelving 6dB/oct.
- **Threshold**
  Sets the working range of the dynamic gain control. In the working range region (see Above/Below parameter) the gain of the dynamic filter is controlled by the input signal level. The amount of gain or reduction is displayed by the dyn. gain meter. The threshold level is referred to the maximum dynamic for the input signal of the dynamic eq. cell, so Thresh=+21dB means "threshold at the maximum level of input signal".
- **Time**
  Determines how quickly the dynamic equalizer reacts to signals that match the threshold conditions or how quick the DEQ restores the normal state when signals do not match these conditions.

Label	Attack Time (ms)	Release Time (ms)
Fast 1	1	10
Fast 2	4	40
Medium 1	8	80
Medium 2	20	200
Medium 3	40	400
Slow 1	80	800
Slow 2	100	1000

- **Above/Below**
  Selects if the dynamic equalizer works above the threshold or below the condition.
- **Side/Norm**
  Selects if the detection block "analyzes" the whole signal (normal mode) or a filtered signal (side chain mode). The filter applied for the side chain depends on the type of filter selected for the signal as in table below.

Signal filter type	Side chain filter
Low Shelving at freq. f0	Low pass, cut off freq. at f0
Peaking centered at f0	Band Pass centered at f0
High Shelving at freq. f0	High pass, cut off freq. at f0

- **On/Off**
  Enables (bright button) or disables (dark button) the single dynamic eq. cell.
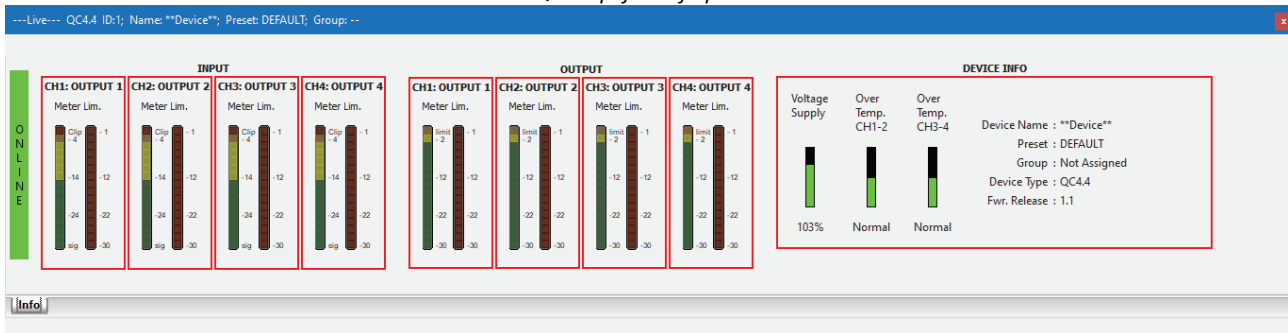
21.4.5 Preset

See chapter 21.3.2.

21.4.6 Block Diagram

See chapter 21.3.4

21.5 Live Mode parameters

21.5.1 Info panel

QC Amplifier Info panel

In the **INFO** panel you can monitor the following systems parameters during the show time:
- Input Signal Level and Gain Reduction
- Output Low Signal Level and Gain Reduction
- Output High Signal Level and Gain Reduction
- Mains Voltage Supply - as percentage of the nominal voltage
- Amplifier's temperature
- Temperature overload: it can be "Normal" or "Overload"

Additional device's information is displayed, including:
- Device Name
- Loaded Preset
- Group
- Device Type
- Firmware release info

22.   Q-NEX AMPLIFIER SETUP AND EDIT

22.1 Automatic or manual ID assignment procedure

For a Q-NEX amplifier you can start the procedure of automatic assignment of a new ID following these steps:

1. goes to the "Settings" page and goes to the "ID ASSIGN" box;

2. select the "AutoID" option, the device searches and auto assigns the first ID available from the connected (and active) devices. Note that from the same panel you can also set manually a specific ID for the device, be careful that ID must be unique in the network.
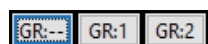
22.2 Control Panel info

The control panels are compact windows that display main features, configurations and status (protections, signal/clipping, preset currently used, etc...) of devices in the workspace.

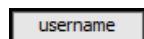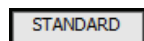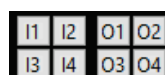|	
Q-NEX14.4 **Q-NEX14.4**	*The model's name of the device is shown on the left side of each panel. If the unit's Editor Panel is open, the model's name of the current selected device blinks white/green.*
STDBY **ON**	*STDBY/ON button displays and controls the status of the Q-NEX amplifier, the button is active only in SETUP mode.*
GR:- - **GR:1** **GR:2**	*The GR button identifies the group the device is assigned to. When PRONET AX is in SETUP mode, a click on this button opens the group list so you can assign the device. "- - "means not assigned.*
F	*If FIND view is selected, the control panels show the F button (SETUP or EDIT mode). Pressing the "F" button a message is visualized on the frontal display panel of the selected device.*
username	*If NAME view is selected the control panels show the "username" of the device (SETUP or EDIT mode).*
STANDARD	*If PRESET view is selected the control panels show the preset loaded in the device (SETUP or EDIT mode).*
I1 I2 O1 O2 **I3 I4 O3 O4**	*If SIGNAL view is selected, these buttons he signals' status in EDIT and LIVE mode. Only in EDIT mode, if clicked the three squares work as MUTE buttons.* *"I1" …" I4" show the input signals of Q-NEX amplifiers channels 1 to 4: GREEN = signal present, ORANGE = too high signal, RED = mute input.* *"O1" …" O4" show the output signals of Q-NEX amplifiers channels 1 to 4: orange = signal is limited, red = channel is muted.*
DEMO4 **ID:1 ID:1 ID:1** **ID:1**	*The device's ID is shown on the right side of each Control Panel:* *"DEMO#" identifies a DEMO device (device with no parameters).* *"ID: #" in WHITE color identifies a VIRTUAL (device with parameters but disconnected from the network).* *"ID: #" in GREEN color identifies a device CONNECTED to the network.* *"ID: #" in RED color identifies a device that was previously CONNECTED, but that is temporarily disconnected from the network due to connection problems.* *"ID: #" in BLACK color on red background identifies a temperature OVERLOAD or other protection status that generally mutes the device outputs.*

