CloudPower Series™

4 channel amplifier with DSP and remote control

Operation Manual V1.0

CP 354
CP 704
CP 1504
CP 3004

CloudPower Series

4 channel amplifier with DSP and remote control

Serial number of this product:

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Important safety instructions

CAUTION: to reduce the risk of electric shock, do not remove cover (or back). No user-serviceable parts inside. Refer servicing to qualified service personnel.

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of an uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation mark within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the equipment.

Instructions

Before installing or operating the equipment, read all safety instructions, warnings and operating instructions. Heed all warnings. Follow all instructions. Keep all safety, installation and operating instructions for future reference.

Installing and operation location

Do not use this apparatus near water. Do not expose this apparatus to drips or splashes. Do not place any objects filled with liquids, such as vases, on the apparatus.

Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat. No naked flames, such as lighted candles, should be placed on the apparatus.

Do not install the apparatus in a confined space such as a book case or similar unit. Do not block any ventilation openings.

Ensure that foreign objects and liquids cannot get into the equipment.

Install in accordance with the manufacturer's instructions. Only use attachments/accessories specified by the manufacturer.
Use only with the cart, stand, tripod, bracket or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/ apparatus combination to avoid injury from tip-over .

The apparatus should be located close enough to the AC outlet so that you can easily grasp the power cord plug at any time.

The mains plug, the appliance coupler or the mains switch is used as the disconnect device. Either device shall remain readily operable when the apparatus is installed or used.

Power source and grounding

This product should be operated only from the power source indicated on the apparatus or in the operating instructions. If you are not sure of the type of power supply to the premises where the equipment is to be used, consult your product dealer or local power company.

Do not defeat the safety purpose of the polarised or grounding-type plug. A polarised plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

Connect Class I construction apparatus to an AC outlet with a protective grounding connection.

Do not overload wall outlets, extension cords or integral convenience receptacles, as this can result in a risk of fire or electric shock.

Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles and the point where they exit from the apparatus.

Unplug this apparatus during lightning storms or when unused for long periods of time.

Cleaning, maintenance and servicing

Unplug the apparatus from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.

Do not attempt to service this product yourself, as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personal.

Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally or has been dropped.

Intended use

The equipment may only be used for the purpose described in the operation instructions. Never carry out any work on the equipment other than as specified in the operating manual.

Never push objects of any kind into this product through openings, as they may touch dangerous voltage points or short-cut parts, which could result in a fire or electric shock.

Children should never use the apparatus without close adult supervision.

WARNING: excessive sound pressure levels can cause hearing loss.

Environmental precaution

Electrical and electronic equipment may contain hazardous substances for humans and their environment.

The “crossed out wheelie bin” symbol present on the device and represented above is there to remind one of the obligation of selective collection of waste. This label is applied to various products to indicate that the product is not to be thrown away as unsorted municipal waste. At the end of life, dispose of this product by returning it to the point of sale or to your local municipal collection point for recycling of electric and electronic devices.
Customer participation is important to minimize the potential affects on the environment and human health that can result from hazardous substances that may be contained in this product.
Please, dispose of this product and its packaging in accordance with local and national disposal regulations including those governing the recovery and recycling of waste electrical and electronic equipment. Contact your local waste administration, waste collection company or dealer.

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Dear customer
Thank you for choosing the Apex CloudPower™ for your sound reinforcement needs. The all-new CloudPower™ series is a professional amplifier series with feature built-in DSP and remote control over the cloud – securely. Log in to APEX Cloud and remotely-manage your amplifiers from your office. Save time and money by monitoring performance and adjusting functions

Product highlights

- Remote management over Apex Cloud
- WebUI with built-in Wi-Fi Hotspot
- Internal streaming source supporting Spotify and Apple Airplay
- Daylight viewable colour OLED display
- Four-input analog and network options
- On board 64bit DSP with free configurable signal path. IIR+FIR filter capability.
- User processing DSP facilities:
  - Gain adjustment and phase inversion
  - Delay 250 ms (combined with group delay)
  - 12-band parametric filtering, with choice of 16 filter types
  - Peak/RMS limiter
- Speaker processing DSP facilities
  - Delay (30 ms Max.)
  - 12-band parametric filtering, with choice of 16 filter types
  - High- and low-pass crossover filtering with choice of filter types
  - FIR/IIR filter implementation
  - Peak/RMS limiter
- Group processing DSP facilities
  - Group Delay (combined with user delay)
  - Group12-band parametric filtering, with choice of 16 filter types
  - Group gain
- Internal Global and speaker preset library
- All models can directly-drive low impedance or 70/100v loudspeakers
- Four class D, DC coupled amplifiers(4x 350w, 4x 750w 4x 1500w, 4 x 3000w)
- Apex GlidePath technology
- Our proprietary control loop provides a load independent frequency response and low harmonic and intermodulation distortion.
- Power supply with worldwide operation from 100-240Vac. Its active power factor correction circuitry ensures efficient use of the mains power system
- Low idle loss (heat) through the use of a proprietary control loop which relaxes the output stages dead time.

Foreword

The APEX CloudPower™ Series professional amplifiers feature built-in DSP and remote control over the cloud securely. Easily connect the amplifier to the WebUI on any HTML5 capable browser (MAC, PC, IOS, Android) with the built-in WiFi hotspot, or to a local area network via cat5 cable. The unique internal streaming source option makes it possible to playback Spotify and Apple airplay sources straight from your mobile device without the need for external hardware.

Multiple amplifiers can be controlled through the same webUI using the trusted and comprehensive work-flow of our IntelliCloud software package. Featuring high-end studio-grade analogue circuit designs, the APEX CloudPower™ Series sets a new benchmark in powered system management and speaker processing design. The proprietary Class-D amplifier control loop features GlidePath technology and exceptionally low intermodulation figures resulting in wide stereo imaging.
CloudPower™ is founded on our proprietary GlidePath architecture, with DSP and amplifier circuits fully integrated for outstanding performance. GlidePath employs DC coupling throughout the signal path, dramatically reducing the time offsets and distortion associated with AC coupling. The result: crisper, punchier bass and brighter, more natural high frequencies, delivering superb intelligibility and higher perceived volume.. Four models with power ratings ranging from 350W to 3000W per channel fit all applications from small commercial spaces to the largest theatre.

Whether the application is a standalone system amplifier, or a comprehensive networked system with multiple amplifiers, the APEX CloudPower™ Series is designed to provide the solution that our clients demand. With comprehensive loudspeaker preset capability, implementing CloudPower™ into your system couldn't be easier.

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About this manual

Carefully read all instructions and warnings before operating this device. Keep this manual in a safe place so that it can be referred to when required.

The latest manual revision can be downloaded from the download section of the Apex website:
http://www.apex-audio.be

This manual describes use of the CloudPower™-series

Inspection and unpacking

This appliance has been carefully packed in the factory and the packaging was designed to withstand rough handling. Should the unit appear to have been damaged in transit, do not discard any of the packing material and notify the carrier immediately as they will be responsible.

Save all the packing materials for future use if you ever need to ship the unit again.

Please check the list below against the contents of the packaging. If any items are missing or damaged, contact the Apex dealer or distributor where you purchased the unit.

- Apex CloudPower™ amplifier
- AC power cable Europe
- Network cable ("straight" type)

Operating environment

The CloudPower™ is designed to operate in most normal climates, at a temperature between 0 °C and 50 °C (32 - 122 °F), with relative humidity between 10% and 60%.

The Apex CloudPower™ incorporates internal fan-cooling, which should keep the unit within its operating temperature. However, should the unit be installed in an equipment rack it is important to ensure that the temperature inside the rack does not exceed the upper limit. Under such circumstances, additional rack-mounted cooling fans may be necessary.
Do not block any ventilation openings.

NOTE: Fit solid blanks (not ventilation blanks) to unused rack spaces to ensure effective air circulation. Leaving
gaps in between items of equipment degrades the effectiveness of forced–air cooling.

Power requirements

BEFORE you connect any unit to the mains, please make sure that the voltage of your local AC supply is within the acceptable range of the unit.

The Apex CloudPower™ is designed to work from an AC supply between 100 V and 240 V, at a frequency between 50 and 60 Hz. No AC voltage selector is provided as the device automatically adjusts to the incoming AC voltage.

Precautions should be taken so that the appliance is properly grounded at all times. This unit must be earthed.

Installation

If the unit is brought into a warm room from a cold environment, internal condensation may occur. Ensure that the unit has been allowed to reach ambient temperature before switching it on. We recommend one hour.

Although this unit is intended for installation in a standard 19-inch rack it can nevertheless be used free standing. If the unit is installed in a flight-case or in an equipment rack, fix the unit with all four screws through the front panel holes and the four screws from the back panel. For normal use no extra support is needed, but in more extreme conditions, such as on the road, we recommend the unit is supported at the rear.

Front panel

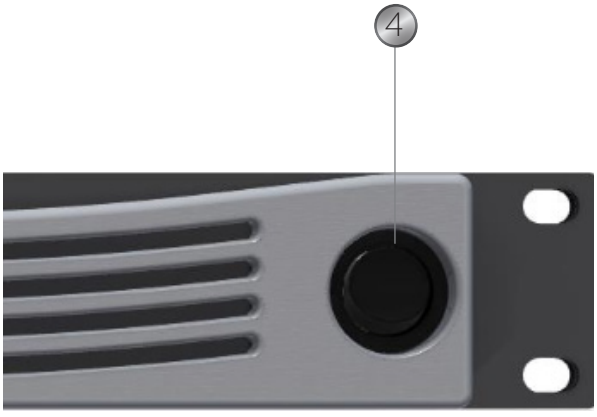
The front panel design is very clean and intuitive, it contains only two hardware buttons and a daylight viewable colour OLED display.

1. Daylight viewable colour OLED display.

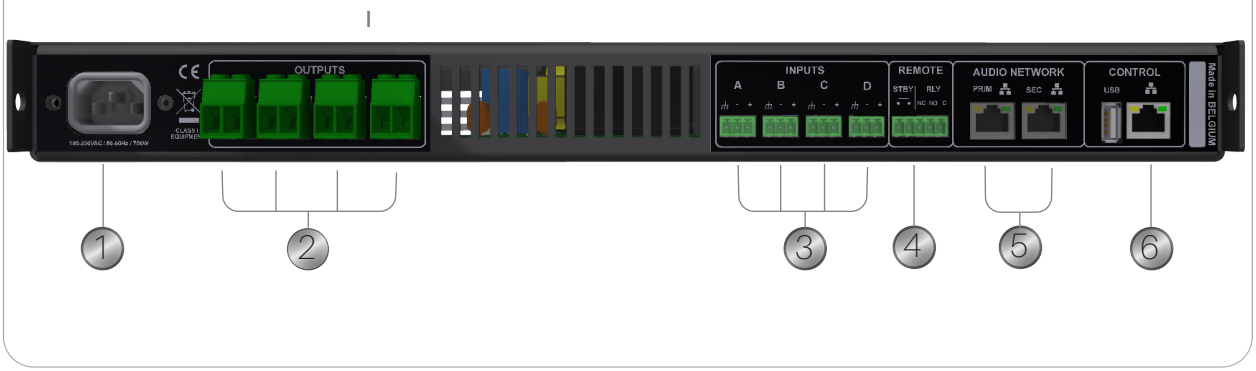
2. Function Icons

3. Rotary control for menu navigation, data entry, etc. The control can also be pressed inwards, to perform an “Enter” action in the menu system.

4. The CloudPower is powered on and off by a frontpanel switch.



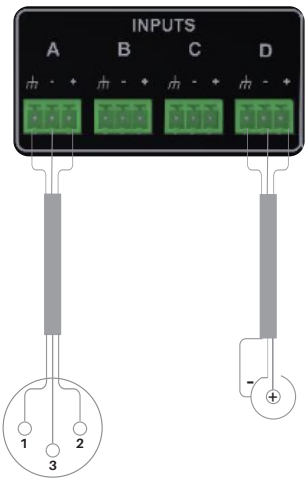
Rear panel



1 IEC connector accepts worldwide operation from 100-240Vac. CloudPower must be grounded (earthed) with the safety ground pin to the mains distribution system. NEVER disconnect the earth (ground) pin on the mains cable (AC power cord).

2 Amplifier output connectors are sturdy terminal block connectors. Channels are located from left to right. Each channel has a marked hot (+) and cold (-) terminal.

3 Analog inputs are available on terminal block connectors with clearly marked hot (+), cold (-)and ground terminals. The use of twin-and-screen cable is recommended.



Balanced output (XLR)

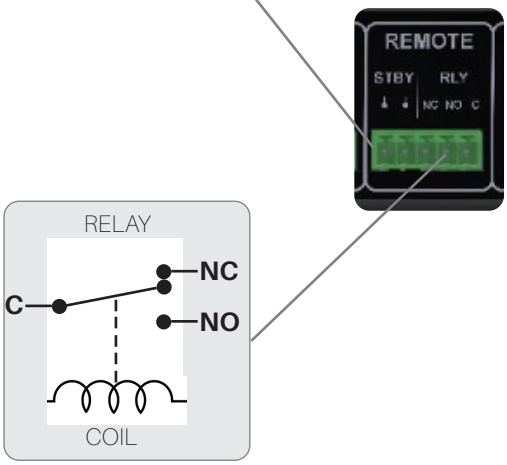
1 = Ground
2 = Hot
3 = Cold

Unbalanced output (RCA)

Pin = Hot
Screen = Cold

4 Terminal block connector for remote applications, EN-54 ready.

If you connect the two standby pins together, the amplifier will go into standby. The pins must be connected potential free (you may not apply voltage to them).



if the amp is off or there is a fault then C (center) is connected to NC (normally closed). If everything is OK, the relay picks up and C is connected to NO (normally open)

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RJ-45 Ethernet connectors for optional digital audio network. Each optional Audio network card has two network ports; a primary and a secondary.
When the device is connected to an active network, the yellow LINK LED illuminates above the connector in use.
Data activity on the network is indicated by illumination of the green ACT LED. It is normal for the ACT LED to flicker either sporadically or continuously.
The switched 100/1000 Base-T network connections auto-sense whether standard or crossover Cat-5e cables are in use. The green ACT LED illuminates (flashes) to show network activity, and when a 100 Mbps connection is present; the orange LED illuminates (static) to indicate a 1000 Mbps connection.
The secondary network port on the CloudPower™ devices can be configured for redundancy of the primary network port. If a parallel network is created, any single cable or switch failure is overcome without loss of audio.
By default, the secondary ports are configured in dual redundancy mode to support a second redundant network.
The alternate configuration for the two ports is a switch mode which allows daisy-chaining of devices in a single network. Daisy chain mode is not recommended for more than a few devices.
Pre-made cables with moulded RJ45 plugs are recommended. If it is necessary to make up custom Cat-5e network cables, use pinout described below.

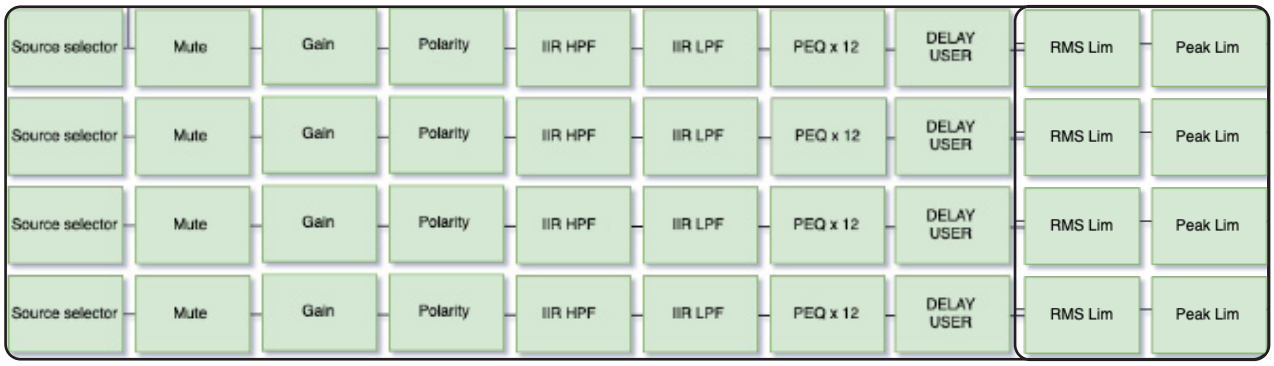
Pin No.	Color
1	Brown
2	Brown + White
3	Green
4	Blue + White
5	Blue
6	Green + White
7	Orange
8	Orange + White

RJ45 Wiring and Pin Out Description

6 RJ-45 Ethernet connector for control.
Note: The USB connector is for service only.

Signal Flow

The figure below depicts the audio signal flow for a CloudPower™ device. The signal flow can be divided in three main blocks, each with its own functionality and processing. These blocks are : input source, group and speaker blocks.



