USER MANUAL

PL-audiO

Power System Management
D10.4 DSP
https://www.pl-audio.de

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Siegener Str. 6
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GERMANY

Powerpac D10.4

REMOTE ENABLE

PUSH

UNDO

Fn

Powered OFF

PL-audio

BACK
HOME

PUSH
TO ENTER

MUTE
SELECT

IN
Comp
0
-6
-12
-18
-24
Sig
dBFS

DIG

DIG

A   B   C   D

PowerPac D10.4

AES LINKS ARE BUFFERED IN AES MODE

OUT3 = 1+/1-
OUT4 = 2+/2-

OUT1 = 1+/1-
OUT2 = 2+/2-
OUT3 = 3+/3-
OUT4 = 4+/4-

PUSH A   PUSH B   PUSH C   PUSH D

A   B   C   D

OUT 3/4

AES A/B   INPUTS   AES C/D   AES A/B   LINKS   AES C/D

Powerpac D10.4 DSP

PL-audio

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PL-audio

Serial number of this product:

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 un-insulated "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.

www.pl-audio.de

PL-aUdiO

Dear customer,

Thank you for buying the Apex Intelli-Power10 The Intell-Power 10 is a professional quality, DSP-based system management processor with an integrated 4-channel amplifier. It provides all the equalisation, crossover filtering, time alignment and limiting required by the current generation of high performance loudspeaker systems.

Product highlights

- 4-in, 4-out with analog, AES3 and optional Dante connectivity
- LCD display with intuitive menu system
- No external computer necessary
- Inputs and outputs selectable as analogue or digital in pairs
- User-selectable analogue input sensitivities and output levels
- Sample Rate Conversion available on digital inputs
- Automatic redundant clock source selection with definable hierarchy
- Internal sample rates available from 44.1 kHz to 192 kHz
- Any input can be assigned to any output to create one or more crossovers of various configurations
- Input channel DSP facilities:
  - Gain adjustment and phase inversion
  - Delay (1.5 s max.), definable as time or distance, with temperature and RH compensation
  - 30-band ISO-centred graphic equalisation
  - 12-band parametric filtering, with choice of 16 filter types
  - Compressor
- Output channel DSP facilities
  - Delay (1.5 s max.), definable as time or distance, with temperature and RH compensation
  - Driver alignment delay (30 ms max.), definable as time or distance
  - 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
- Internal preset library
- Event logging system
- Ethernet remote control using Intelli-Ware PC application; static IP, DHCP and auto-IP compatible; wired or wireless
- Four class D, DC coupled driven from DAC 50Hz burst rms 1/3 12dB crest factor amplifiers (4x 2500W, 2ohm 4x 2500W, 4ohm 4x 1600w, 8ohm)
- Apex Direct Drive technology
- High reliability PSU with PowerCON® connector
- Professional quality XLR and EtherCON® connectors throughout
- 2U 19" rack-mounting unit

Foreword

Featuring dual DSP internal processing, high-end studio-grade analogue circuit de-signs, the new Intelli-Power 10 sets the new benchmark in powered system manage-ment and speaker processing design. The D/A conversion features DirectDive technol-ogy which enhances the impuls response for accurate bass response.

Whether the application is for a standalone system amplifi er confi gured using front panel controls, or a compre-hensive wireless networked system for Stadium or Arena sized tours, the Intelli-Power 10 is designed to provide the solution that our clients demand. With comprehen-sive loudspeaker preset ca-pability, implementing the Intelli-series into your system couldn't be easier.

The crossover characteristics (usually supplied by the manufacturer of the loudspeakers being used) can be quickly and easily entered into the Intelli-Power10 and then stored in the unit for later recall. This is of great advantage with touring systems, where the configuration of the speaker rig necessarily changes from venue to venue.

The Intelli-Power10 remote control capabilities allow fine tuning of the sound system to be carried out from a remote PC, typically a wireless-enabled tablet PC.

About this manual

Carefully read all instructions and warnings before operating this appliance. 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.eu

This manual describes use of Intelli-Power10 fitted with firmware version v2.4.1.0

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.