22.3 Setup Mode parameters

22.3.1 Setup panel
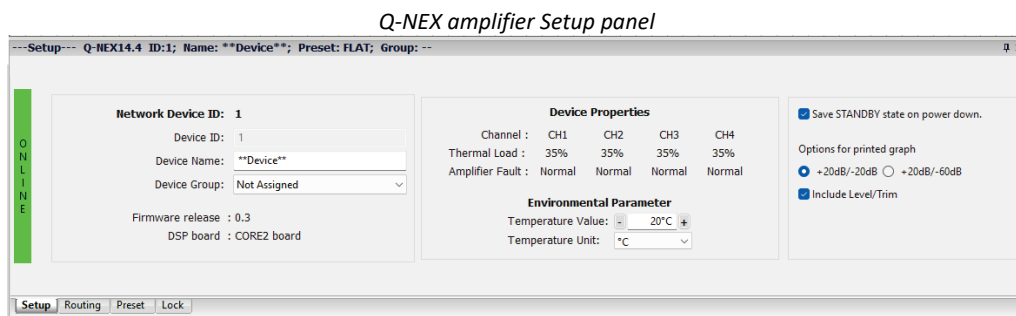
Q-NEX amplifier Setup panel

The Setup panel shows several information on the status of the device:
- the device's ID;
- the device Name: here you can give a custom name to the device;
- the Group the device is assigned to: here you can assign the device to a group;
- firmware release and type of DSP board contained in the CORE DSP (see chapter 14.1 about how to upgrade it);
- the "Thermal Load" capacity of each channel. The displayed data are in percentage because the temperature is picked up from various sensors on the respective channel. In normal operation, this value must be well below 100% if it reaches 100% a smooth reduction of the output power for that channel will be applied to ensure its operational continuity.
- the "FAULT" or "Normal" status of each channel;
- the Environmental Parameters allows you to set the temperature for the exact calculation of delay time, when the delay is expressed in length units, and to set the temperature units (°C or °F), see the specific box;
- the option to save the STANDBY/ON status of the Q-NEX amplifier when a mains power down occurs; if checked the Q-NEX amplifier stores its current status (ON or STANDBY) and it restart according with the stored status on the next power-on; if unchecked the amplifier starts always in STANDBY status when powered-on;
- the options to setup the graph parameters when Q-NEX data are printed;

Environmental parameters

Sound travels at different speeds depending on the density of the surrounding air it is traveling through. Cold air is denser than warm air, thus the sound travels slower than it would if the air was warmer. Temperature can have a major influence on greater distances, particularly with respect to widely separated speaker arrays surrounding the audience. A simplified formula to find the average speed of sound for any given temperature (Celsius) is:

$$Vm/s = 331 + (0.6 * T)$$

Where **V** is the speed of sound and **T** is the temperature of the air. The speed of sound is also affected by other factors such as humidity and air pressure.

Temperature: sets the ambient temperature. This parameter is used to calculate the speed of sound for converting distances into delay times.

Temperature unit: sets the temperature unit scale (Celsius or Fahrenheit unit scale).

NOTE: the temperature parameter influences all the delay parameters if they are set in length units (mm, m, inch, feet). When you recall a preset, the stored delay is displayed according to the general temperature value. You can set the delay parameters in time units if you do not want this conversion.

22.3.2 Routing panel

This panel shows the internal signal routing of the DSP processing, on this panel in SETUP mode:

- **SOURCE**: each physical XLR inputs input (1, 2, 3 ,4) can be assigned to each of the four DSP input sections (A, B, C, D), separately or combined together (1+2, 3+4, 1+2+3+4).
- **JOIN IN**: by checking these boxes allows you to join the parameters of A-B, B-C, C-D, DSP input sections, so changing a DSP input section parameter also the joined parameter will be changed accordingly.
- **INPUT DSP**: these are the four DSP INPUT sections (A, B, C, D) of the internal processing unit. Each INPUT section has five processing blocks: INPUT LEVEL, COMP LIMITER, INPUT EQ, INPUT DELAY, INPUT FIR.
- **ROUTING**: using this matrix section the four DSP INPUTS (A, B, C, D) can be assigned singularly or combined (A+B, C+D, A+B+C+D) to the DSP OUTPUTS (1, 2, 3, 4) processing sections.
- **JOIN OUT**: by checking these boxes allows you to join the parameters of 1-2, 2-3, 3-4, DSP OUTPUTS, so changing a DSP OUTPUT parameter also the joined parameter will be changed accordingly.
- **OUTPUT DSP**: these are the four DSP OUTPUT sections. Each OUTPUT has 6 blocks: OUTPUT DELAY, XOVER, OUTPUT EQ, DEQ, OUTPUT LEVEL, COMP LIMITER.
- **BRIDGE**: by checking these boxes allows you to set the 1-2 or 3-4 channels in bridge mode. When set as bridge, automatically the parameters of the second channel (2 or 4) disappear. Note: the bridge mode is available on Q-NEX5.4 and Q-NEX10.4 models only.
- **Z-LOAD**: by checking these boxes allows you to set the channels to operate in LO-Z (i.e. typical loudspeaker loads 4Ω, 8Ω, 2Ω…), HI-Z 100V or HI-Z 70V mode (i.e. high impedance line "100V-line" or "70V-line").
- **NAME**: in these boxes you can enter a 10-character custom name for each OUTPUT. This name appears on the display of the device.

Note: when you join the sections of two channels, then all the parameters on the section of the first channel are copied onto the section of the second channel, to align them before working further. However, note that FIR filters in input sections are not automatically aligned: if you use FIR filters in joined sections you must load them manually for all sections and you must keep them aligned manually.