The User block contains the following controls:

Input selector	selection for primary and secondary input, analog or digital. (Note digital is not possible as a secondary input when analog is primary)
Mute	Mute selector for each source
Gain	Input gain control for each source. Range from -80dB to 15dB
Polarity	Polarity selector for each channel +/-
IIR HPF	Infinite impulse response HPF
IIR LPF	infinite impulse response LPF
PEQ x 12	12 x EQ for each source with a choice of 16 EQ types
Delay User	Delay option up to 250 ms for each channel
RMS Limiter	Adjustable RMS limiter for each input
Peak Limiter	Adjustable peak limiter for each input
	Note: RMS and peak limiter are processed after the group processing

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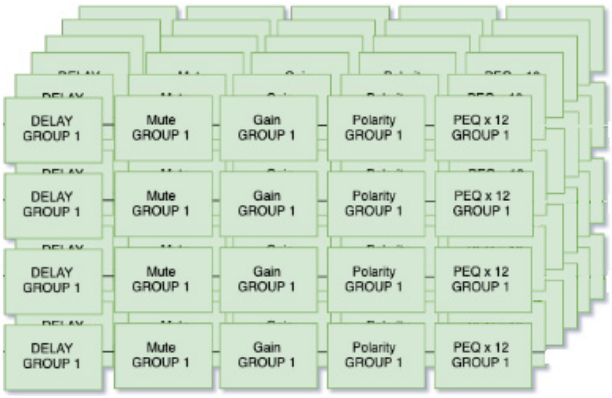
Group

Groups provide powerful control over all channels in a system. Amplifier channels can be assigned to multiple Groups, and each amplifier channel can be a member of up to 6 different Groups. Adjusting group parameters will affect all amplifier channels across the network assigned to that group.
Multiple Groups can be used to logically partition a large-scale system. For instance, amplifier channels powering
a restaurant zone can be grouped to create a restaurant sub-master. A master Group can be created to enable a system-wide interface for EQ and Levels, allowing instant adjustments to all amplifier channels on the network.

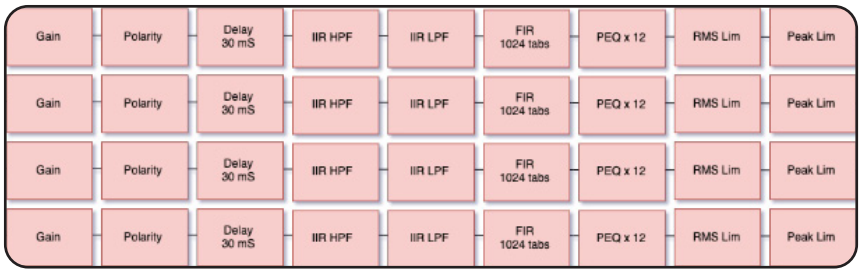


The Group block contains the following controls:

Mute	Mute selector will mute all members of the group.
Gain	Input gain control for each group. Range from -80dB to 15dB
Polarity	Polarity selector for each group +/-
PEQ x 12	12 x EQ for each group with a choice of 16 EQ types
Delay	Delay option up to 250 ms for each group

Speaker

A speaker preset file contains one channel of loudspeaker setting information which can be recalled on an amplifier channel. The red properties below indicate the speaker preset parameters. The end user chooses a brand/type of loudspeaker in a list and doesn't have to worry about the actual parameters.
These speaker presets are created in the WebUI by the speaker OEM and can be uploaded and stored in the amplifier speaker preset folders.



Gain	Output gain control for each speaker. Range from -60dB to 15dB
Polarity	Polarity selector for each speaker +/-
Delay	Delay option up to 30 ms for each speaker
IIR HPF	Infinite impulse response HPF
IIR LPF	infinite impulse response LPF
FIR	Each speaker preset can contain a 1024 tabs FIR filter
PEQ x 12	12 x EQ for each source with a choice of 16 EQ types
RMS Limiter	Adjustable RMS limiter for each input
Peak Limiter	Adjustable peak limiter for each input

Presets

The CloudPower™ amplifier has two types of preset libraries, device and speaker presets.

∗A Global audio preset file contains all audio DSP settings of the four channels of the amplifier; User, Group and speaker parameters.
∗A speaker preset file contains one channel audio settings information which can be recalled on a amplifier channel.
These speaker presets are created in the IntelliCloud Web user interface by the speaker OEM .

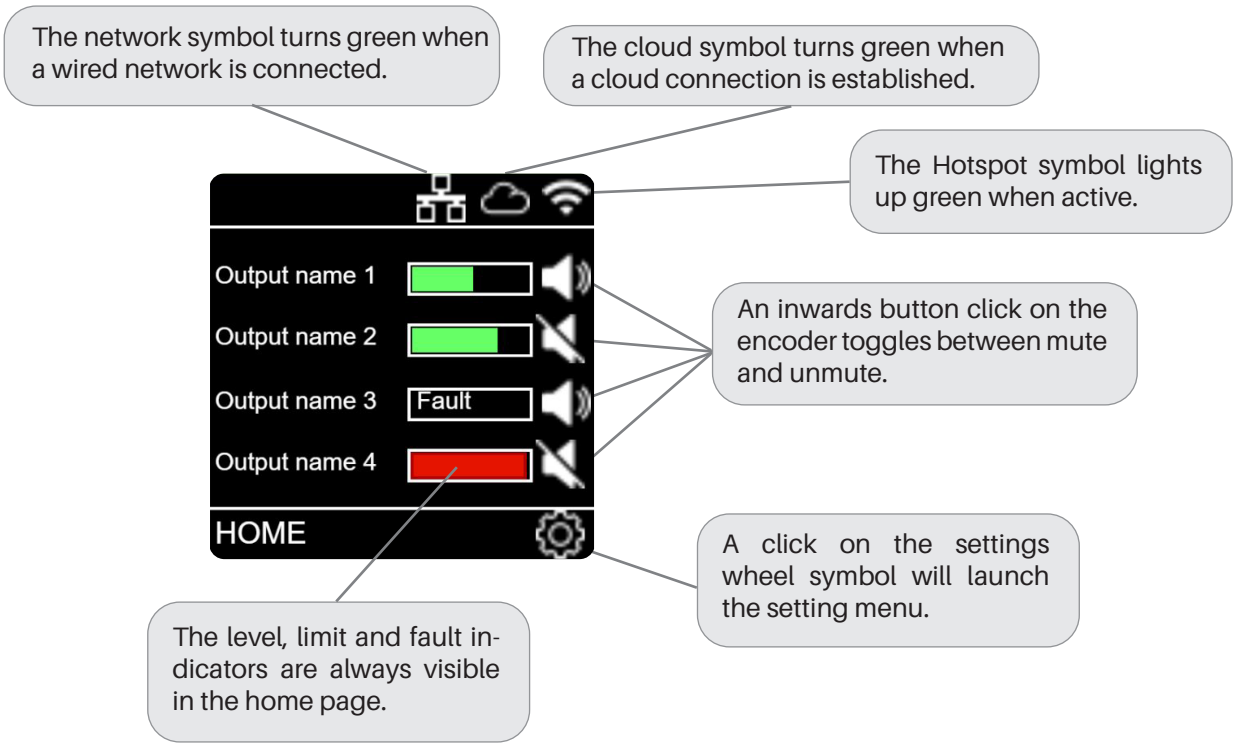
Please note that only audio related settings are stored in the Global audio and speaker preset file.

Front panel operation

The front panel gives the user access to the status of the amplifier and also gives the user the ability to set IP parameters and basic audio settings.
There is only one encoder that is used to modify various parameters via the menu. When a menu item is selected that permits adjustment of parameter values, the menu's icon illuminates. Turn the encoder clockwise to increase the selected parameter, or counter-clockwise to decrease the value. Pressing the encoder inwards will perform an enter operation.

Home page menu

The homepage will indicate output level, IP status, cloud connection status, current preset or output name for each output channel and global preset loaded.



Settings menu

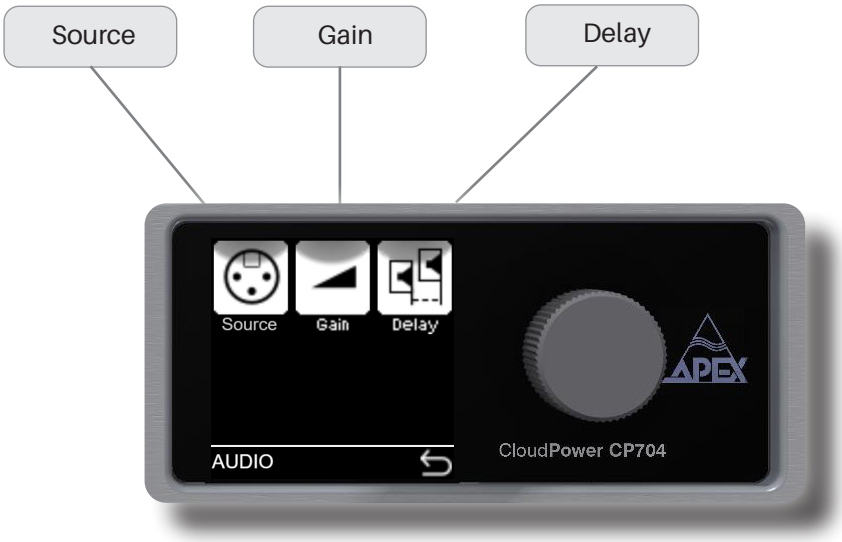
The settings menu gives access to the setting sub menu icons. A right or left turn with the encoder will highlight the selected sub-menu.

Pressing the encoder inwards will activate the selected settings submenu.

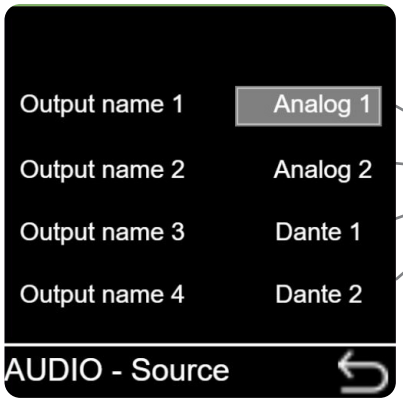
Pressing ⮌ will always return the menu up one level from every menu or sub menu.

Audio Menu

The Audio Menu is where the basic audio parameters and settings can be adjusted. The top page of the Audio Menu offers three further sub menus.



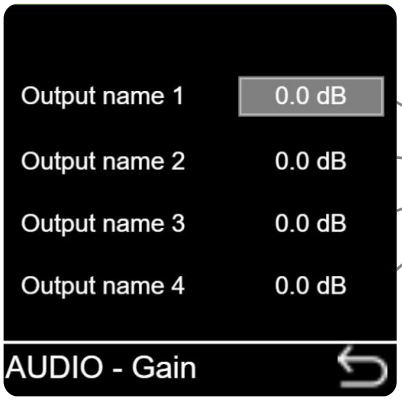
Audio Menu / Source



From the source sub menu, you can select the type of input for each amplifier channel. There are four input options for each channel. Analog 1- 4, Stream L, Stream R, Network 1 - 4. The digital option card options are DANTE or AVB.

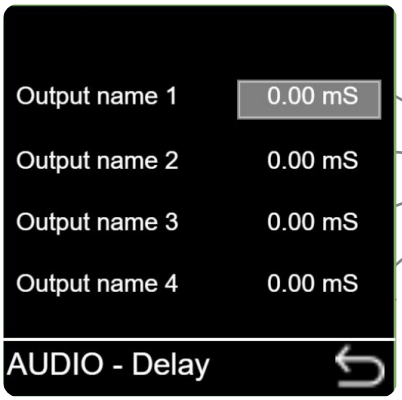
⚠ **Be careful when scrolling the inputsource list, the routing works in real time and stream levels can be very loud !**

Audio Menu / Gain



From this menu, the gain can be adjusted for the input stage of the selected Input analog source . The default gain setting is 0 dB, but can be set to any value from -80 dB to +15 dB, in 0.1 dB increments.

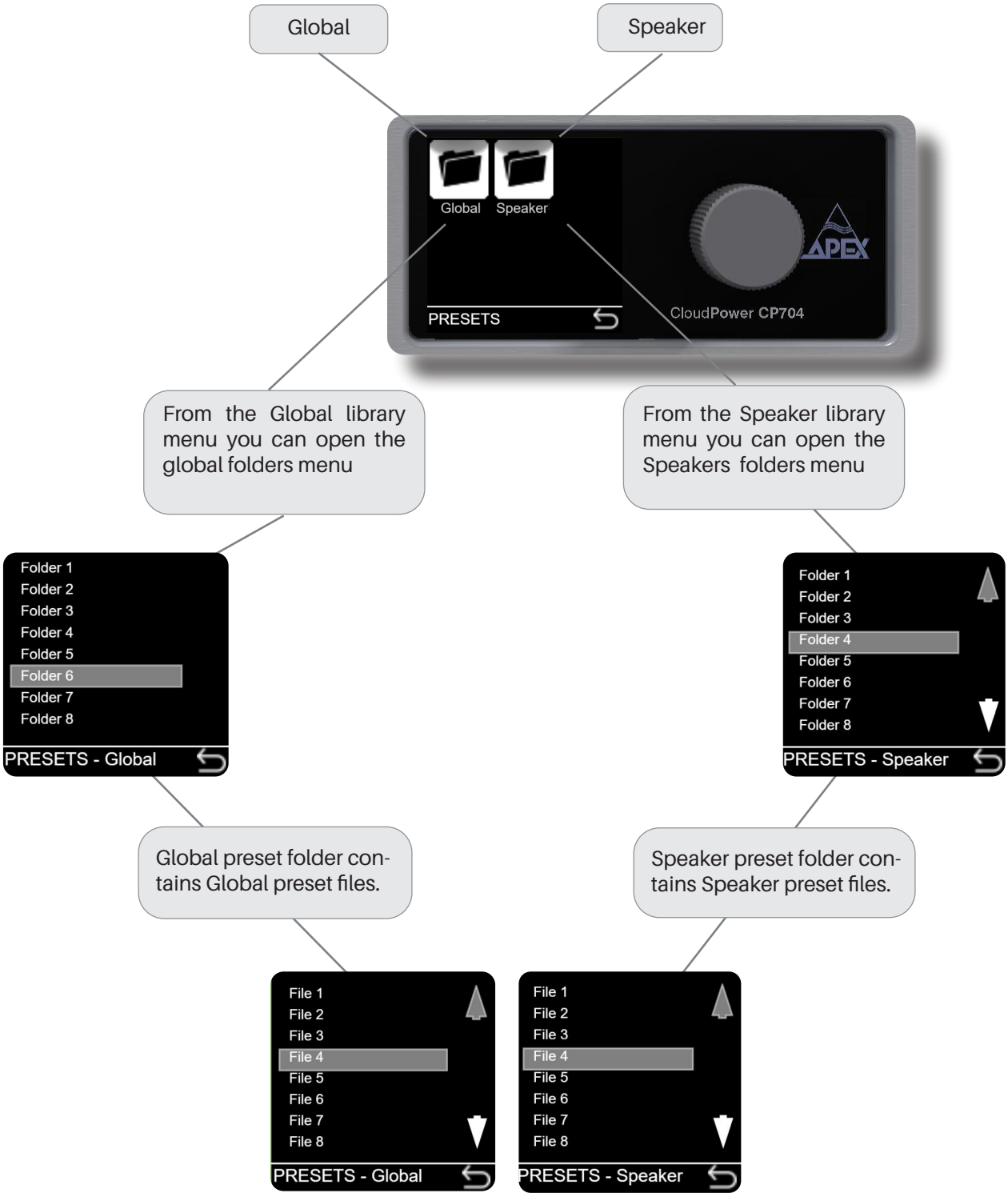
Audio Menu / Delay



Each Source of the CloudPower™ may have up to 250 ms of delay inserted.
Note: The total amount of delay per channel is 250 ms shared between the channel and the groups that are assigned from that channel.