- Intelli-Power10 amplifier
- AC power cables with Neutrik PowerCON® connector
- Network cable ("straight" type)
- USB with Intelli-Ware software and other product documentation
- This manual

Operating environment

This appliance 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 Intelli-Power10 incorporates an internal fan-cooling, which should keep the unit within its operating temperature range in most situations. 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. This could be the case when the rack contains power amplifiers. Under such circumstances, additional rack-mounted cooling fans may be necessary.

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 Intelli-Power10 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.

Although this unit is intended for installation in a standard 19-inch rack it can nevertheless be used freestanding. 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 backpanel. 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.

The Intelli-Power10 is fan-cooled, with intake on the frontside of the unit and extraction on the backside Allow at least 10 cm (4 inches) at front and back side of the unit for sufficient ventilation.
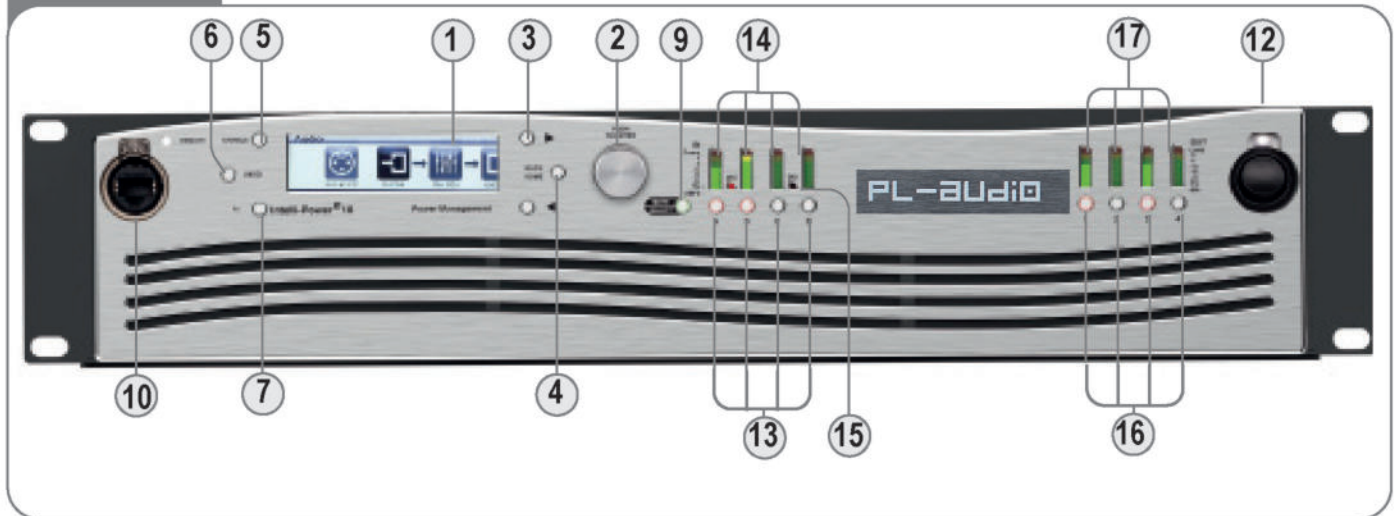
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⑫ The Intelli-Power10 is powered on and off by a front panel switch; an adjacent white LED illuminates when the unit is powered.
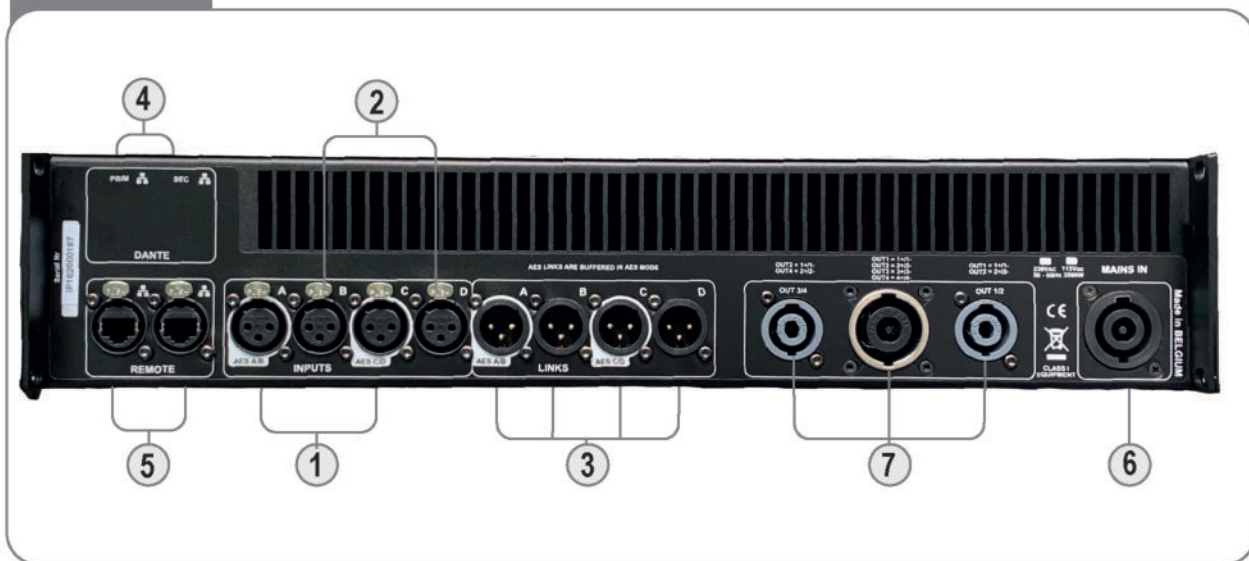
Input Controls:

⑬ Each input channel has a "soft" button below its meter, which mutes the input channel, depending on the setting of the Master MUTE/SELECT button [9].

⑭ Each input channel has a 6-segment tricolour LED bargraph meter which indicates the signal level in the channel. The meter is calibrated in dBFS, where 0 dB corresponds to digital clipping. The bottom 'Sig' segment illuminates at an input level of -48 dBFS. The top 'Comp' segment illuminates when gain reduction in the channel is being applied by the compressor.

⑮ Input channel AES LED(s). Each pair of input channels has a red LED which illuminates if those channels are selected to be an AES-3 digital input pair.

Output Controls:

⑯ Each output channel has a "soft" button below its meter, which performs either a Channel Select function **FOR THE INPUTS** in conjunction with the menu system), or mutes the output channel, depending on the setting of the Master MUTE/SELECT button [9].

⑰ 7-segment bargraph metering is provided for each output channel; the meters are similar to the input channel meters [14], but the highest segment indicates operation of the output channel limiter, and the bottom 'Sig' LED illuminates when the output channel signal level is 48 dB below the RMS limiter threshold.

Rear panel

All audio connections to the Intelli-Power10 and all control connections with the exception of the front panel Ethernet port (see [16] above), are made via the rear panel.

① Input channels A and C have inputs on latching 3-pin female XLR connectors. These connectors are dual-purpose and may be either analogue or digital, the selection being made via the menu system. In the analogue mode, the inputs are electronically balanced, with an impedance of >10 kΩ. Maximum input level is selectable via the menu system, and may be set to +21 or +24 dBu.

When used in the digital mode, each connector carries two channels of audio, as per the AES-3 standard. A front panel LED [15] illuminates when digital mode is selected and a valid AES-3 signal is detected. Input impedance is 110Ω. The Intelli-X^3 will also accept AESid or S-PDIF digital audio at this connector. Use a 75 Ω <>110 Ω impedance converter to interface with 75 Ω AESid or S-PDIF systems.

② The connectors for input channels B and D are identical to those for channels A and C, except that they are only functional when the analogue mode is selected for the input. If inputs A & B are selected to be a digital pair, only the input connector for channel A is used; similarly, if channels C & D are selected to be a digital pair, only the connector for channel C is used.