Note that in most of the factory presets the operations on Q-NEX routing panel are not available.
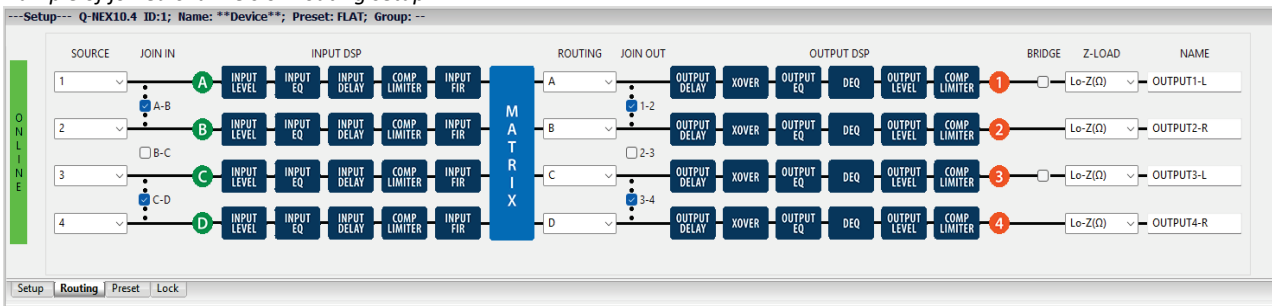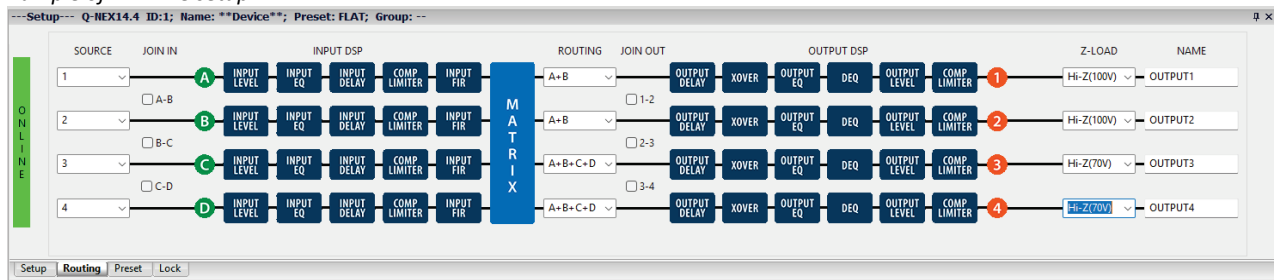
Example of four independent channels:
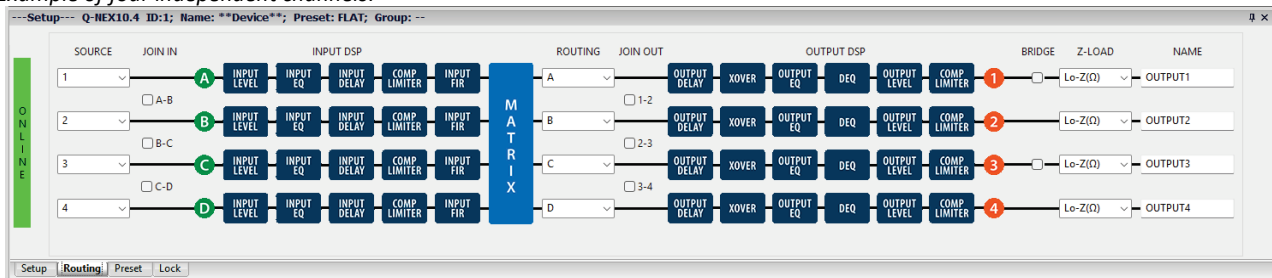
Example of Bridge Mode outputs (only for Q-NEX5.4 and Q-NEX10.4):
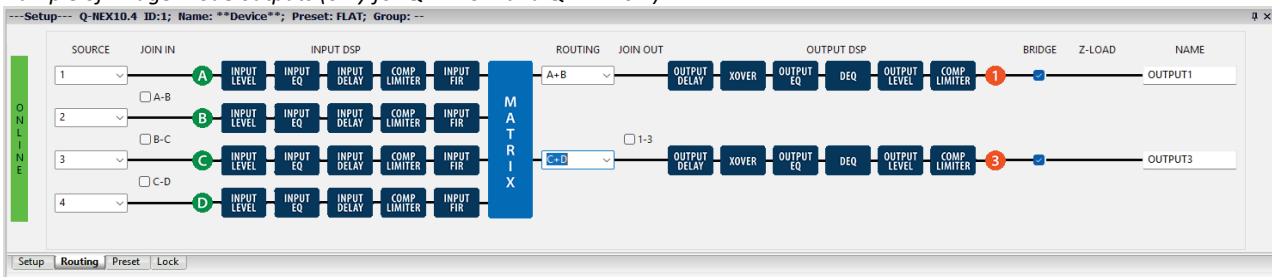
Example of joined channels on routing setup:

Example of Hi-Z line setup:

22.3.3 Preset panel

A Preset is a specific set of CORE DSP parameters values that are optimized for a specific loudspeaker system.

The current preset is the set of parameter values currently in use and running on the device with the CORE DSP.

The current preset can be "Stored" and "Recalled" to/from the internal memory of the device, but it can also be "Saved" and "Reloaded" to/from the memory of your computer.
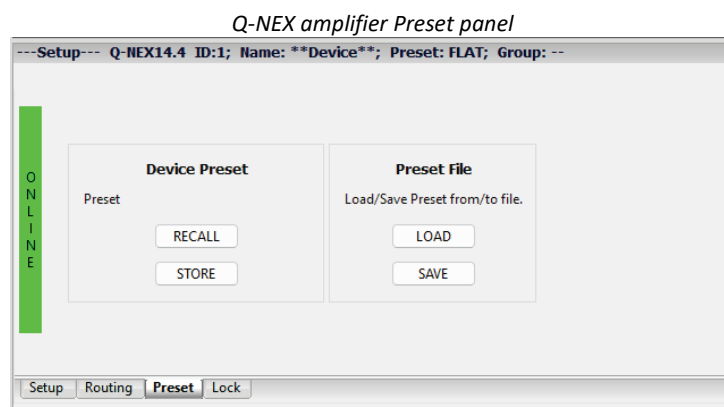
The presets of Q-NEX amplifiers can be of three types, a letter after the number and before its proper name identifies the type:

- **D - Default Preset**: it identifies a fully free preset with defaults CORE DSP parameters, to be used as a starting point for setting new audio system. In a new unit all the **16 available internal presets** are Default. The Default preset no. 1 cannot be overwritten.

- **U - User Preset**: these are presets edited by the user starting from a Default preset and saved in one of the available internal user memory locations.

- **F - Factory Preset**: these are presets created by the factory and optimized for different AXIOM passive loudspeaker systems. These preset files can be loaded into one of the available internal user memory locations using the LOAD command.
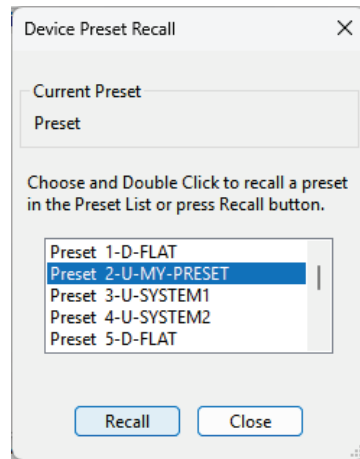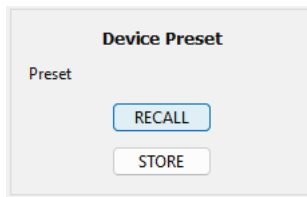
The AXIOM Factory Presets have been accurately designed to optimize the response of AXIOM loudspeaker systems, so the OUTPUT section has partial or full restrictions (some parameters cannot be edited or viewed), while the INPUT section is completely editable by the user. When a Factory Preset is saved into a User memory, the OUTPUT section keeps partial or full restrictions (some parameters can't be edited or viewed).

Q-NEX amplifier factory presets for different AXIOM passive systems are available for download from the **MYAXIOM** section of the https://www.axiomproaudio.com/ website.