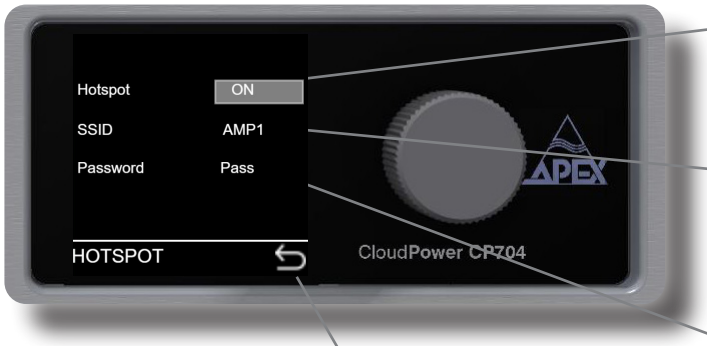
Presets Menu

The CloudPower™ amplifier has two types of preset libraries, global and speaker presets. A global preset file contains all audio DSP settings of the four channels of the amplifier.(User,group and preset settings)
A speaker preset file contains one channel's loudspeaker settings information which can be recalled and inserted on the amplifier channel.
These speaker presets are created in the Web user interface by the speaker OEM and can be uploaded



Hotspot Menu

Every CloudPower™ amplifier has an Hotspot option. This allows the user to control the amplifier with any mobile device. (Smartphone, Tablet or laptop). The software of the CloudPower™ s web based, so there is no need for a software installation. From the frontpanel,turn the Hotspot option on and search for the amp in your device wifi networks. Connect to the Hotspot and enter the IP address **172.24.0.1** in your browser and the IntelliCloud software will open on your device automatically.



Turn Hotspot function on/off

The SSID name is displayed here

The Password for the Hotspot is displayed here

Pressing ⮌ will apply the changes and return the menu up one level.

Cloud Menu

Every CloudPower™ amplifier has a unique Cloud option. This allow the user to control the amplifier from a remote location over the internet. The Remote connector must be connected to a router with internet connection. Using a secure connection allows the user to communicate with the amplifier(s) from any place in the world. Just open your browser on your device and enter: http://amplifier1.apexconnect.me, and IntelliCloud will open from the connected CloudPower™ amplifier. (where amplifier1 refers to the amplifier's name given from the settings menu see page 38 for more details). The amp will ask for a login and password, both are by default "admin"and can be changed in the settings menu.
Note: amplifier1 refers to the custom amplifier name entered in IntelliCloud, Apex cloud connect settings menu.

Turn Cloud function on/off

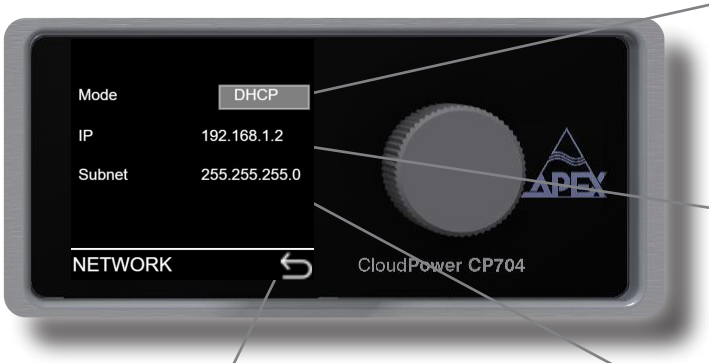
User name is displayed here

The Password for the Cloud login is displayed here

Pressing ⮌ will apply the changes and return the menu up one level.

Network Menu

The CloudPower™ amplifier can also be controlled in a wired network application. Connect the CloudPower™ device(s) Ethernet remote connector together with your PC to a router . The use of a router is mandatory in DHCP mode to obtain IP addresses.
After a connection is established with the router, the CloudPower™ device will receive an IP address that will displayed in the network menu. Enter this address in your device's browser and the IntelliCloud software will open on your device.
The IntelliCloud software is web based, so there is no need for a software installation. This software is necessary to create preset files and to get access to all the functionality of the CloudPower™ devices.



DHCP or Static IP address.
The use of a router is mandatory in DHCP mode in order to obtain an IP address.

When DHCP mode is set, an IP address will be displayed automatically when connection is established with the router. In static mode, an IP address has to be dialled in.

Pressing ⮌ will apply the changes and return the menu up one level.

When DHCP mode is set, the Subnet will be displayed automatically, when the connection is established. In static mode, the Subnet mask must be dialled in manually.

Notes on Networking

Providing that the network is properly configured, IntelliCloud is capable of automatically detecting and controlling any CloudPower device connected to the network. Please refer to the IntelliCloud documentation for more details on controlling the CloudPower remotely.

Quick set up tip :

- Connect your PC together with the CloudPower™ device(s) to a wired or wireless router.
- Set all connected devices and your PC to DHCP.
- Open your browser and enter the IP address that is displayed on the network submenu of any of the connected devices.
- The IntelliCloud software will open automatically on your control device.

Configuring simple IP networks is something that most system engineers would be aware of. Explaining the details of IP networking is therefore outside the scope of this manual, however we believe some salient points do require further clarification.

IP Addresses

All computers, whether they are Windows, Linux or Mac OS based, and most network-based devices such as the CloudPower™ , obtain an IP address by the following means:

- If a static IP address has been assigned to the computer or device, then that IP address must always be used. Static IP addresses are fixed and do not change. This is useful when installing CloudPower™ devices into fixed installations whereby all networked audio equipment has been assigned a unique and unchanging IP address. This is very useful for network management.
- If the device or computer is set to automatic mode (whereby no static IP address has been defined) then a unique IP address will be used; however this address may vary every time the device is connected to the network. If a DHCP server is available on the network then the CloudPower device will use the IP address provided by it.

Further information

In most applications, communication between the CloudPower™ and IntelliCloud software will not require any configuration and will effectively work 'out of the box'. However, when the CloudPower is used in more network critical environments (e.g., broadcast or AV installations) some additional network settings may be required and the information provided below may be of interest.
The communication protocol used by the CloudPower™ is UDP/IP based. It is based on Unicast communications (point-to-point) for the remote control of properties (e.g., modifying an input gain or the frequency of a filter) and Multicast (point-to-multipoint) for auto-discovery of devices and property changes (such as driving meters within IntelliCloud). Multicasting is preferred over broadcasting as it is more suited for network bandwidth control.

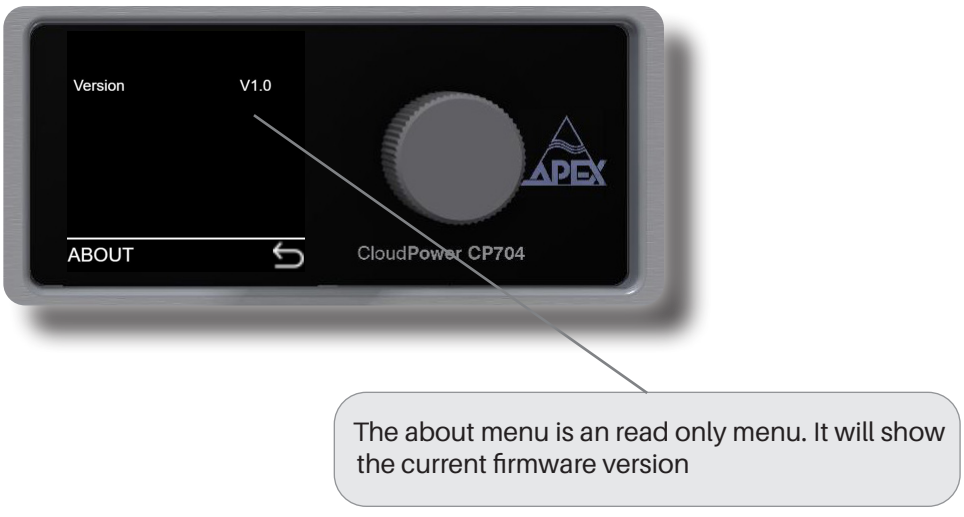
Ethernet cables

Nowadays, computers and network devices automatically detect the type of connection (irrespective of whether straight or crossover Ethernet cabling is used). The CloudPower operates in the same manner, hence there is no need to worry about cable wiring when out in the field.
Remember that there are limits to Ethernet cable length between two devices and this is 95 meters. Any connection will add about 10 m.

Going wireless

Using wireless networks may be challenging, but the key to success is to use good quality rugged wireless access points and configure them correctly.
Configuring an access or router point is not that difficult. There is no requirement to install any software as the computer's web browser is sufficient (all access points have a built-in web-server). Just type in the IP address of your access point into your web browser and you'll be able to configure the device.
In some applications, there may be a requirement to boost the signal level of both the access point and computer (outdoor stadium shows for example). External boosters are available but these will require that the original antenna of the access point or computer be removed (this has a bearing on the type of access point chosen). Note: always check local regulations concerning maximum permitted wireless signal power before up-rating your equipment.

About Menu

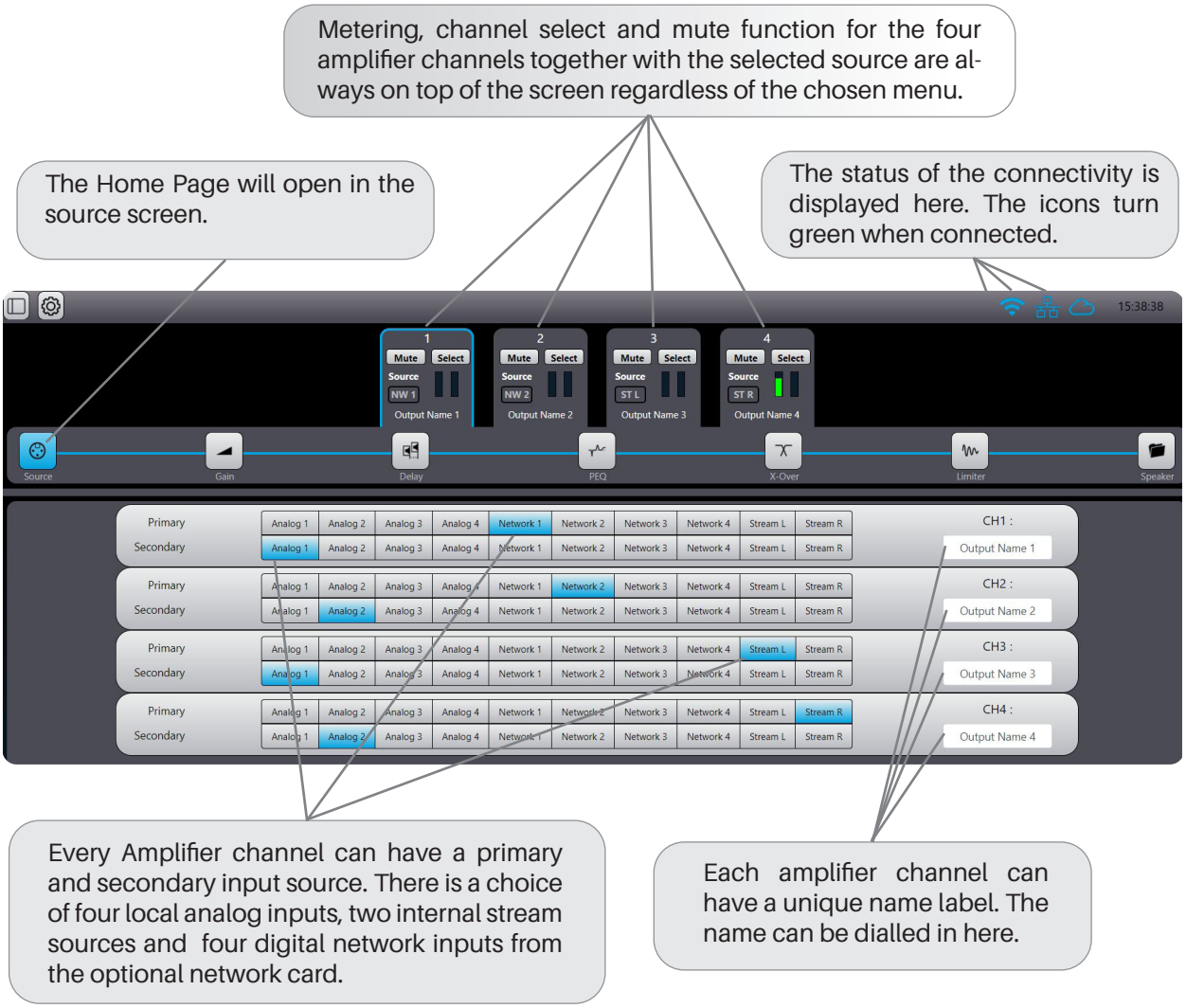


Apex IntelliCloud Software

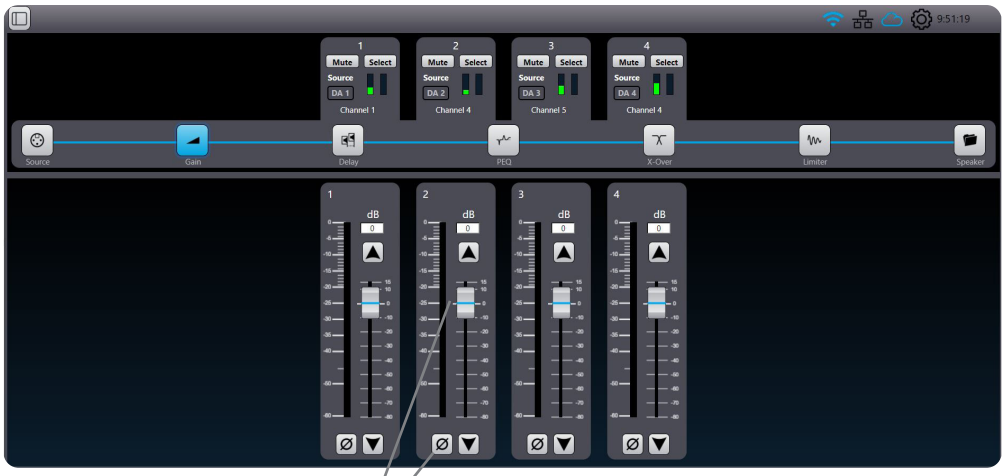
As described in the front-panel section, the front panel control allows only basic sound operations for the user in the field. To explore all the functionally of the CloudPower amplifier, there is a additional off and online software solution: "Apex IntelliCloud".
Connecting a computer or mobile device to a CloudPower device via a network (wired or wireless) or hotspot and dialling in the IP address 172.24.1.1 will put the IntelliCloud software automatically on your screen. Since the IntelliCloud uses web-based software there is no need for any software installation, regardless of what operating system you are using (MAC, PC, IOS, Android).(See section Netwok and hotspot settings on pages 20 and 21)
The IntelliCloud software provides a unified interface for the CloudPower series, optimized for a wireless touch-screen, tablet or mobile device. The interface mirrors the powerful, but intuitive design of the hardware, whereby operation is predominantly icon driven. IntelliCloud also provides data management facilities, allowing complex configurations to be configured, presented and stored in a more efficient and intuitive way.