③ For each input (ABCD) there is a corresponding XLR link on 3-pin male XLR connectors. A and C connectors are also dual-purpose and may be either analogue or digital. When used in the digital mode, each connector caries two channels of audio, as per the AES-3 standard. The AES links are buffered in AES mode.

The pinout is as shown below, and is applicable to both analogue and digital signals:

PIN	CONNECT
1	GND
2	'Hot' (+)
3	'Cold' (-)

The pinout is as shown below, and is applicable to both analogue and digital signals:

PIN	CONNECT
1	GND
2	'Hot' (+)
3	'Cold' (-)
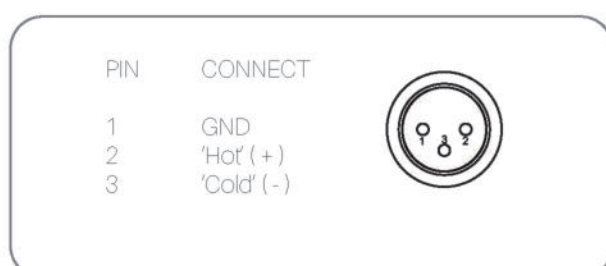
④ The optional rear panel Ethernet ports labeled "Pri" and "Sec" allow the Intelli-X³ to be integrated into a Dante AoE network.

Depending on the chosen Dante network configuration, both ports will either act as an Ethernet switch, allowing loop-thru connectivity with other Dante devices on the same subnet, or will operate on separate subnets allowing redundant connectivity with the Dante network.

⑤ The rear panel Ethernet ports allow the Intelli-X³ to be connected to an Ethernet network, for remote control via Intelli-Ware. Two ports are provided to permit units to be "daisy-chained". There is also an Ethernet port on the front panel for ease of temporary PC access when the unit is installed in a rack.

⑥ A Neutrik PowerCON® 32A connector provides AC Mains input.

⑦ speakON speaker output connectors – Power outputs are available simultaneously on a single 8-pole connector and on two 4-pole connectors. The four-pole connectors carry outputs for channels 1&2 and 3&4 respectively.
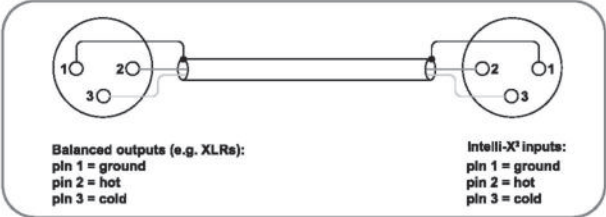
Wiring the unit

The use of twin-and-screen cable is recommended for both inputs and outputs.

Inputs

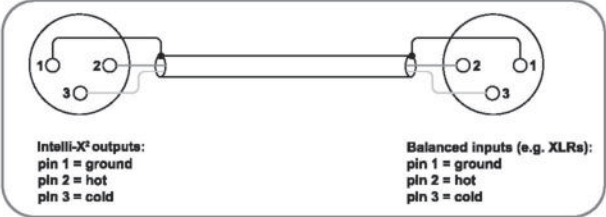Preferred wiring for both balanced and unbalanced sources is illustrated below:

Balanced

Balanced outputs (e.g. XLRs):
pin 1 = ground
pin 2 = hot
pin 3 = cold

Intelli-X² inputs:
pin 1 = ground
pin 2 = hot
pin 3 = cold

Unbalanced

Unbalanced outputs (e.g. phonos):
screen = ground
pin = hot

Intelli-X² inputs:
pin 1 = ground
pin 2 = hot
pin 3 = cold

Outputs

Preferred wiring for both balanced and unbalanced destinations is illustrated below:

Balanced

Intelli-X² outputs:
pin 1 = ground
pin 2 = hot
pin 3 = cold

Balanced inputs (e.g. XLRs):
pin 1 = ground
pin 2 = hot
pin 3 = cold

Unbalanced

Intelli-X² outputs:
pin 1 = ground
pin 2 = hot
pin 3 = cold

Unbalanced inputs (e.g. phonos):
screen = ground
pin = hot
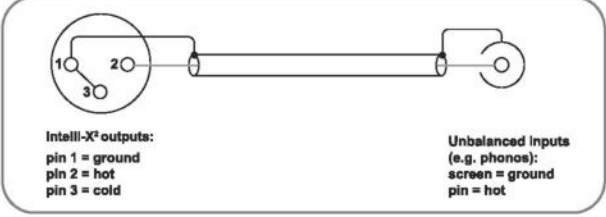
ℹ Important note regarding presets creation

Unlike the Apex Intelli-X family, the Intellipower10 does not have all the DSP functionality available from the frontpanel.
The resaon for this is to avoid accidental operation on the road that could cause damaged speakers.
However the most important input processing is available from the frontpanel alongside with the output mute function.

Input frontpanel operation:

- Input mutes
- Input routing
- Input gain
- Input delay
- Input parametric EQ
- Input meter settings

Output frontpanel operation:

- Output mutes

This manual describes all the frontpanel operations in detail, so any user can operate this device in the field.
In order to create presets and more in deep operation of some functions, please refer to the Intelliware appendix on page xx
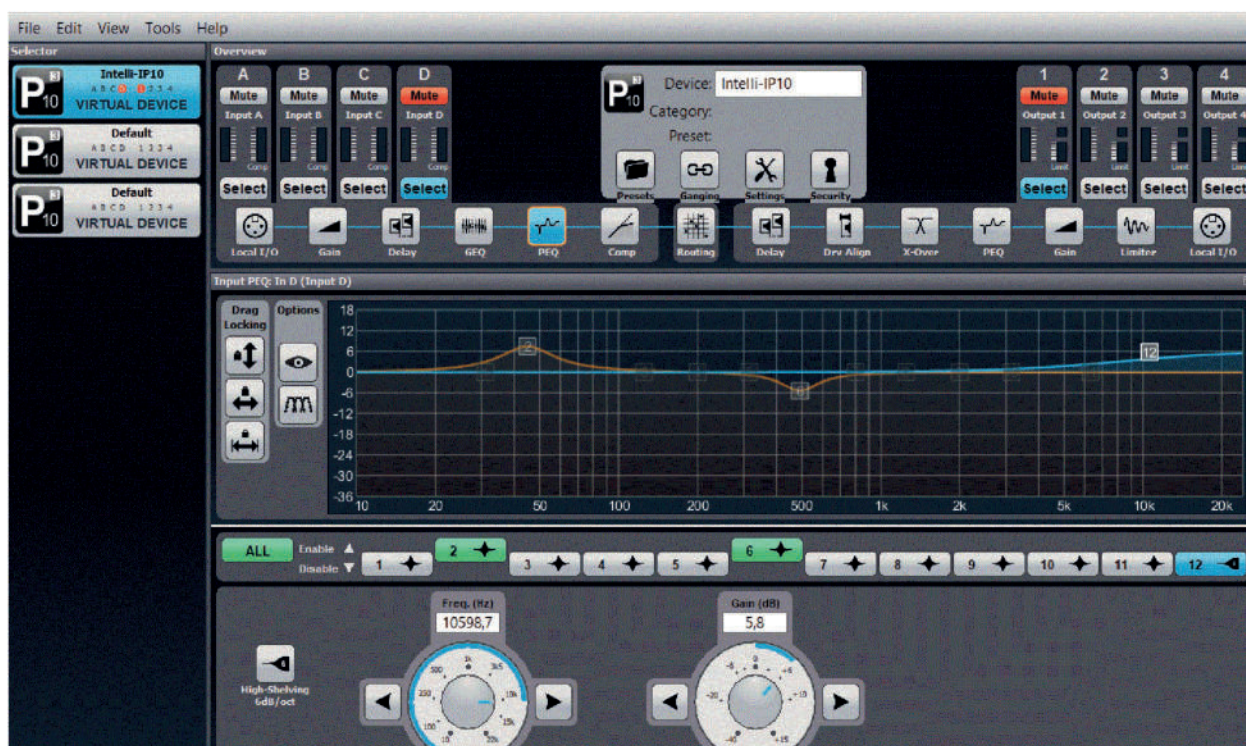
The Menu System

Powering up the unit

When the Intelli-Power10 is powered on, the APEX logo is displayed on the LCD screen while system initialisation and internal diagnostic checks are being run. All front panel LEDs are tested as part of these checks. The Boot status page is displayed briefly, confirming the firmware version number.
All unit operations and audio parameters are controlled through the Intelli-Power10 menu system. This section describes the various menus and submenus in turn.