> **WARNING: the "Recall", "Store" and "Load" operations will affect all devices of the same model that are element of the same GROUP if the GROUP LINK option is enabled, so you must pay attention to define correctly the groups in your audio system and be careful if the link option is enabled or disabled before using these commands.**

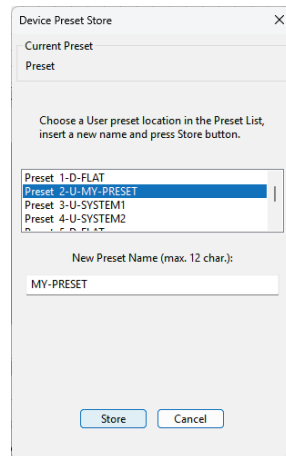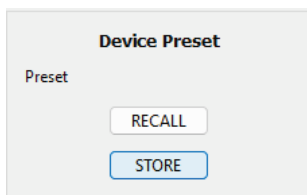*Q-NEX amplifier Preset panel*

*In the **PRESET** panel you can store or recall preset in the device's memory or load and save presets in your computer HD as *.pcf files (NOTE: in DEMO devices only the "Load Preset File" is available). The buttons open their respective panels:*
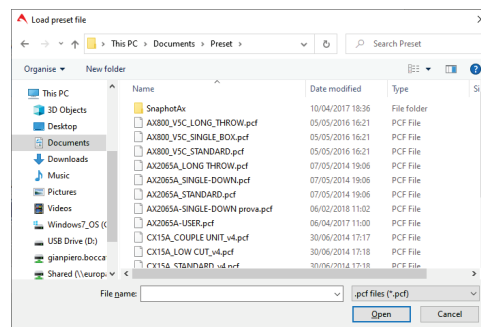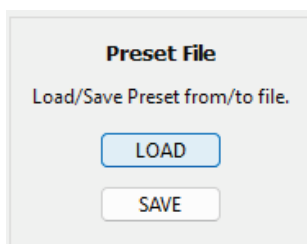
TO RECALL A PRESET FROM THE DEVICE MEMORY:
1) *Click on RECALL button.*
2) *Select the preset in the upper section.*
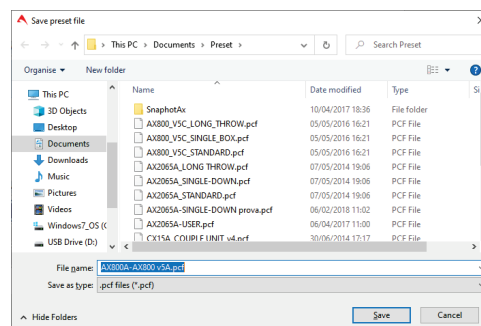3) *Confirm clicking on Recall button or undo clicking on Close button.*

TO STORE A PRESET INTO THE DEVICE MEMORY:
1) *Click on STORE button.*
2) *Select the memory location in the upper section.*
3) *Specify the name in the lower section (12 characters are available).*
4) *Confirm clicking on Store button or undo clicking on Cancel button.*

TO LOAD A PRESET FROM THE COMPUTER HD:
1) *Click on LOAD button.*
2) *Select the PCF file containing the preset.*
3) *Confirm clicking on Open button or undo clicking on Cancel button.*

TO SAVE A PRESET INTHECOMPUTER HD:
1) *Click on SAVE button.*
2) *Specify the preset name in the box section (12 characters are available).*
3) *Specify the PCF file name.*
4) *Confirm clicking on Save button or undo clicking on Cancel button.*

NOTE: Preset name is the short name (max 12 characters) stored in the device memory, instead the pcf file name uses the same conventions as the windows operating system with a more extensive description.

22.3.4 Lock panel

The **LOCK** panel allows you to lock the device. Click on "LOCK" and enter the password:
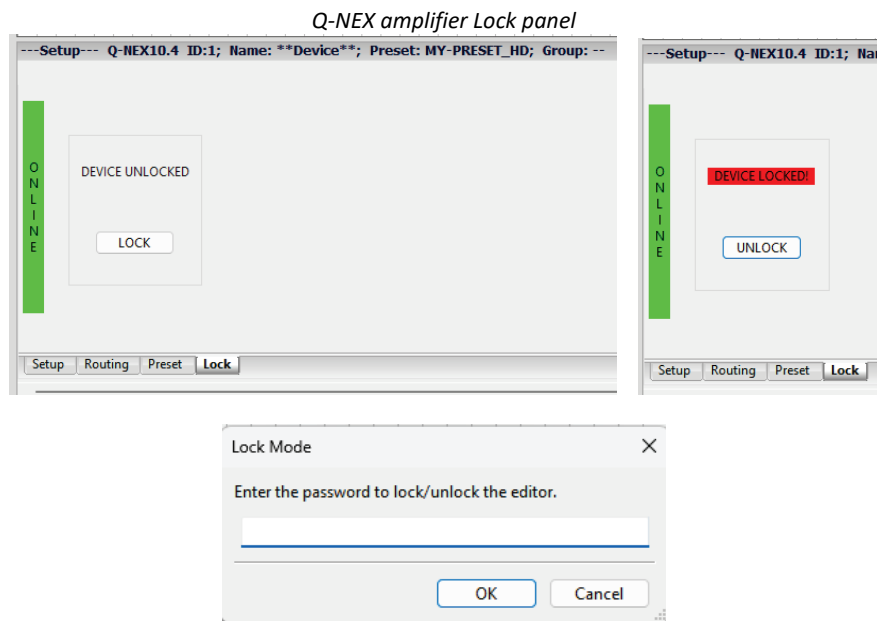
Q-NEX amplifier Lock panel

Up to 12 characters can be used for the password. The password is stored in the device's memory, so **it is very important to write down this password in a secure place, to recover it in case it is forgotten**.
When a device is protected with a password you can edit no parameters and its control panel appears as follows:

"LK:X" is shown instead of "ID:X" and the "Group" button is deactivated.
Note: the only way to erase the password is by resetting the device, see chapter 14.1.

VERY IMPORTANT WARNING: the "Lock" operation affects all the devices of the same GROUP if the GROUP LINK option is enabled, so you must pay attention to define correctly the groups in your audio system and be careful if the link option is enabled or disabled before using this command.

22.4 Edit Mode Parameters
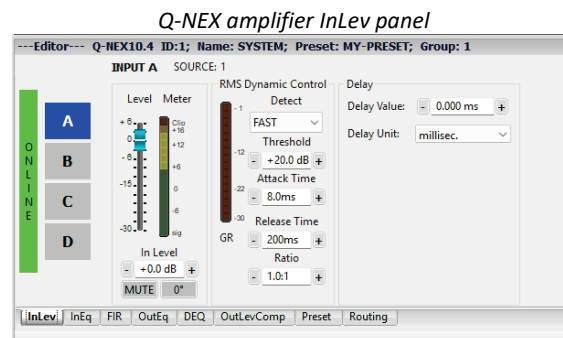
22.4.1 Channel selector
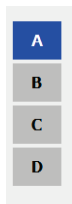
In each edit panel you have four buttons (A, B, C, D) to select which channel you want to control for the DSP INPUT sections of Q-NEX amplifier.
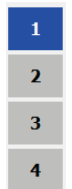
In each edit panel you have four buttons (1, 2, 3, 4) to select which channel you want to control for the DSP OUTPUT sections of Q-NEX amplifier.