Home page menu

Once your device is connected to the CloudPower the home screen will be displayed. Please note that on smart-phones and tablets the software will only work in landscape mode. Your device will display a warning when you hold it in portrait mode.

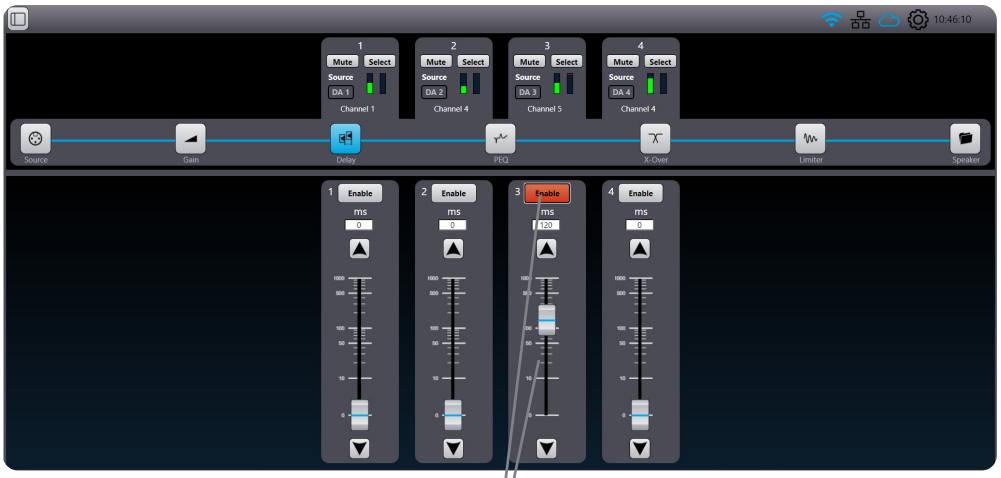


User Gain Menu



Gain: opens a window where you can set gain and phase for any of the four inputs, regardless of what channel is selected.
Gain can be set with the fader, keyboard arrows or by dialling in the desired level.

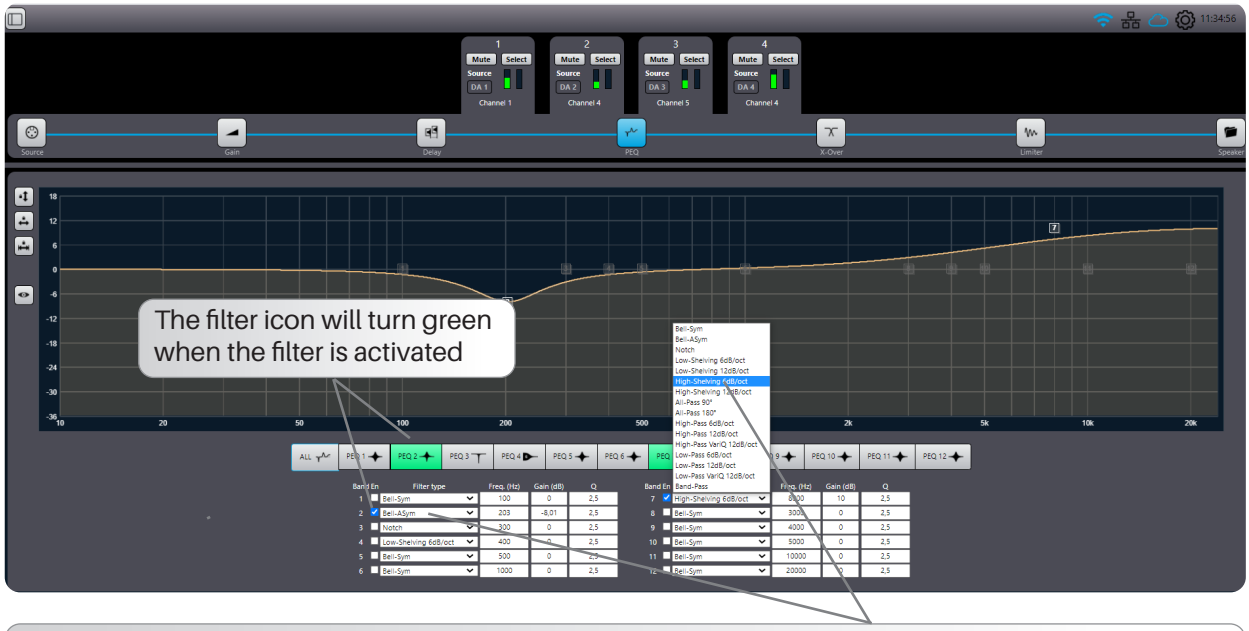
User Delay Menu



Delay: opens a window where you can set the delay in ms of the four channels, regardless of what channel is selected. Values can be set with the fader, keyboard arrows or by dialling in the desired level.
Delays can be toggled between enable and disable for A-B comparison.
Note: The maximum combined user delay time (User and group) for each channel is 250 ms.

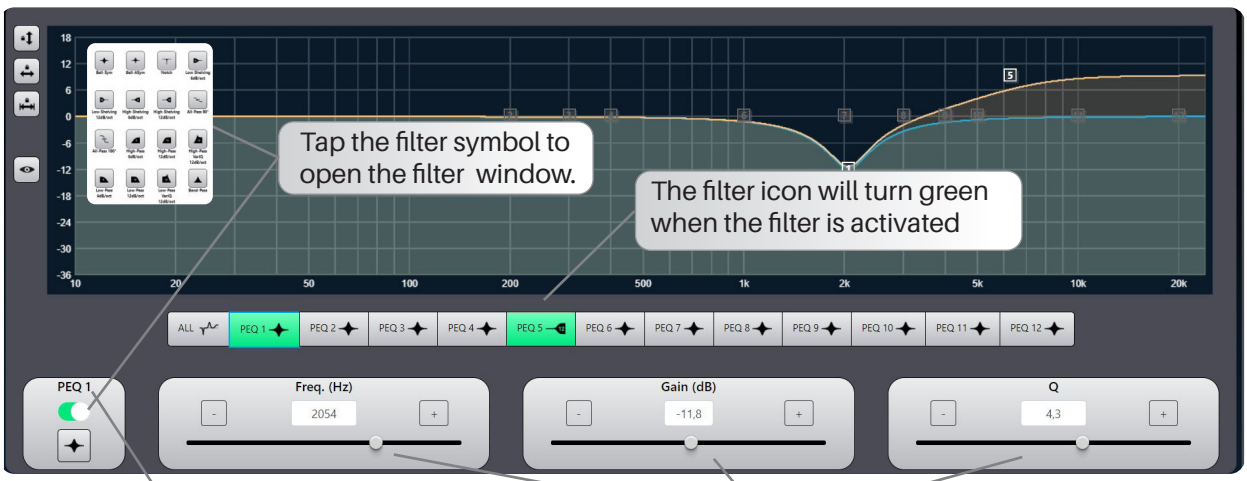
User EQ Menu

The CloudPower™ has a very powerful EQ section. Each amplifier channel can be processed by a total of 96 EQ filters.(12 filters in the user block, 72 in the group section and 12 in the speaker block). On top of that there is a FIR filter option available in the speaker block. Depending on the application, there are different ways to edit the EQ parameters.



From the Home page tap the PEQ tab to access the EQ main page. From this page you can dial in numeric values for the12 EQ filters.. Each EQ can be set to a choice of 16 filter types: Bell-Sym, Bell-Asym, Notch, Low-Shelf 6dB or12dB, High-Shelf 6dB or 12db, All-Pass 90° or 180°, High-Pass 6dB or12dB, High-Pass Vari-Q 12dB, Low-Pass 6dB or 12dB, Low-Pass Vari-Q 12dB, Band-Pass.

When using (pen)tablets or mobile devices the following method could be more intuitive

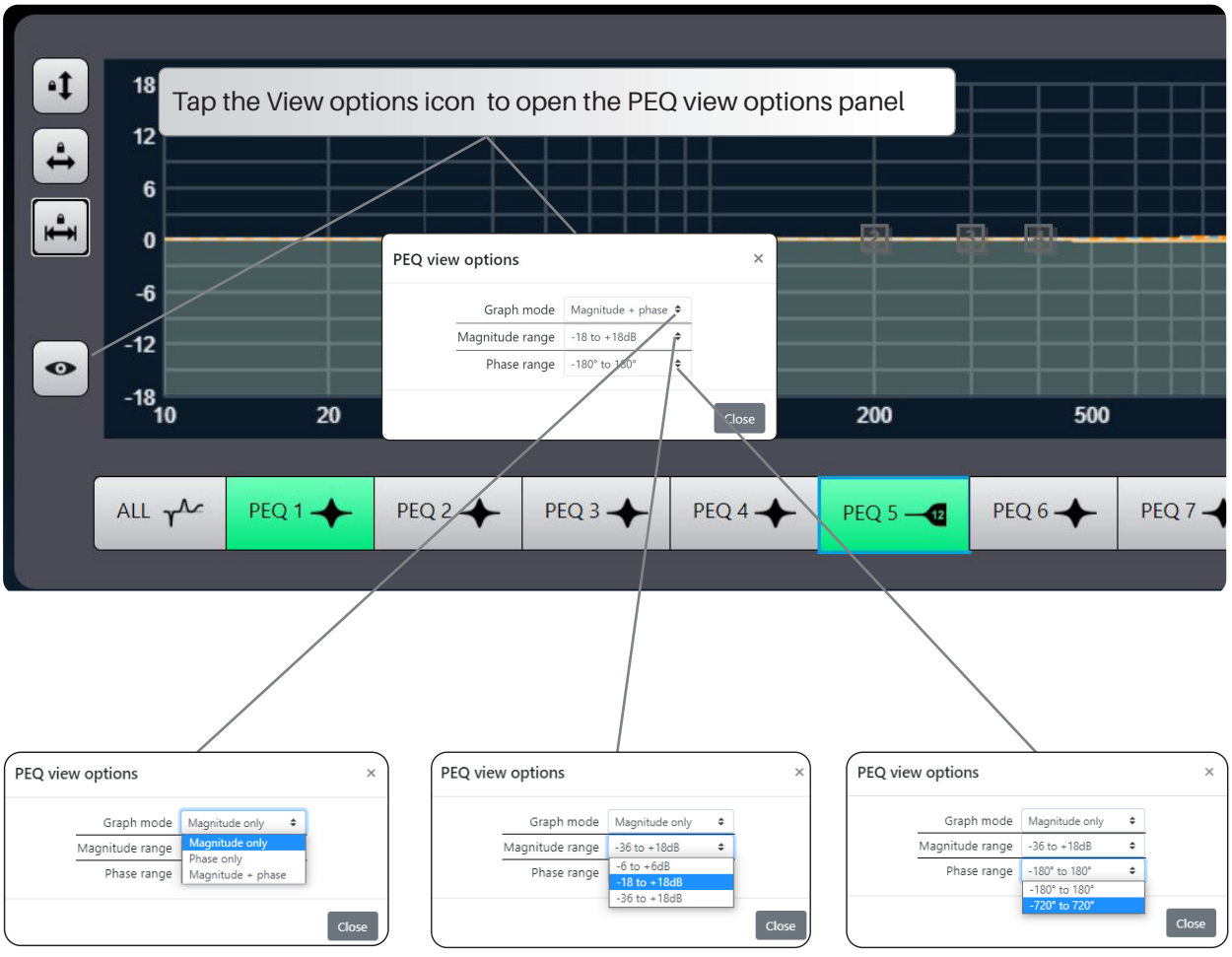


Swiping the on switch will activate the selected filter and display the curve on the overview screen

Adjusting the filter parameters can be done in multiple ways: use the sliders and tap the +/- buttons for fine adjustments or use the on screen drag function with mouse, pen or finger gestures.

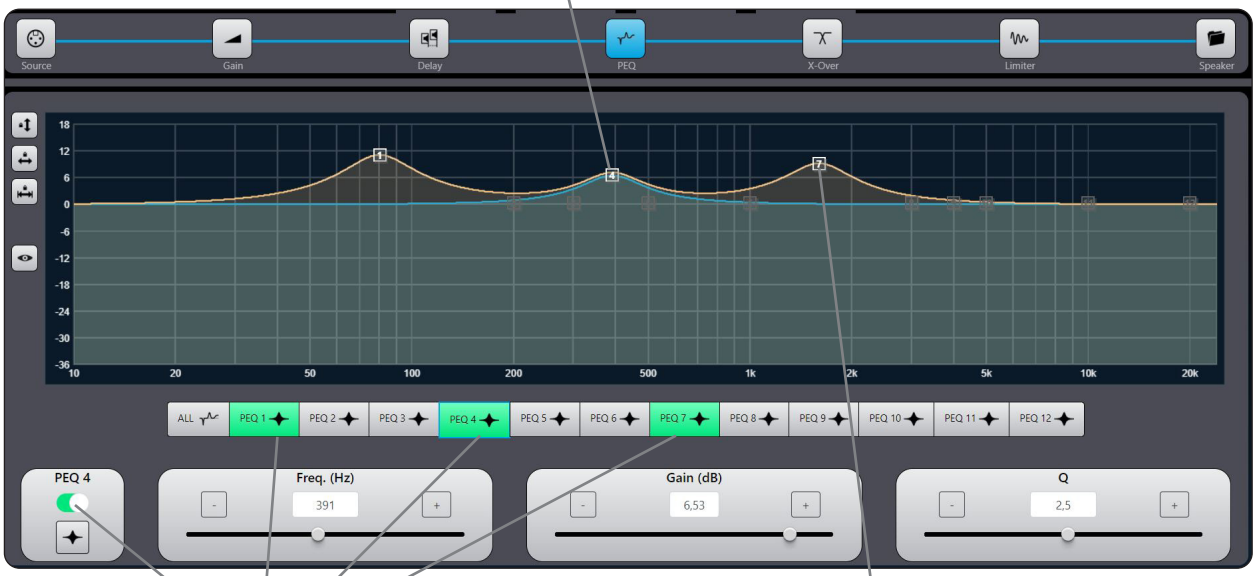
To avoid accidental guesture operations in touch mode, there are three “Drag Locking” options.

The overview screen has different view options in the PEQ window



The PEQ view window uses different line and colours to indicate in an intuitive way what filters are active and which filter is in edit mode.

The blue line indicates the active EQ curve of the PEQ Filter that is in edit mode. In this case, that is PEQ4



Whenever a PEQ filter is activated, it will get a green tab.

The brown line indicates the total active EQ curve of the selected amplifier channel. In this graph, that is the total EQ curve of PEQ1, PEQ4 and PEQ7.

User X-Over Menu

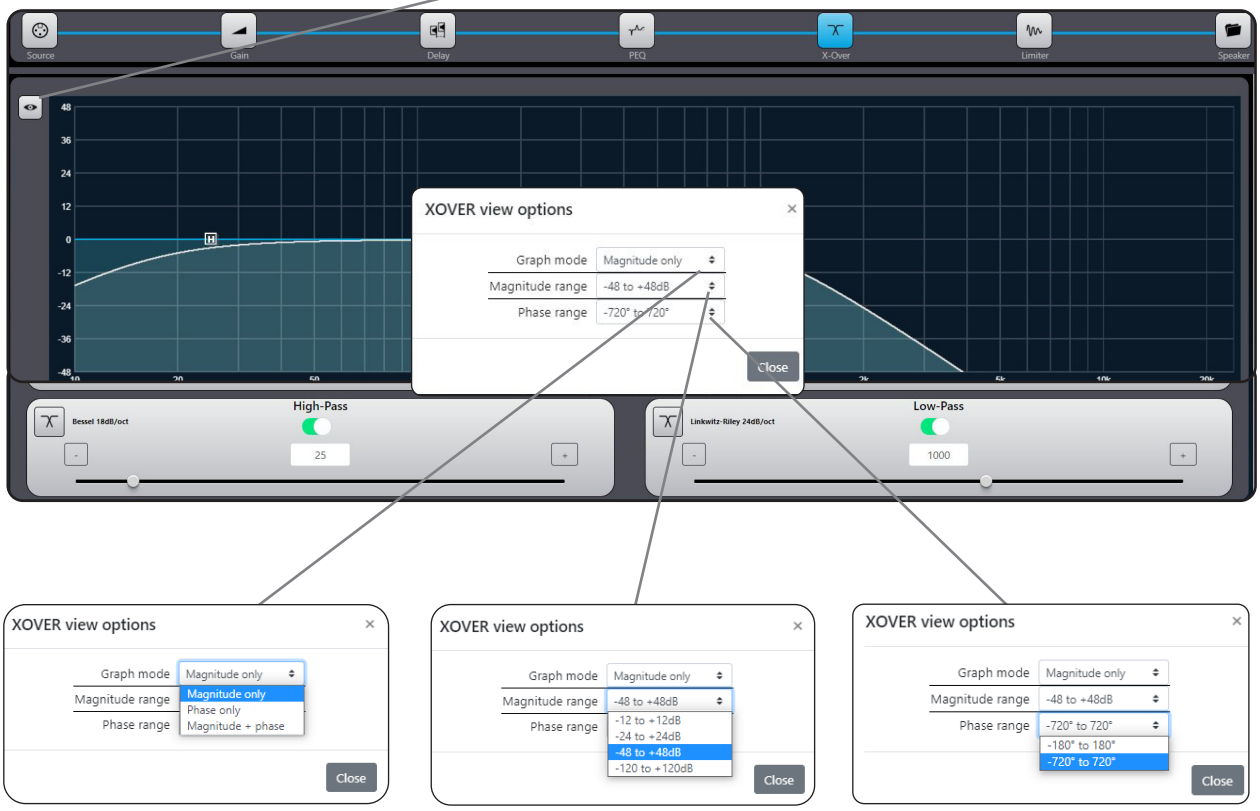
The CloudPower™ amplifier offers 19 different types of classic X-over filters :Bessel , Butterworth and Linkwitz Riley with slopes from 6 to 48 dB/oct in the user block.

From the Home page tap the X-Over tab to access the X-Over main page.

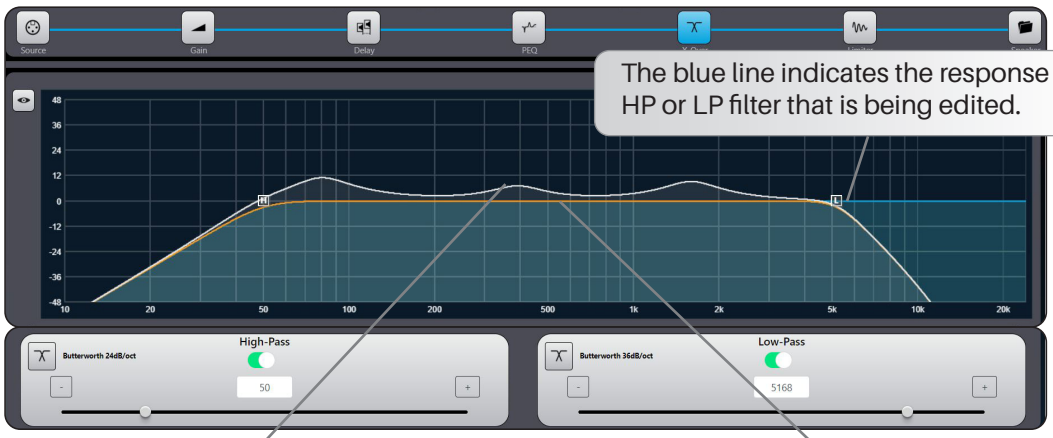
Adjusting the Filter parameters can be done in multiple ways: use the sliders and tap the +/- buttons for fine adjustments or use the on screen drag function with mousse, pen or finger gestures.
Both filters can be set from 10 Hz to 22 kHz

The overview screen has different view options in the X-Over window

Tap the View options icon to open the PEQ view options panel



The X-over view window uses different line and colours to indicate in an intuitive way what filters are active and which filter is in edit mode.



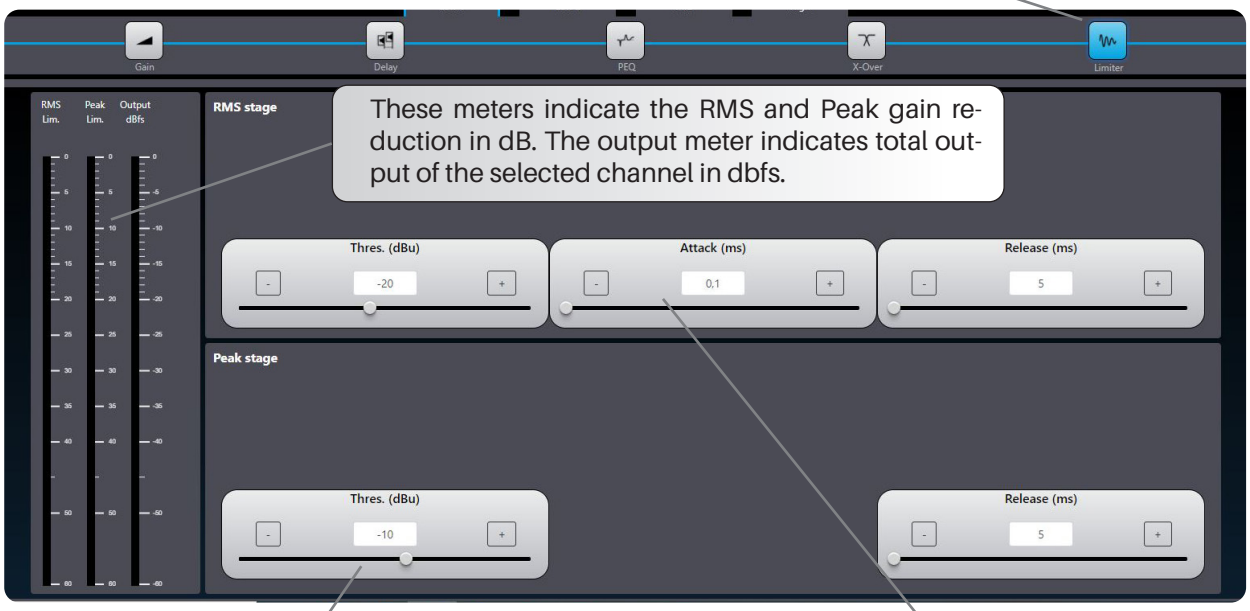
The blue line indicates the response of the HP or LP filter that is being edited.

The white line reproduces the total response of the amplifier channel including all PEQ, High and Low-Pass filter.

The brown line indicates the total response of the High and Low-Pass filters of the selected amplifier channel.

User Limiter Menu

Limiter: opens a window where you can adjust the limiter parameters for the selected output channel. To fully protect loudspeakers from damage, each output is provided with a two-stage limiter. One stage responds to the RMS level of the signal, the other is a very fast-acting limiter responding to signal peaks. The thresholds may be set independently for each stage, but note that the Peak threshold must always be higher than the RMS threshold.



These meters indicate the RMS and Peak gain reduction in dB. The output meter indicates total output of the selected channel in dbfs.

Peak Threshold - this is set in an identical manner to RMS threshold. Note: the threshold of the limiter peak stage should always be set above the threshold of the RMS stage. Otherwise the RMS limiter will never be activated.

Attack - the attack time of the Peak Limiter is fixed (and very fast).

Release - this sets how long it takes the gain reduction applied by the RMS limiter to be removed after the signal level has dropped below the relevant threshold. The default value is 5 ms, and release can be set in the range 5 ms to 500 ms.

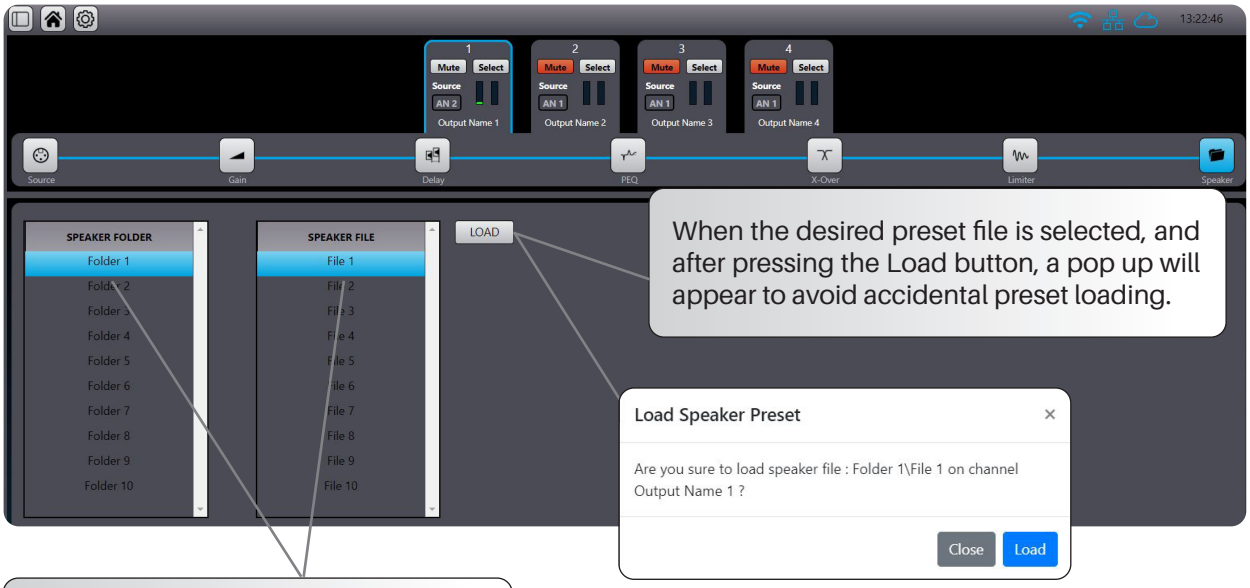
RMS Threshold - this is the RMS signal level above which limiting is applied. The threshold may be set from -56dBu to +24 dBu

Attack - this sets how rapidly the RMS limiter acts when the programme level exceeds the RMS threshold. The default value is 0.5 ms, and attack can be set in the range 0.1 ms to 100 ms.

Release - this sets how long it takes the gain reduction applied by the RMS limiter to be removed after the signal level has dropped below the relevant threshold. The default value is 5 ms, and release can be set in the range 5 ms to 500 ms.

Speaker Preset Menu

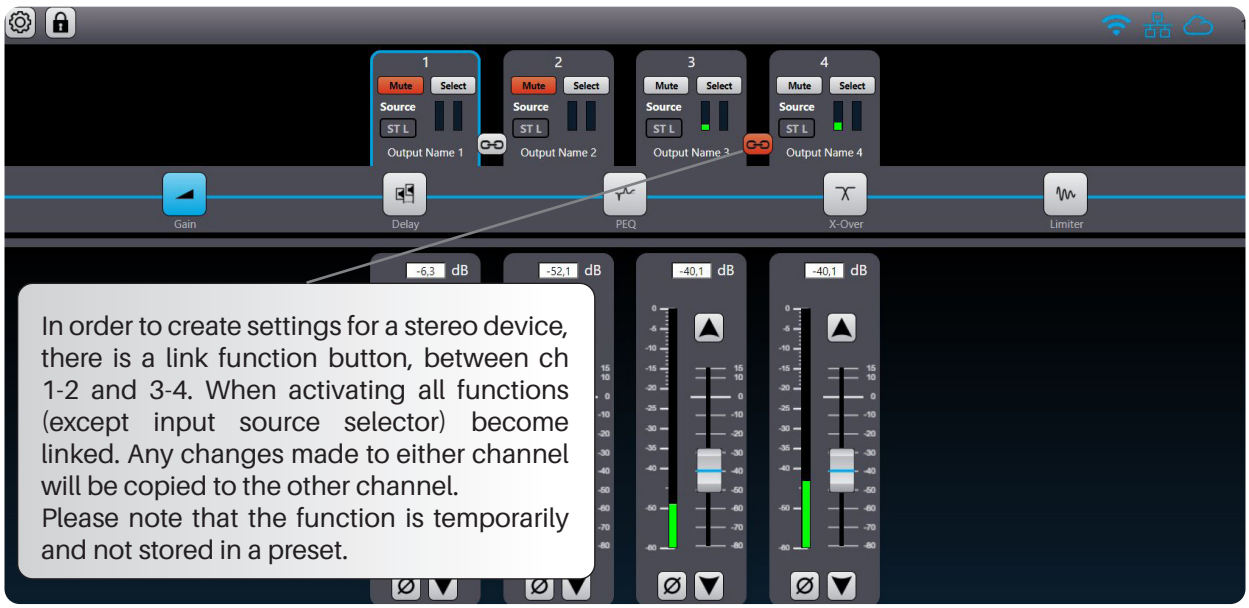
From the speaker preset page you can recall all the protected speaker preset files that are created from the IntelliCloud speaker creator webui or those supplied from brand manufacturers.
The preset file will be loaded in the selected channel.



When the desired preset file is selected, and after pressing the Load button, a pop up will appear to avoid accidental preset loading.

A speaker folder can contain a group of speaker files. For example a folder could be a brand name and it can hold all the brand presets. You can create an unlimited number of folder and files.

Stereo link option



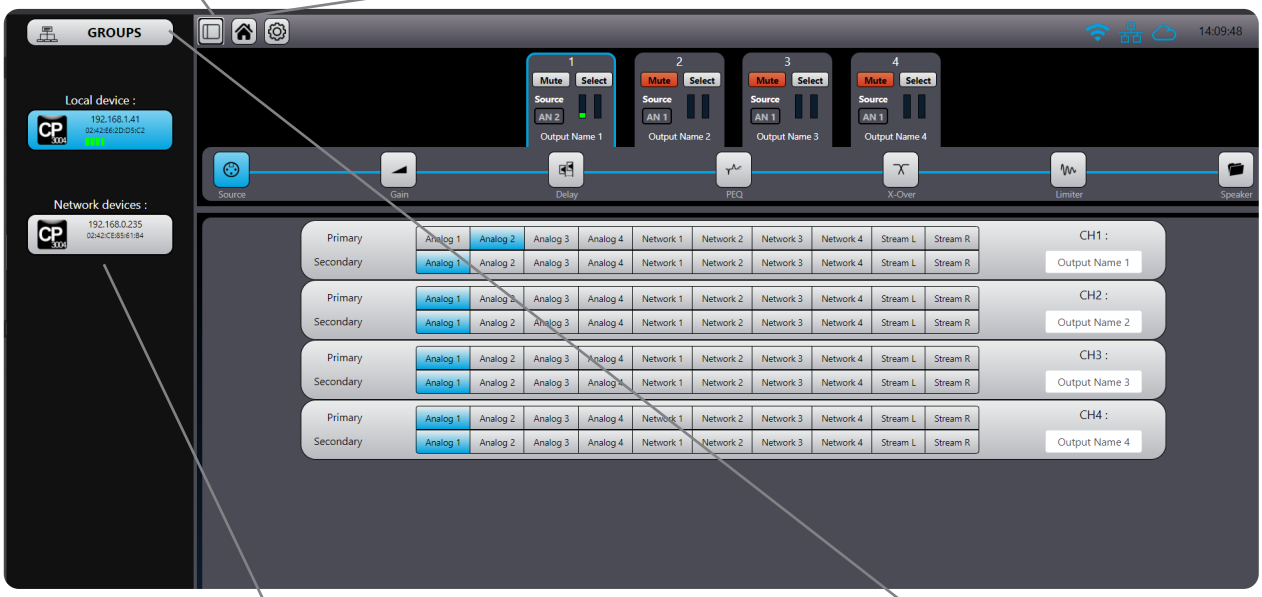
In order to create settings for a stereo device, there is a link function button, between ch 1-2 and 3-4. When activating all functions (except input source selector) become linked. Any changes made to either channel will be copied to the other channel.
Please note that the function is temporarily and not stored in a preset.