22.4.2 InLev panel

Q-NEX amplifier InLev panel

In the I**nput Level** panel, you can control the following parameters for each input section of a channel:

- the input signal **level** can be controlled with the graphic slider or with the edit box clicking on + or – buttons or typing the value;
- **MUTE** button shuts up the channel: when active it turns RED;
- **Meter bar** shows the level of the input signal, reduce the input level if Clip is reached;
- **0°/180°** changes the polarity of the channel, i.e. this parameter reverses the phase of the signal;

RMS Dynamic Control is a dynamic compressor block that can detect the root mean square (rms) value of the input signal and control its amplitude with a variable gain; the control of the RMS level of the input audio signal lets you control its "mean energy" and then the perceived loudness;

- **Detect** set how fast the Dynamic Control analyze the RMS value; you can set "FAST" to detect all the rapid transitions of the energy of input signal, i.e. for the dynamic compression of signals with fast transients; you can set "SLOW" to detect a broad mean energy of the input signal, i.e. to have a smooth loudness control;
- **Threshold** set the threshold level for the dynamic compressor; below the threshold non compression/limiting occurs, above the threshold the processor starts to compress or to limit the signal as indicated in the GR bar. The threshold level is referred to the dBu value of the signal;
- **Gain Reduction bar (GR)** shows how the signal level is reduced by dynamic controller over the threshold;
- **Attack Time**: determines how quickly the compressor reacts to signals above the threshold.
- **Release Time**: determines how quickly the compressor restores its normal gain after the signal goes below the threshold.
- **Ratio:** sets the amount of compression for the signal. This parameter determines the input/output ratio for signals above the threshold: for example, a 5:1 ratio means that a signal exceeding the threshold by 5 dB will be compressed to 1 dB above the threshold. When this parameter is set at maximum it works as "Limiter" with the compression ratio set to∞:1;

Delay set the delay for the INPUT section;

- **Delay value:** set the delay in the box or set it using +/- buttons. the input delay is typically set to align a sound source with another sound source, for example subwoofers with full-range speakers.
- **Delay Unit:** here you can also set the delay unit; note that selecting unit of measurement for length (mm, m, inch, feet...) the amount of delay (distance value) depends on the air temperature as indicated in the "environmental settings" in Setup panel.

22.4.3 InEq panel

Q-NEX amplifier InEq panel
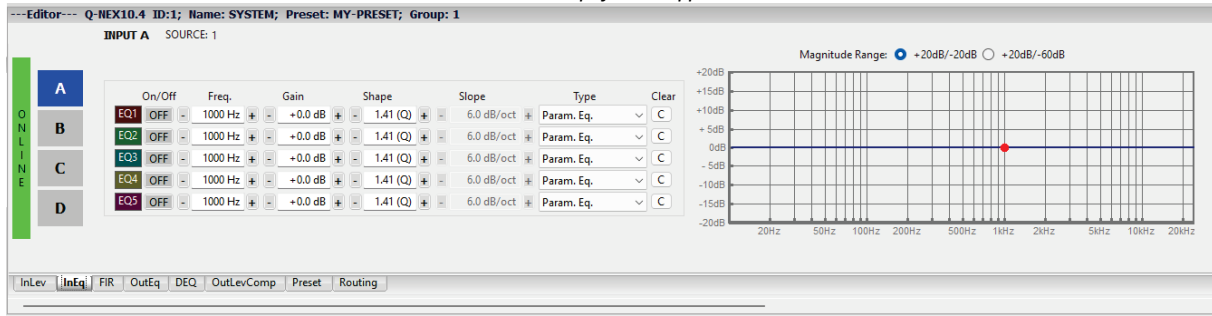
In **Input Eq** panel you can control five full-parametric equalizer cells available for the input section of each channel.

The graphic window plots the frequency response for the whole EQ block and for a single equalizer cell (the thin and colored line visualized selecting an equalizer cell). For each equalizer cell you can set many parameters and some of them can also be easily controlled by the mouse within the graphic window, just dragging the colored dots and rotating the mouse wheel if present.

Right-Clicking with mouse on the edit area of the EQ panel you can open a contextual menu that gives you the possibility of storing/recalling an EQ preset to/from a file, or gives you the possibility of copying/loading the preset to/from the computer Clipboard. In this way you can store your favorite settings for the block of all five filter or exchange in a faster way the EQ settings between different devices.

- **Frequency:** sets the reference for the equalizer filters, in steps of 1/20 octave from 15.6Hz to 32kHz. For shelf filters the frequency is referred on "Gain dB/2" point, to obtain a slope-variable shelving filter from 6dB/oct to 12dB/oct with a "pivot" point at the reference frequency.
  Frequency can be edited in the numeric edit box, can be scrolled by the spin buttons or by the up/down arrow keys of your keyboard, or can be edited moving the colored graphic dots marked on the frequency response window.
- **Gain:** set the gain of the equalizer filter, from +15dB to -15dB in 0.2dB steps. This parameter is not available with a notch filter; All Pass filter and LP/HP/Band Pass filter types. Gain can be edited in the numeric edit box, can be scrolled by the spin buttons or by the up/down arrow keys of your keyboard, or can be edited moving the colored graphic dots marked on the frequency response window.
- **Shape:** controls the aspect of equalization filter, depending on the filter type selected. For Parametric, Band Pass and Notch filter types the parameter assumes the meaning of "width of the bell shape" of the filter, usually defined as "Q" or "Bandwidth":
  Q (Quality factor)is the ratio of the center frequency of filter and the bandwidth measured at the -3 dB points.
  Bw (Bandwidth) in octave fractions with steps of 1/20-octave (measured at -3dB points).
  In PRONET AX "Settings" you can select if you use the "Q" or "Bw" representation of the filter's shape.
  For 1st-order All Pass filters the shape parameter set the phase (degree) at the reference frequency.
  For 2nd-order All Pass filters and Resonant LP and HP filters the shape parameter can set only Q (quality factor) as in analog filters.
  This parameter is not available for Shelving filters.
  Shape can be edited in the numeric edit box, can be scrolled by the spin buttons or by the up/down arrow keys of your keyboard, or can be edited with mouse by a combination of left-click and wheel on the frequency response window.
- **Slope:** controls the slope of variable shelving filters from 6dB/oct to 12 dB/oct in 0.5dB steps (not available for other filter types). Slope can be edited in the numeric edit box, can be scrolled by the spin buttons or by the up/down arrow keys of your keyboard, or can be edited with mouse by a combination of left-click and wheel on the frequency response window.
- **Type:** this drop-down menu selects the type of filter used and it is available only when the filter cell is bypassed (OFF). Note that changing the filter type restores a default setup condition for many parameters of the filter cell.
  Filter types available are: Parametric, Notch, High and Low Shelving 6dB/oct, High and Low Shelving 12dB/oct, High and Low variable slope Shelving, Resonant High Pass and Low Pass, Band Pass, 1st order All pass, 2nd order All Pass.
- **On/Off:** clicking ON/OFF button bypasses the equalizer cell.
- **C button:** pressing this button clear the filter's parameters.