Group Menu

Groups provide powerful control over all channels in a system. Amplifier channels can be assigned to multiple groups, and each amplifier channel can be a member of up to six different groups. Adjusting group parameters will affect all amplifier channels across the network assigned to that group.
Multiple Groups can be used to logically partition a large-scale system. For instance, amplifier channels powering a restaurant zone can be grouped to create a restaurant sub-master. A master Group can be created to enable a system-wide interface for EQ and Levels, allowing instant adjustments to all amplifier channels on the network.

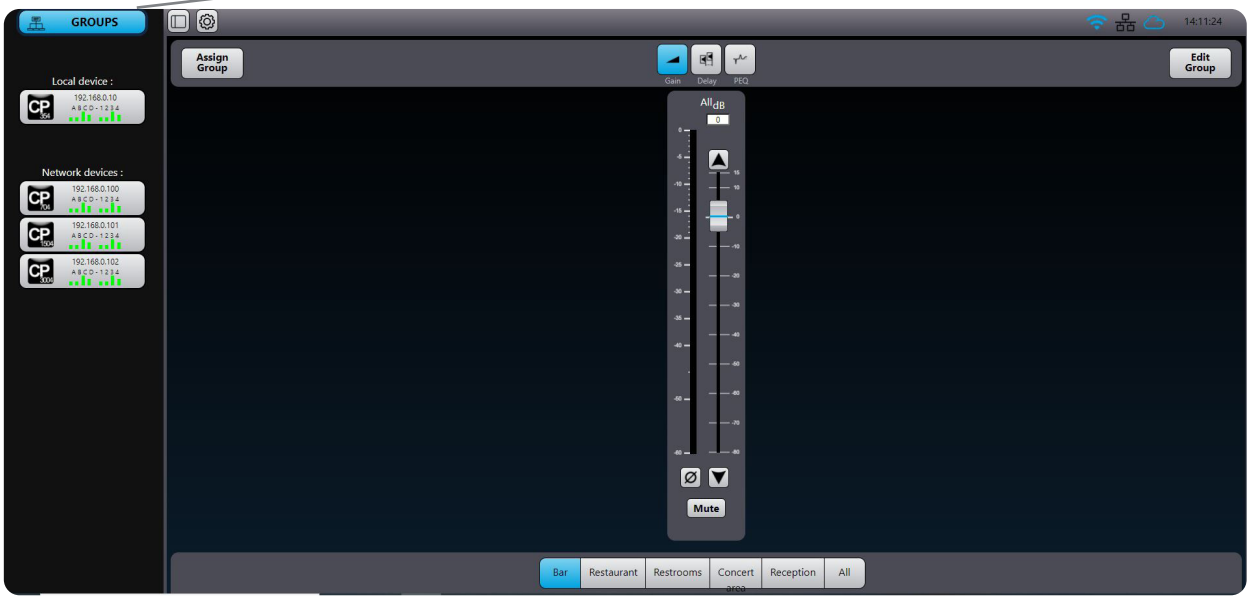
Tap the Side bar icon to access the Group functions

Tap the Home Icon to return to the home screen of the highlighted device.

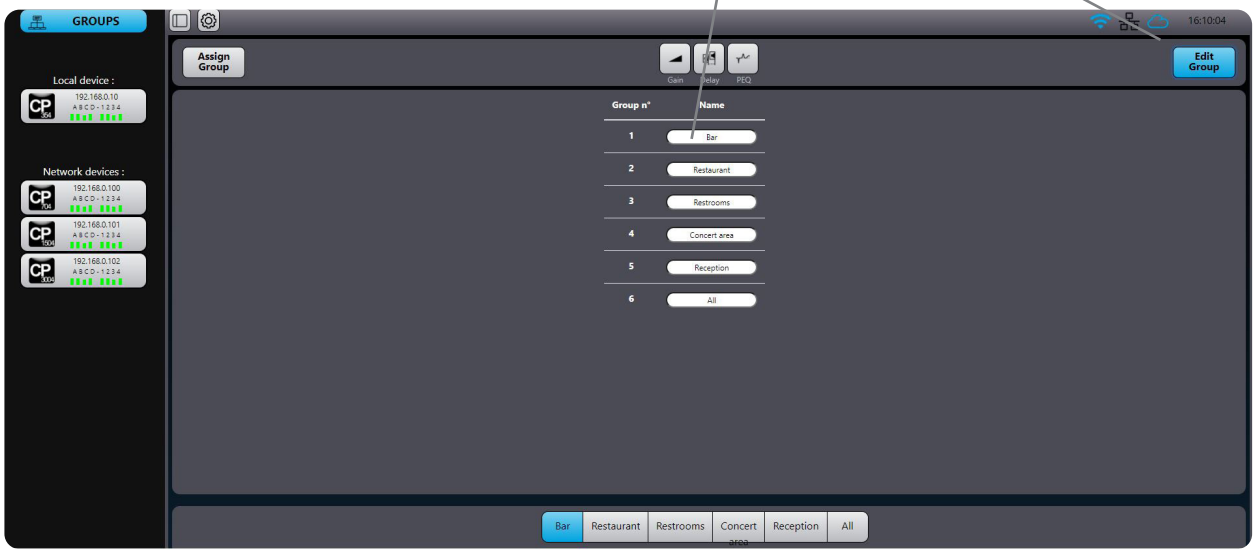


The side bar displays the Local connected device (if any) together with all the connected devices found on the network.

Tap the Group icon to open the Group editor main window



Tap the edit Group tab to edit names for the six groups



Toggle the arrow to open or close the group assign view for one or all amps in the network.

Selecting the Assign Group tab will open or close the Assign Group window.

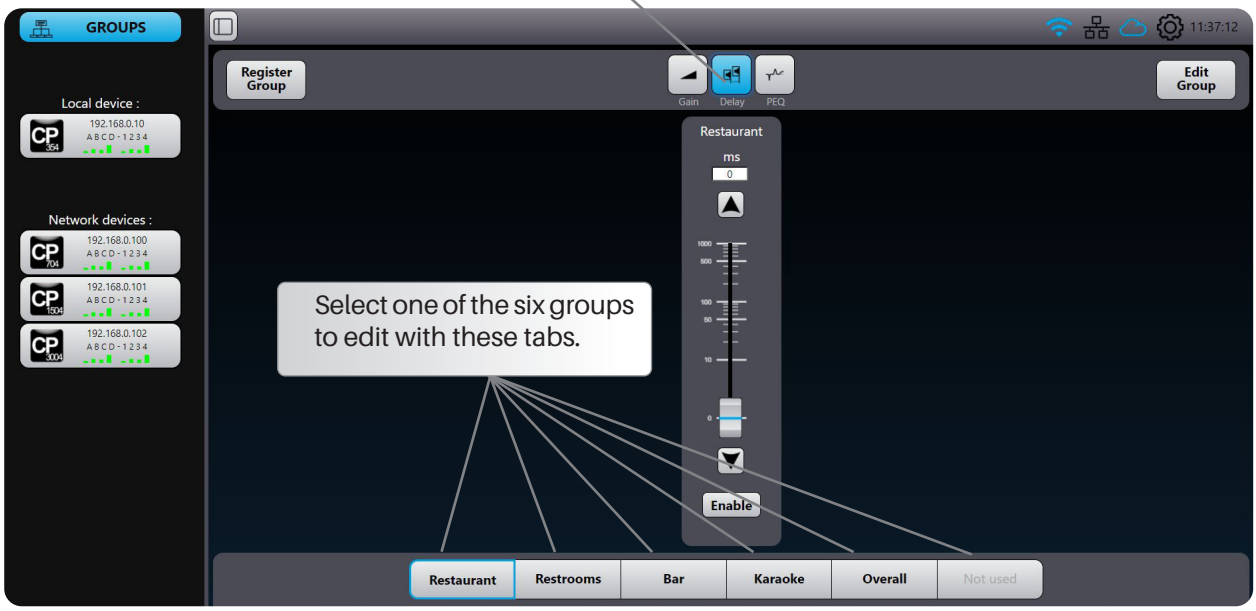
Clear all assignments for the selected amplifier.

Group Gain Menu

Gain: opens a window where you can set gain and phase for the selected group.
Values can be set with the fader, keyboard arrows or by dialling in the desired level. Gain range can be set from -80 to +15 dB. Group gain is a relative value that will add or detract gain from the amplifier channel that is part of the group.

Group Delay Menu

Delay: opens a window where you can set the delay in ms of the selected group. Values can be set with the fader, keyboard arrows or by dialling in the desired level. Delays can be toggled between enable and disable for A-B comparison.
Note: The maximum combined group delay time (User and group) for each channel is 250 ms.



Group EQ Menu

PEQ: opens a window where you can select twelve PEQ filters, for each of the selected group, with the same functionality as for the User PEQ menu (See section User EQ Menu on page 28).
The group PEQ filters are on top of the User PEQ.

Select one of the six groups to edit with these tabs.

Settings Menu

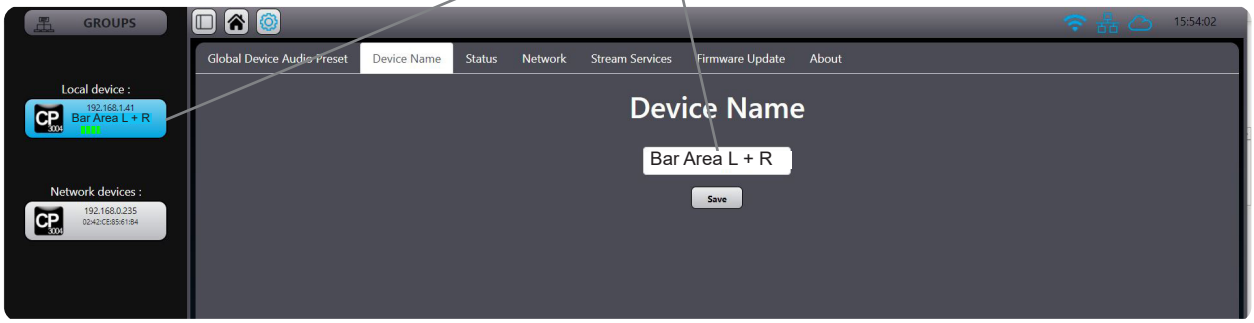
A tab on the settings wheel Icon will bring you to all the available settings for the selected device.

The Global Device Audio Preset menu gives access to the global preset folders and files.
A Global audio preset file contains all audio DSP settings of the four channels of the amplifier; user, group and speaker parameters.

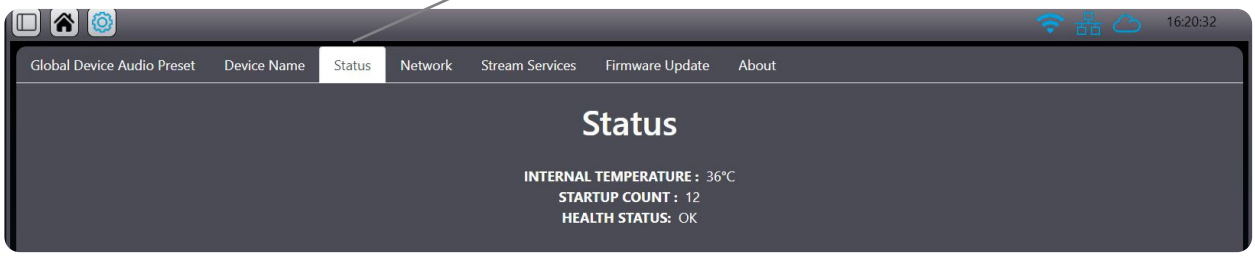
Preset can be recalled, saved, renamed or deleted from here.

You can create, rename or delete an unlimited number of preset folders.
Each preset folder can contain an unlimited number of preset files.

From this menu a personal device name can be dialled in. Pressing save will make this name also pop-up in the side bar

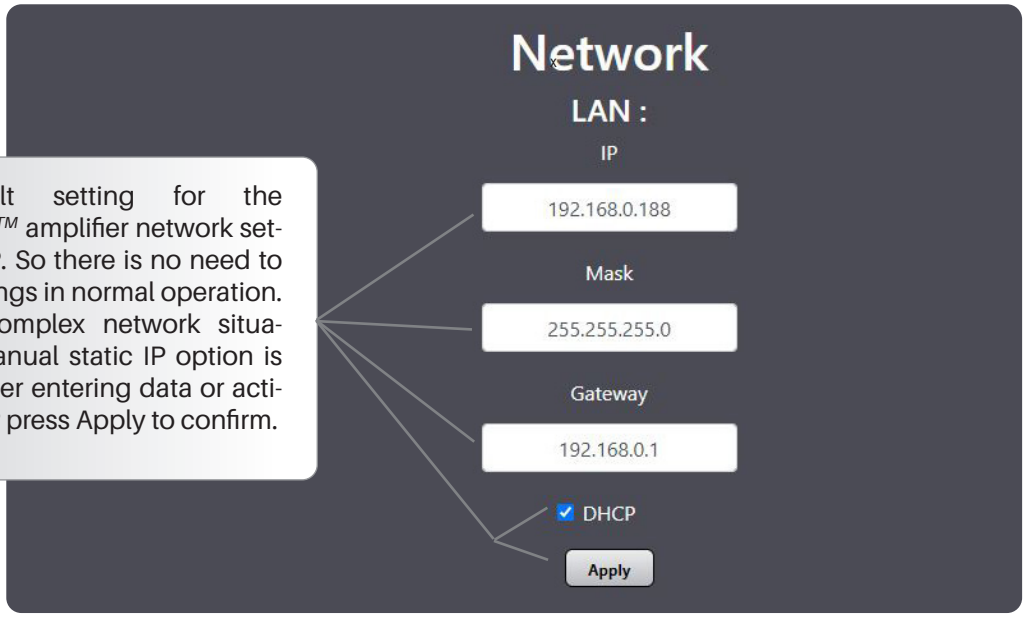


The Status sub menu gives some technical information about the status of the amplifier.

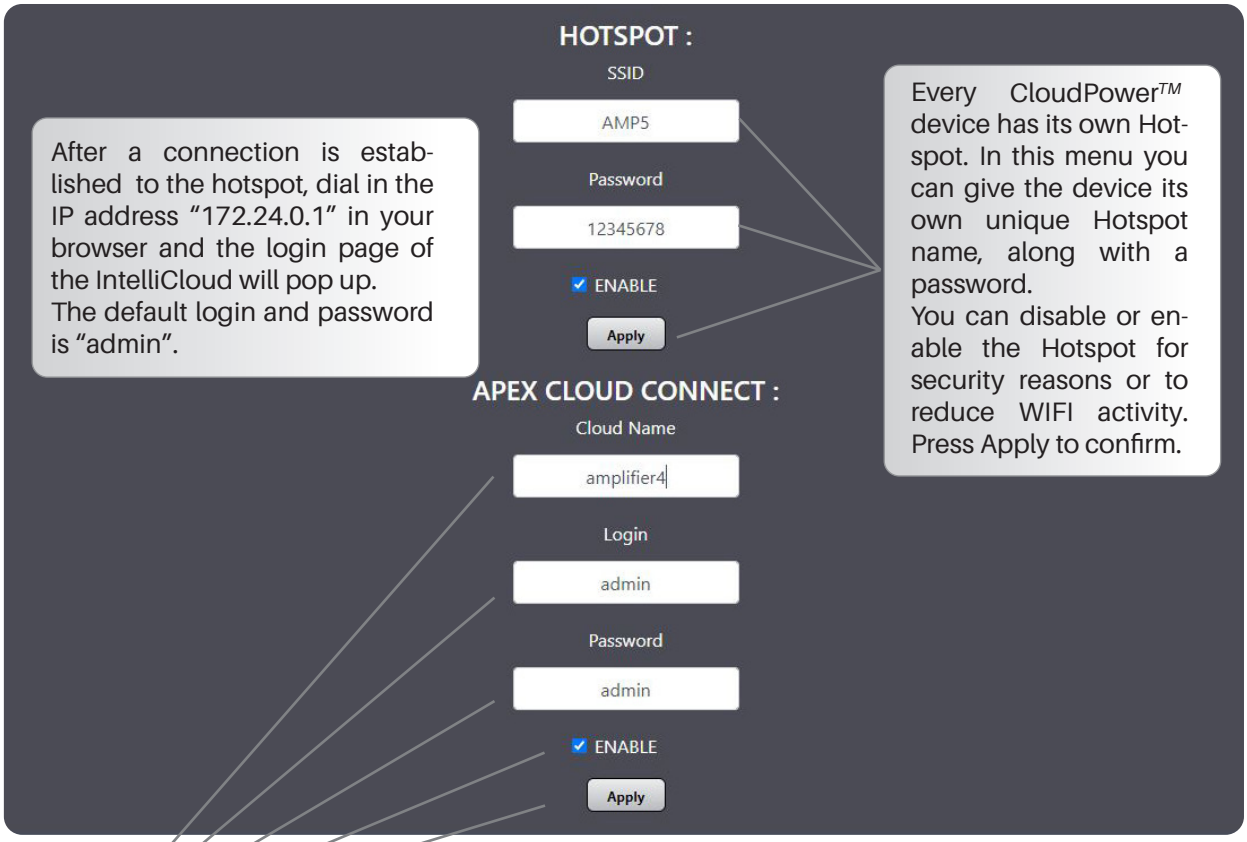


All the network settings are concentrated in this window. The cloudpower can be accessed in three different ways as described in the frontpanel part on pages 20 and 21.

The default setting for the CloudPower™ amplifier network setting is DHCP. So there is no need to enter IP settings in normal operation. For more complex network situations, the manual static IP option is available. After entering data or activating DHCP press Apply to confirm.



Note: After a connection is made with the IntelliCloud software, a security login window will appear on your device. The default settings are **admin** for both login and password, these settings can be personalized in the network window under the Apex Cloud Connect menu.



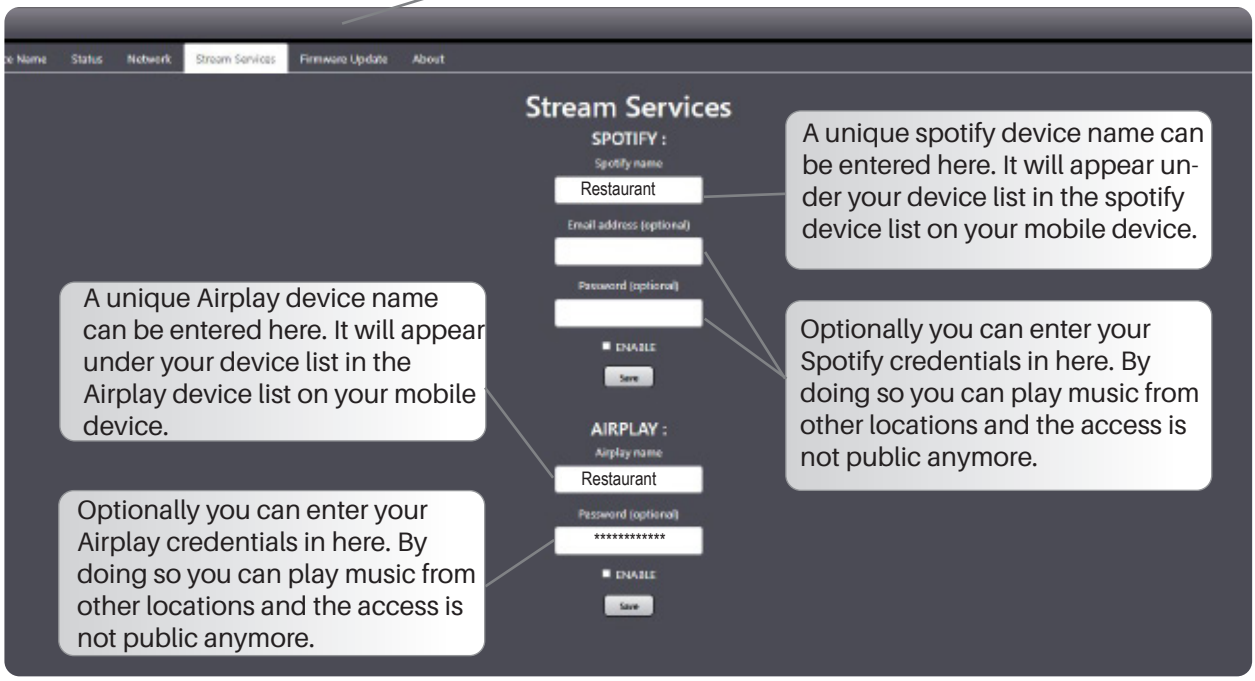
After a connection is established to the hotspot, dial in the IP address "172.24.0.1" in your browser and the login page of the IntelliCloud will pop up.
The default login and password is "admin".

Every CloudPower™ device has its own Hotspot. In this menu you can give the device its own unique Hotspot name, along with a password.
You can disable or enable the Hotspot for security reasons or to reduce WIFI activity. Press Apply to confirm.

A single CloudPower™ amplifier or a complete network of CloudPower™ devices can be accessed and controlled from any place in the world as long as both the CloudPower™ and the PC or mobile device are connected to the internet. Just dial in a unique name and enable the function. To access the amplifier, dial in the name of the amplifier followed by the extension "**.apexconnect.me**" in your browser.
In this example this would be: **amplifier4.apexconnect.me** Press Apply to confirm.

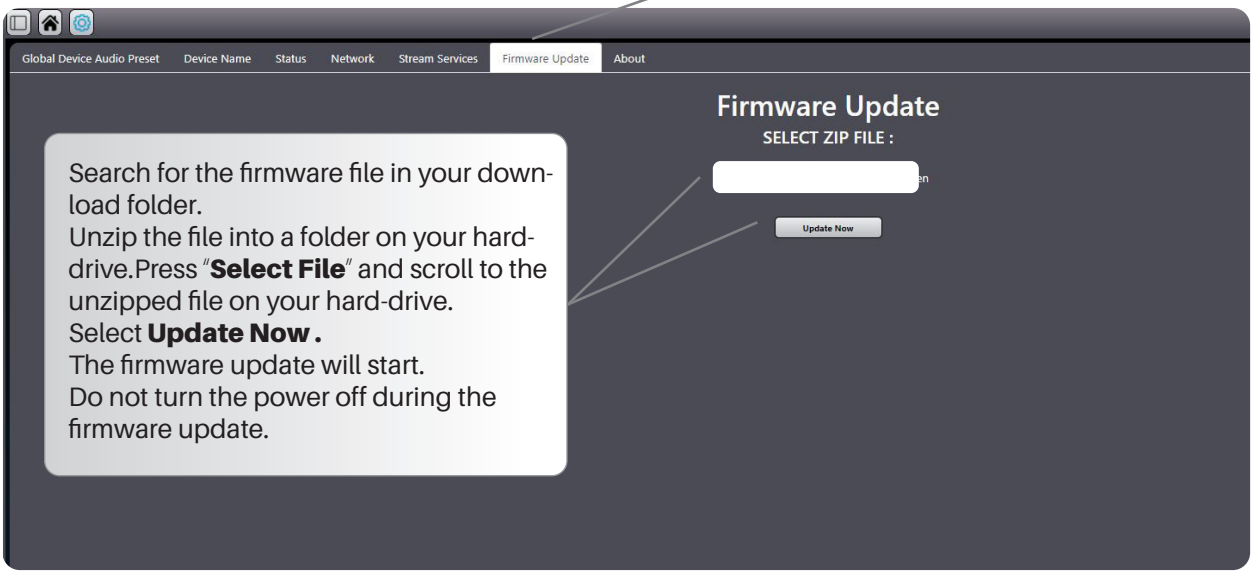
Note: After a connection is made with the IntelliCloud software, a security login window will appear on your device. The default settings are **admin** for both login and password, these settings can be personalized in the network window under the Apex Cloud Connect menu.

From this menu Spotify and Airplay streaming services can be activated and personalized. Make sure that your mobile device is on the same network as your CloudPower™ device.



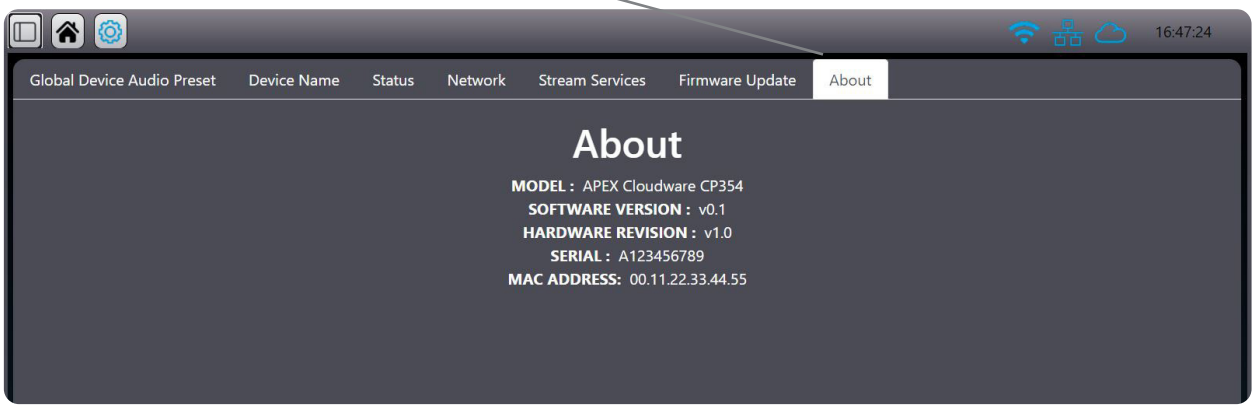
Please note that you have to enable this function and Save any changes before they becomes active. Also it's not possible to stream Spotify and Airplay simultaneously.

Firmware updates will be available when new features are implemented. Download the latest Firmware version from: **www.apex-audio.be/downloads.**



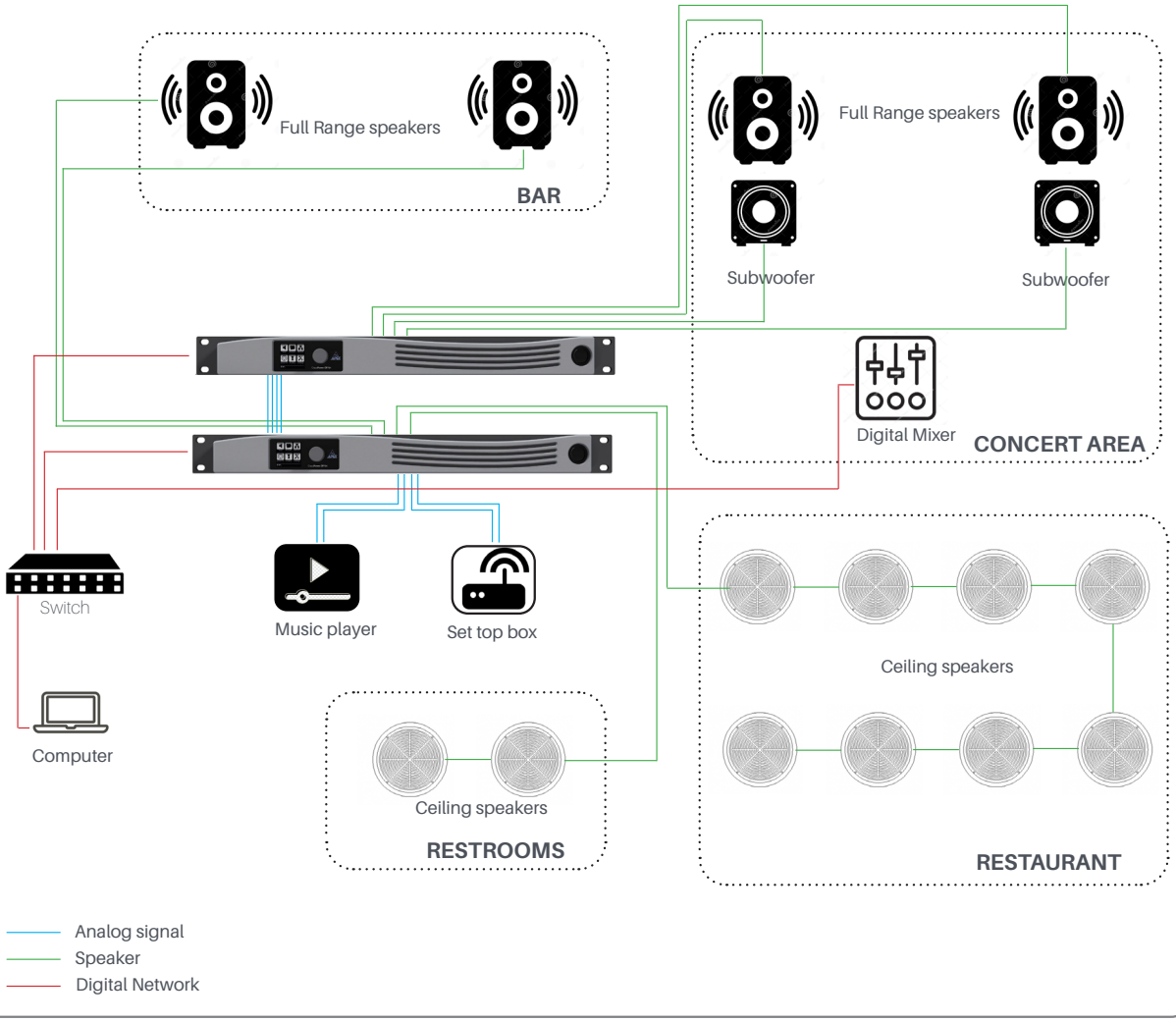
Spotify and Spotify logos are trademarks of the Spotify Group. Apple, the Apple logo, AirPlay, iPad, iPhone, iPod, iPod nano, iPod touch, iTunes, Mac, and OS X are trademarks of Apple Inc., registered in the U.S. and other countries

The About menu only displays technical information about the device.



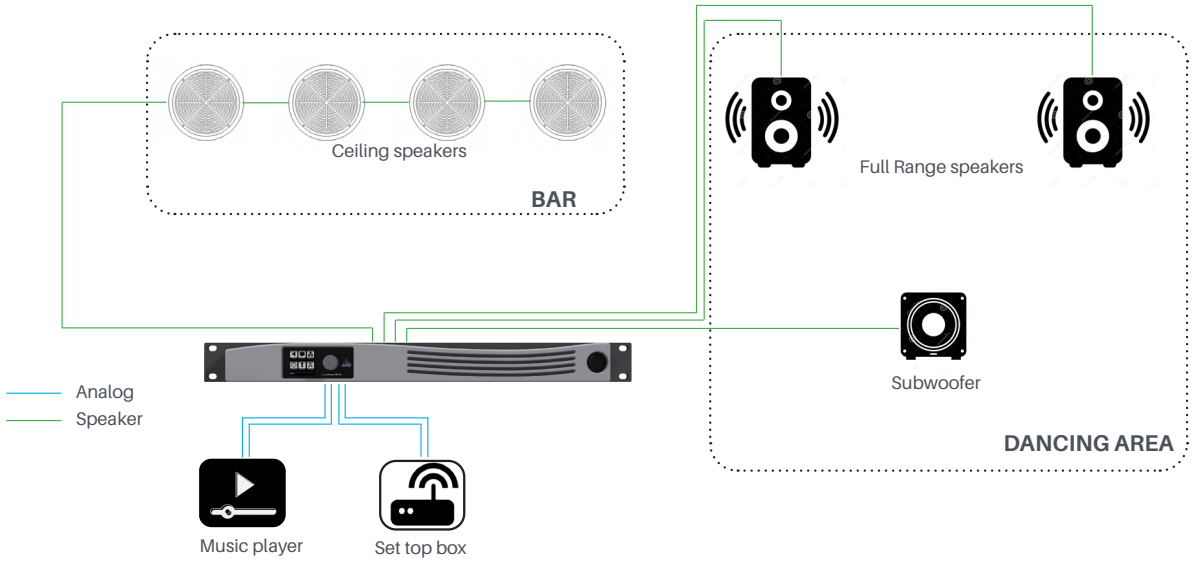
Dual amplifier example with analog and digital inputs

In this restaurant example, the four rooms are equipped with their own speaker system comprising of a bar zone with full range loudspeakers a concert area with a small PA system, a restaurant with ceiling loudspeakers and the rest rooms, also equipped with ceiling loudspeakers. Each of the systems is able to play any of the selected analog or digital sources. TheIntellicloud web based software has a powerful group function, so changes for every zone can be made from a central computer connected to the switch.