22.4.4 FIR panel

Q-NEX amplifier FIR panel
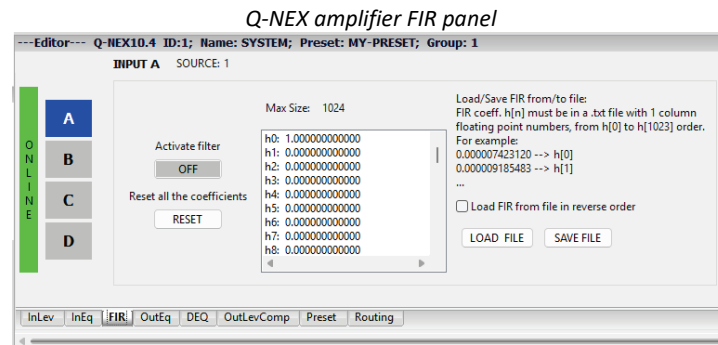
In FIR panel you can manage the 1024-taps for the finite impulse response (FIR) filters in each input section of the channels.
The FIR filter is implemented by the DSP in the form of:

$$y[n] = h[0] \cdot x[n] + h[1] \cdot x[n-1] + h[2] \cdot x[n-2] + \cdots + h[1023] \cdot x[n-1023]$$

where:

$y[n]$ is the output sample
$x[n]$ is the input sample

- With **Activate filter** (ON/OFF) you can enable or disable the FIR filter;
- **RESET** button clears all the FIR's coefficients loaded in current preset memory and replaces them with the default set of FIR's coefficients (a flat response filter);
- **Coefficient filters:** in this window you can check the FIR's coefficients loaded for the filter;
- With **the LOAD FILE** button you can load a set of FIR coefficients from a standard .txt file with 1 column array of floating point numbers, from h[0] to h[1023] order. Check the required option to load the coefficients in reverse order if needed (the first coefficient in the array .txt file will be loaded as the last coefficient h[1023] for the FIR);
- With **the SAVE FILE** button you can save in a standard .txt file of your hard disk the current set of coefficients from the FIR filter selected.

Note that FIR filters can't be joined or linked in according with the group option, so you have to load manually the FIR filter for each channel (and for each amplifier) even if the input sections of the amplifier are joined or even if the amplifier is grouped with other amplifiers.

22.4.5 OutEq panel

Q-NEX amplifier OutEq panel
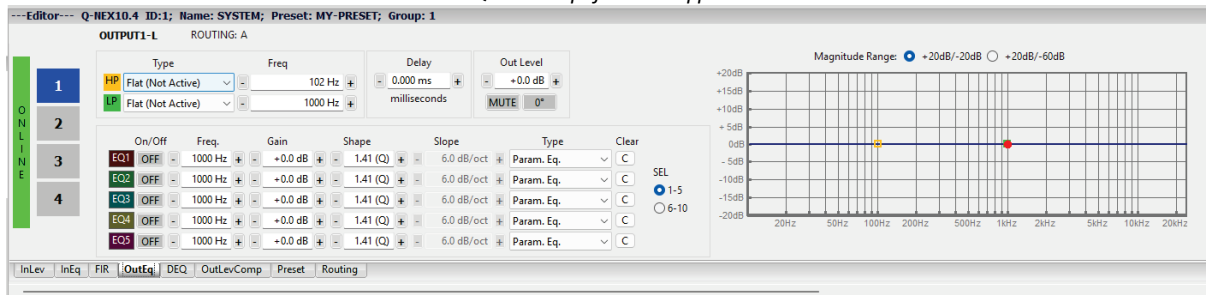
In **Output Eq** panel you can control 10 full-parametric equalizer cells available for the output section of each channel, you can also control the crossover blocks (Xover), the level, the phase and the output delay for the right alignment of the output sections.
The graphic window plots the frequency response for the crossover filters, for the whole EQ block and for a single equalizer cell (the thin and colored line visualized selecting an equalizer cell). For each equalizer cell you can set many parameters and some of them can also be easily controlled by the mouse within the graphic window, just dragging the colored dots and rotating the mouse wheel if present.
Right-Clicking with mouse on the edit area of the EQ panel you can open a contextual menu that gives you the possibility of storing/recalling an EQ preset or Xover preset to/from a file, or gives you the possibility of copying/loading the preset to/from the computer Clipboard. In this way you can store your favorite settings for the block of all ten filters or Xovers, or you can exchange in a faster way the EQ settings between different devices.

- **Frequency:** sets the reference for the equalizer filters, in steps of 1/20 octave from 15.6Hz to 32kHz.For shelf filters the frequency is referred on "Gain dB/2" point, to obtain a slope-variable shelving filter from 6dB/oct to 12dB/oct with a "pivot" point at the reference frequency.
  Frequency can be edited in the numeric edit box, can be scrolled by the spin buttons or by the up/down arrow keys of your keyboard, or can be edited moving the colored graphic dots marked on the frequency response window.
- **Gain:** set the gain of the equalizer filter, from +15dB to -15dB in 0.2dB steps. This parameter is not available with a notch filter; All Pass filter and LP/HP/Band Pass filter types. Gain can be edited in the numeric edit box, can be scrolled by the spin buttons or by the up/down arrow keys of your keyboard, or can be edited moving the colored graphic dots marked on the frequency response window.
- **Shape:** controls the aspect of equalization filter, depending on the filter type selected. For Parametric, Band Pass and Notch filter types the parameter assumes the meaning of "width of the bell shape" of the filter, usually defined as "Q" or "Bandwidth":
  Q (Quality factor)is the ratio of the center frequency of filter and the bandwidth measured at the -3 dB points.
  Bw (Bandwidth) in octave fractions with steps of 1/20-octave (measured at -3dB points).
  In PRONET AX "Settings" you can select if you use the "Q" or "Bw" representation of the filter's shape.
  For 1st-order All Pass filters the shape parameter set the phase (degree) at the reference frequency.
  For 2nd-order All Pass filters and Resonant LP and HP filters the shape parameter can set only Q (quality factor) as in analog filters.
  This parameter is not available for Shelving filters.
  Shape can be edited in the numeric edit box, can be scrolled by the spin buttons or by the up/down arrow keys of your keyboard, or can be edited with mouse by a combination of left-click and wheel on the frequency response window.
- **Slope:** controls the slope of variable shelving filters from 6dB/oct to 12 dB/oct in 0.5dB steps (not available for other filter types).
  Slope can be edited in the numeric edit box, can be scrolled by the spin buttons or by the up/down arrow keys of your keyboard, or can be edited with mouse by a combination of left-click and wheel on the frequency response window.
- **Type:** this drop-down menu selects the type of filter used and it is available only when the filter cell is bypassed (OFF). Note that changing the filter type restores a default setup condition for many parameters of the filter cell.
  Filter types available are: Parametric, Notch, High and Low Shelving 6dB/oct, High and Low Shelving 12dB/oct, High and Low variable slope Shelving, Resonant High Pass and Low Pass, Band Pass, 1st order All pass, 2nd order All Pass.
- **On/Off:** clicking ON/OFF button bypasses the equalizer cell.
- **C button:** pressing this button clear the filter's parameters.
- **SEL:** you can visualize the group of EQ cells from 1 to 5 or from 6 to 10.
- **(Xover) type:** this drop-down menu selects the type and the order of Low Pass and High Pass filter. The type can be chosen from Butterworth, Linkwitz-Riley, Bessel with 6, 12, 18, 24, 48 dB/oct orders.
- **(Xover) frequency:** sets the reference frequency for the crossover filters, in steps of 1/20 octave from 15.6Hz to 22627Hz.Frequency can be edited in the numeric edit box, can be scrolled by the spin buttons or by the up/down arrow keys of your keyboard, or can be edited moving the colored graphic dots marked on the frequency response window.
- **OutLev:** this additional level control is useful to align the levels between various channels, particularly in case of a two-way system where one channel is dedicated to a cone speaker and the other a horn speaker with very different sensitivity.
- **Delay, Phase, MUTE:** same output parameters already show in other panels.

22.4.6 DEQ panel

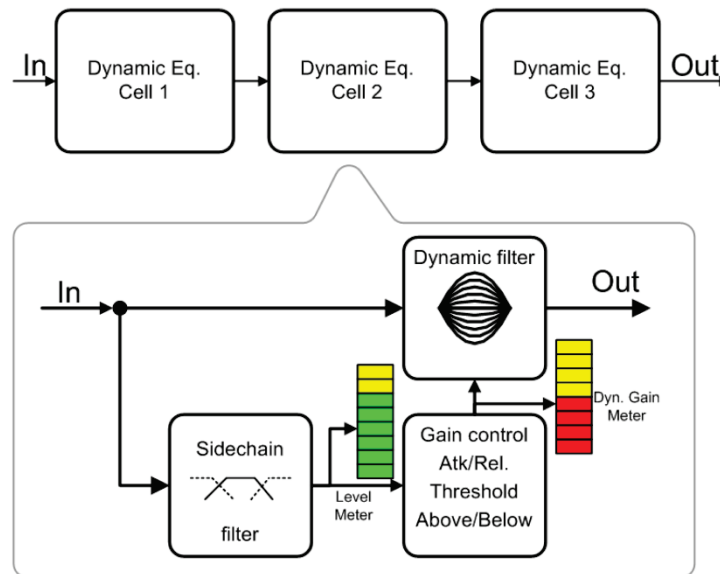Q-NEX amplifier DEQ panel
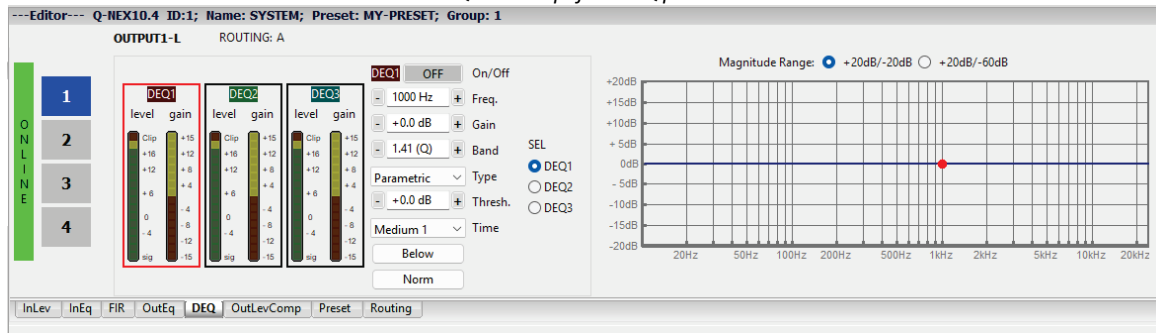
In DEQ panel you can control 3 Dynamic Equalizer cells available on each output channel.

The graphic window plots the maximum frequency response for the whole DEQ block and for a single equalizer cell (the thin and colored line visualized selecting an equalizer cell). For each equalizer cell you can set many parameters and some of them can also be easily controlled by the mouse within the graphic window just dragging the colored dots on the frequency response curve.

NOTE: Right-Clicking with mouse on the edit area of the DEQ page you can open a contextual menu that gives you the possibility of storing/recalling a DEQ processor preset to/from a file, or gives you the possibility of copying/loading the preset to/from the computer clipboard.

How Dynamic Equalization works: The Dynamic EQ processor is a cascade of three dynamic equalizing cells. Each cell is an EQ filter where the gain parameter is dynamically controlled by the level of the input signal. The block diagram below can help you to understand it.
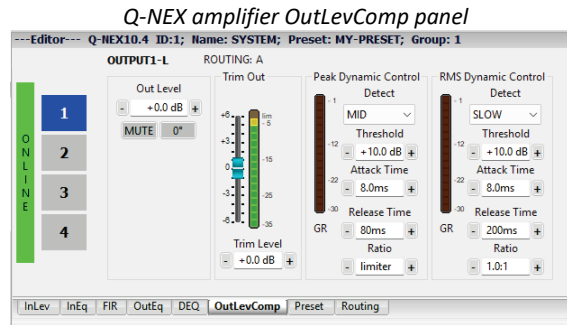
Parameters:

- **On/Off:** *enables (bright button) or disables (dark button) the single dynamic eq. cell.*
- **Frequency:** *sets the frequency for the equalizer filters, in steps of 1/20 octave from 15.6Hz to 22627Hz.*
- **Gain:** *maximum gain of the dynamic equalizer filter, from +15dB to -15dB in 0.2dB steps. Inside the working region the gain value of the filter is dynamically controlled by the level of the input signal and it can vary from 0dB (no action) to the Gain value defined by the parameter. The amount of gain/reduction is visualized by the dyn. gain meter.*
- **Band:** *controls the aspect of the parametric equalization filter; this parameter is not available for shelving filters.*
- **Type:** *this drop-down menu selects the type of filter used. Note that changing the filter type restores a default setup condition for the parameters of the filter cell. Filter types available are: Parametric, Low Shelving 6dB/oct, High Shelving 6dB/oct.*
- **Threshold:** *sets the working range of the dynamic gain control. In the working range region (see Above/Below parameter) the gain of the dynamic filter is controlled by the input signal level. The amount of gain or reduction is displayed by the* **gain meter**. *The threshold level is referred to the dBu level of input signal.*
- **Time:** *determines how quickly the dynamic equalizer reacts to signals that match the threshold conditions or how quickly the DEQ restores the normal state when signals do not match these conditions.*

Label	Attack Time (ms)	Release Time (ms)
Fast 1	1	10
Fast 2	4	40
Medium 1	8	80
Medium 2	20	200
Medium 3	40	400
Slow 1	80	800
Slow 2	100	1000