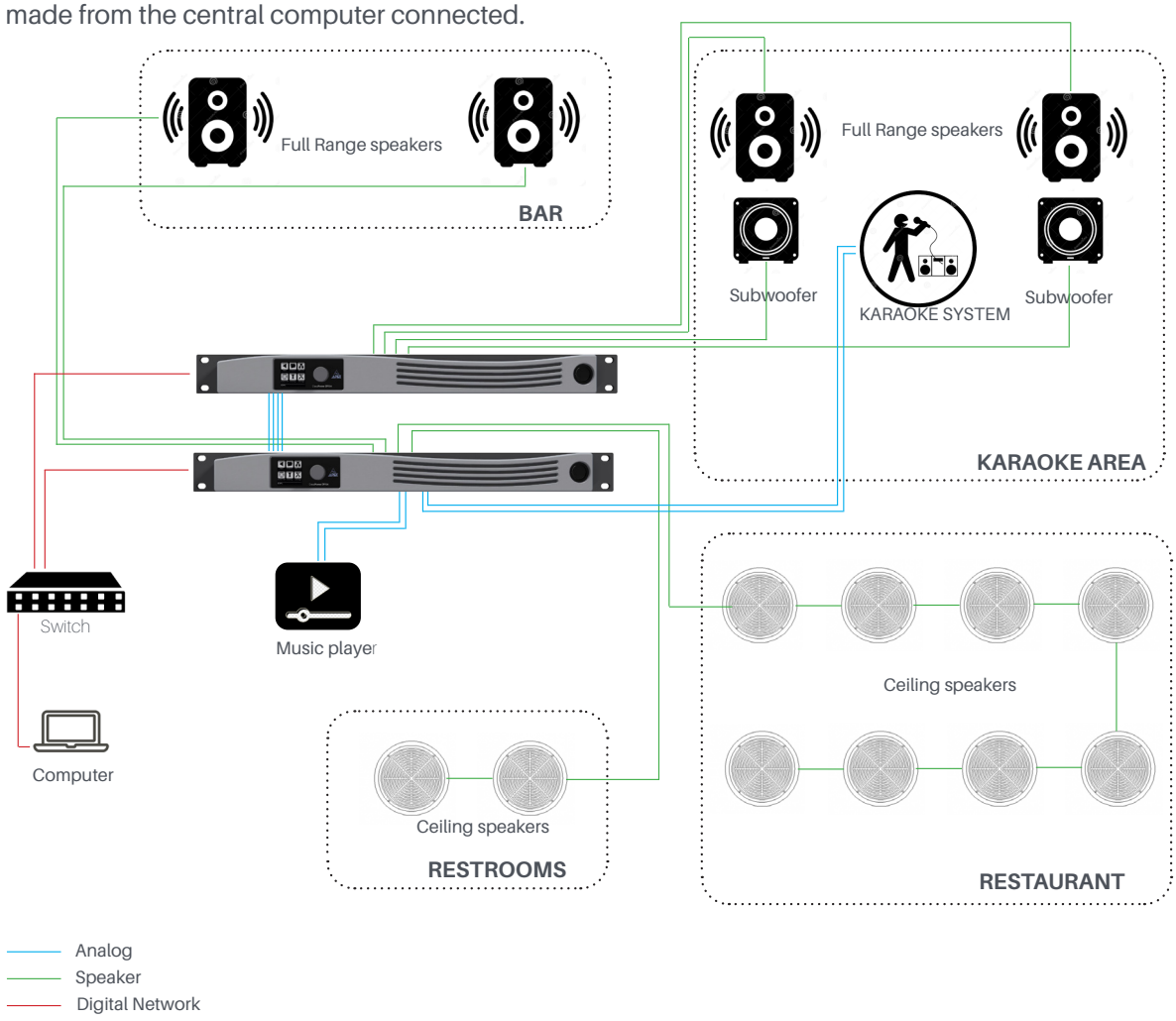
Single amplifier example with analog inputs

In this bar example, the two rooms are equipped with their own speaker system comprising of a bar zone with ceiling mount loudspeakers and a dancing area with a stereo set of full range loudspeakers. Each of the systems is able to play any of the selected analog sources. The level can be easily adjusted via the front panel control or via an optional external computer.



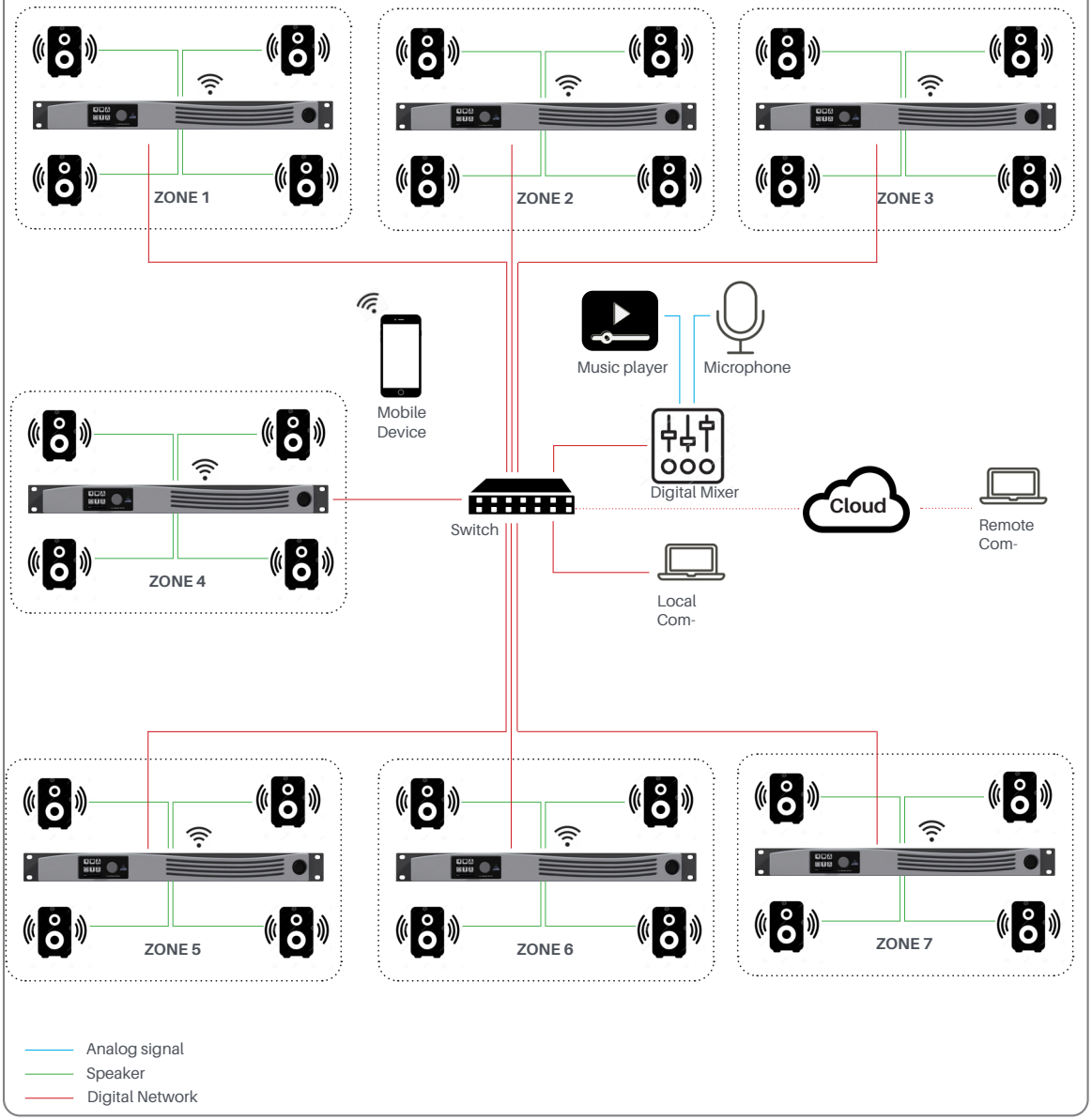
Dual amplifier example with Karaoke area

In this restaurant example, the four rooms are equipped with their own speaker system comprising of a bar zone with full range loudspeakers a Karaoke area with a small PA system, a restaurant with ceiling loudspeakers and the rest rooms, also equipped with ceiling loudspeakers. Each of the systems is able to play any of the selected analog or digital sources. This can be analog inputs from the Karaoke or Music player and digital input coming from a laptop connected to the main switch. The IntelliCloud web based software has a powerful group function, so changes for every zone can be made from the central computer connected.



Large set up example with analog and digital inputs and remote cloud control

In this museum example, all the zones are equipped with their own speaker and amplifier system. The CloudPower™ devices are connected to a central switch with standard network cabling. Settings can be done with either the central local computer or from a remote location over internet. Fine tuning can be done with any mobile device connected to an amps hotspot.



specifications

Output Power

CP354:	4 x 350W @ 4ohm, 350W @ 8ohm, 280W @ 70V, 140W @ 100V
CP704:	4 x 700W @ 4ohm, 500W @ 8ohm, 280W @ 70V, 140W @ 100V
CP1504:	4 x 1500W @ 4ohm, 1500W @ 8ohm, 1500W @ 70V, 1500W @ 100V
CP3004:	4 x 3000W @ 4ohm, 2000W @ 8ohm, 3000W @ 70V, 3000W @ 100V

Inputs

Analog:	4x 3-pin Phoenix
Networked audio:	Digital option card 4 inputs (supports AES67)

Audio Specifications

Power stage:	class D, DirectDrive
Frequency response:	20 Hz - 20 kHz, ±0.3 dB, load independent
Phase response:	±10 deg 20hz - 20kHz
THD+N:	0,05% @ P/2 , 20Hz- 20 kHz, 22 kHz BW
Dynamic range:	110 dB, 20 Hz to 20kHz,
Crosstalk:	>70 dB

Audio Monitoring and protection

Protection:	DC, Overtemp, Overcurrent limiter, VHF
Load monitoring:	Real time load monitoring and internal pilot tone

Power supply

Voltage:	universal switch mode power supply's with active PFC 100-240VAC +-10% 50-60Hz
CP354:	1 common power supply
CP704:	1 common power supply
CP1504:	2 separate power supply's
CP3004:	4 separate power supply's

User processing functions

Gain:	-80 to +15dB, 0,1dB steps
Polarity:	normal / inverted
Delay:	0 to 250 ms (Shared between User and Group settings)
PEQ:	12 x PEQ.Each PEQ can be set to a choice of 16 filtertypes: Bell-Sym, Bell-Asym, Notch, Low-Shelf 6dB or12dB, High-Shelf 6dB or 12db, All-Pass 90° or 180°, High-Pass 6dB, or 12dB, High-Pass VariQ 12dB, Low-Pass 6dB or 12dB, Low-Pass Vari-Q 12dB, Band-Pass
HP/LP filters	Bessel , Butterworth and Linkwitz Riley with slopes from 6 to 48 dB/oct
Limiter:	Peak voltage, RMS voltage

Group processing functions

Groups	Six global processing groups overlays which can link any amplifier chan nel in the network
Gain:	-80 to +15dB, 0,1dB steps
Delay:	0 to 250 ms (Shared between User and Group settings)
PEQ:	12 x PEQ.Each PEQ can be set to a choice of 16 filtertypes: Bell-Sym, Bell-Asym, Notch, Low-Shelf 6dB or12dB, High-Shelf 6dB or 12db, All-Pass 90° or 180°, High-Pass 6dB, or 12dB, High-Pass VariQ 12dB, Low-Pass 6dB or 12dB, Low-Pass Vari-Q 12dB, Band-Pass

Speaker processing functions

Gain:	-80 to +15dB, 0,1dB steps
Polarity:	normal / inverted
Delay:	0 to 30ms
PEQ:	12 x PEQ.Each PEQ can be set to a choice of 16 filtertypes: Bell-Sym, Bell-Asym, Notch, Low-Shelf 6dB or12dB, High-Shelf 6dB or 12db, All-Pass 90° or 180°, High-Pass 6dB, or 12dB, High-Pass VariQ 12dB, Low-Pass 6dB or 12dB, Low-Pass Vari-Q 12dB, Band-Pass
FIR filters:	1024 taps per channel
HP/LP filters	Bessel , Butterworth and Linkwitz Riley with slopes from 6 to 48 dB/oct
Limiter:	Dual-stage, RMS + look ahead Peak limiter
Operating conditions	0° to 50° C, 10 to 60 %, non-condensing
Storage conditions	-20° to 70° C

Dimensions

Unit

Width:	483 mm
Height:	44 mm
Depth:	400 mm

Package (Shipping)

Width:	560 mm
Height:	120 mm
Depth:	560 mm

Weight

Unit (Nett):

CP354:	5 kg, 11 Lbs
CP704:	6 kg,13 Lbs
CP1504:	8 kg, 17 Lbs
CP3004:	10 kg, 22 Lbs

Package (Shipping):

CP354:	6,5 kg, 14,3 Lbs
CP704:	7,5 kg,13 Lbs
CP1504:	9,5 kg, 17 Lbs
CP3004:	11,5 kg, 22 Lbs

Limited warranty

GIVA BVBA ("Apex") warrants you, the original purchaser, or any party that purchases the device from you, that its products are free from defects in material and workmanship under normal use for a period of two (2) years from the date of original purchase. The date of purchase is the date which appears on the first invoice or any other proof of purchase provided by an Apex approved dealer.

Subject to the conditions and limitations set forth below, Apex will, at its discretion, either repair or replace any part of its products that prove to be defective, provided that the product is returned with proof of purchase, shipping prepaid, to an authorised Apex approved service facility.

Warranty cover of any repairs will only extend to the end of the original warranty period.

We will be happy to provide you with a list of authorised dealers to whom you can return the defective unit or who will give you a returns note to enable you to send the unit to the factory.

Service turn-around time will be as fast as reasonably possible. If you are not satisfied with the repair, contact Apex.

Exclusions and limitations

This limited warranty covers only repair or replacement for defective products manufactured by Apex. Apex is not liable for, and does not cover under warranty, any loss of data or any costs associated with determining the source of system problems or removing, servicing or installing Apex products. This warranty excludes 3rd party software, connected equipment or stored data. Apex does not warrant that the operation of the product will be uninterrupted or error-free. In the event of a claim, Apex's sole obligation shall be replacement of the hardware.

This limited warranty does not cover:

(1) any damage to this product that results from improper installation, accident, abuse, misuse, natural disaster, insufficient or excessive electrical supply, abnormal mechanical or environmental conditions or other external causes;
(2) any damage caused by operating the product outside the permitted or intended uses described by Apex;
(3) any damage caused by any unauthorized disassembly, repair, or modification;
(4) consumable parts, such as batteries;
(5) any cosmetic damage.

Apex is not liable for consequential damages.

This limited warranty also does not apply to any product on which the original identification information (including serial number) has been altered, obliterated or removed or any product that has not been handled or packaged correctly.

Warranty services will be furnished only if the product is accompanied by a copy of the original retail dealer's invoice.