- **Above/Below:** *selects if the dynamic equalizer works above the threshold or below the condition.*
- **Side/Norm:** *selects if the detection block "analyzes" the whole signal (normal mode) or a filtered signal (side chain mode). The filter applied for the side chain depends on the type of filter selected for the signal as in table below.*

Signal filter type	Side chain filter
Low Shelving at freq. f0	Low pass, cut off freq. at f0
Peaking centered at f0	Band Pass centered at f0
High Shelving at freq. f0	High pass, cut off freq. at f0

22.4.7 OutLevComp panel

Q-NEX amplifier OutLevComp panel

In **the Output Level and dynamic Compression** panel you can control the following parameters for each output section of a channel:

- the **level** of the output signal can be controlled with the graphic slider or with the edit box clicking on + or – buttons or typing the value;
- **MUTE** button shuts up the channel: when active it turns RED;
- **0°/180°** changes the polarity of the channel, i.e. this parameter reverses the phase of the signal;
- **Trim Out**: the output level can be trimmed here in a short range of +/-6dB.
- **Meter bar** shows the level of the output signal, it is referred to the maximum output level set up by the Peak Dynamic Control threshold;

Peak Dynamic Control is a dynamic Limiter/Compressor block that can detect and limit the maximum value for the envelope of the amplitude of an audio signal, it controls the amplitude with a variable gain applied; this can be typically used to limit the power of the output signal;

- **Detect** set how fast the Peak Dynamic Control analyze the value of the envelope of the audio signal; you can set "MID" value to detect and follow all the typical variations of the amplitude of the musical audio signal, this is typically used to limit the power driven to the load connected at the amplifier's output; you can set "FAST" value to detect in a fast way all the rapid transitions of the envelope of the audio signal to detect also the fastest peaks; you can set "SLOW" value to detect a mean level of the signal envelope, this can be used to have a smooth and slower character typical of the older analog dynamic compressors/limiters;
- **Threshold** set the threshold level for the dynamic compressor; below the threshold non compression/limiting occurs, above the threshold the processor starts to compress or to limit the signal as indicated in the GR bar. The threshold level is referred to the dBu value of the signal;
- **Attack Time**: determines how quickly the compressor reacts to signals above the threshold; with "FAST" detect option this parameter is not available;
- **Release Time**: determines how quickly the compressor restores its normal gain after the signal goes below the threshold; with "FAST" detect option this parameter is not available;
- **Ratio:** sets the amount of compression for the signal. This parameter determines the input/output ratio for signals above the threshold: for example, a 5:1 ratio means that a signal exceeding the threshold by 5 dB will be compressed to 1 dB above the threshold. When this parameter is set at maximum it works as "Limiter" with the compression ratio set to∞:1;
- **Gain Reduction bar (GR)** shows the level reduction of the signal over the threshold;

RMS Dynamic Control is a dynamic compressor block that can detect the root mean square (RMS) value of the signal and it can control its amplitude with a variable gain; by controlling the rms level you can control the "mean energy" of the audio signal;

- **Detect** set how fast the Dynamic Control analyze the rms value; you can set "FAST" to detect all the rapid transitions of the energy of signal, i.e. for the dynamic compression of signals with fast transients; you can set "SLOW" to detect a broad mean energy of the signal, i.e. to have a smooth loudness control;
- **Threshold** set the threshold level for the dynamic compressor; below the threshold non compression/limiting occurs, above the threshold the processor starts to compress or to limit the signal as indicated in the GR bar. The threshold level is referred to the dBu value of the signal;
- **Attack Time**: determines how quickly the compressor reacts to signals above the threshold.
- **Release Time**: determines how quickly the compressor restores its normal gain after the signal goes below the threshold.
- **Ratio:** sets the amount of compression for the signal. This parameter determines the input/output ratio for signals above the threshold: for example, a 5:1 ratio means that a signal exceeding the threshold by 5 dB will be compressed to 1 dB above the threshold. When this parameter is set at maximum it works as "Limiter" with the compression ratio set to∞:1;
- **Gain Reduction bar (GR)** shows the level reduction of the input signal over the threshold;

Note that when you set the Hi-Z (100V or 70V) lines on Setup panel (see chapter 22.3.1) the Dynamic Controls are not available.
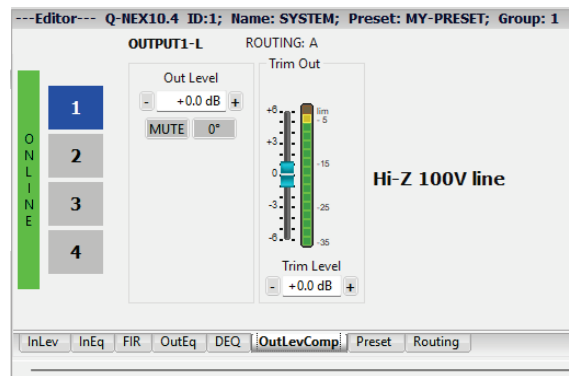
22.4.8 Preset panel

See chapter 22.3.3.
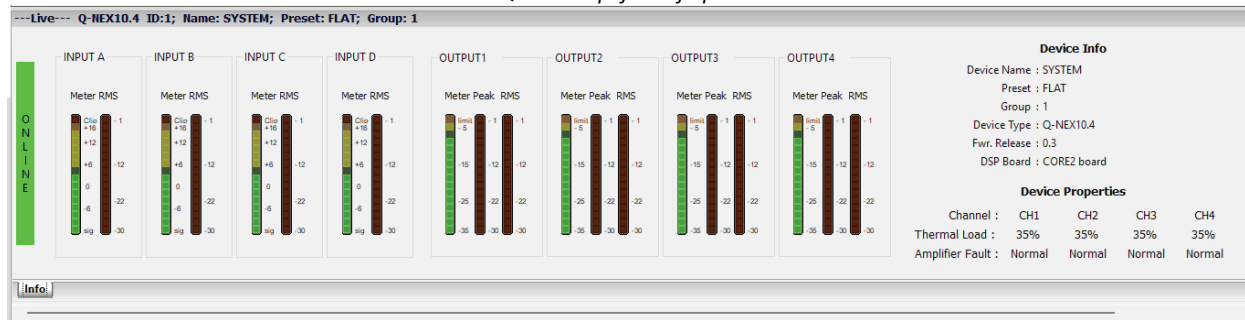
22.4.9 Routing panel

See chapter 22.3.2.
Note that in EDIT mode you can only view the routing of a Q-NEX amplifier, you can change the routing parameters only in SETUP mode.

22.5 Live Mode Parameters

22.5.1 Info panel

Q-NEX amplifier Info panel

In the **INFO** panel you can monitor the following systems parameter during the show time.
- Input Signal Level and Gain Reduction
- Output Low Signal Level and Gain Reduction
- Output High Signal Level and Gain Reduction
- Thermal Load
- Fault warning

Additional device's information is displayed is, including:
- Device Name
- Loaded Preset
- Group
- Device Type
- Firmware release and DSP board info

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