Home page and general menu navigation

After the boot-up is complete, the display shows the Home Page:

```
Intelli-P 10
        Preset: Last recalled preset
A  Analog  0.0dB    1  Output 1        44°C   OK
B  Analog  0.0dB    2  Output 2        43°C   OK
C  Analog  0.0dB    3  Output 3        42°C   OK
D  Analog  0.0dB    4  Output 4        44°C   OK
```

The Home page is the menu "entry level", and confirms the names of the currently-loaded preset (which will be those in use when the unit was last powered-down).
To access the main menus, press the Enter button [2] (the rotary encoder).

Entry to these menus is displayed in the form of icons, illustrated below:

Preset	Audio	Settings	Securtiy	About	Log

Note that not all the options in this menu (and others) are visible simultaneously. Use the ► and ◄ buttons [3] or the rotary control [2] to move along the row. In all menus, the item selected for access is indicated by a highlighted icon. It may be selected by pressing the Enter button [2].

Pressing the BACK/HOME button [4] at any time will move the display "back up" the menu one level, and a "long" press will return the menu directly to the Home page. (The exception to this is when softkeys have been enabled.)

Selecting and adjusting parameters

When a list of items is displayed within a menu or submenu, the rotary control is used to scroll through the items rapidly. Each item is highlighted in turn. The highlighted item may be selected for adjustment by pressing Enter, when a 'scroll' symbol will appear next to the current setting. While this is visible, the rotary control can be used to select an alternative option, change the parameter value or tick/untick a checkbox, as the case may be.

Altering numeric values - a shortcut

The range of some parameters is considerable, and the resolution of adjustment very small, so in some situations, using the rotary control to enter a high parameter value directly is quite laborious. A shortcut data entry method allows a much faster way of entering a known value:

1. Select the parameter to be adjusted so that it is highlighted.
2. Press and hold Enter (>2 sec).
3. This expands the parameter value by inserting leading zeroes as required, and highlights the first available digit position.
4. Use the rotary encoder to select a different digit position, if required, and press Enter again to select it.
5. The rotary enoder may now be used to alter that digit alone. Press Enter when the correct integer is showing.
6. Repeat steps 4 and 5 until the full value is entered.
7. Scroll to the right hand end of the number string, and press Enter to complete the adjustment.

Editing text fields

Several menu displays include text fields which may be renamed by the user. The field available for editing will be highlighted. Press the Enter button again to highlight the first character of the field. Press once more to enable character editing. Note that a 'scroll' symbol appears at the end of the field. Use the rotary control to alter the highlighted character. The characters available are:

    ABCDEFGHIJKLMNOPQRSTUVWXYZ
    abcdefghijklmnopqrstuvwxyz0123456789_ - + . [ ] ( )

Note that the first character is a blank space. Use this to delete unwanted characters.

Each character in the field may be edited in turn, using the rotary control to select the next. When complete, press BACK/HOME to highlight the entire field.
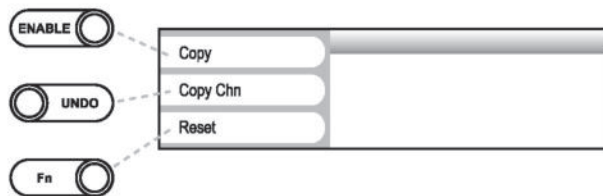
The softkeys

The six keys around the LCD are "soft" keys – that is, they perform different actions depending on the current menu page being displayed. In general, only some of the softkeys are enabled in each page, and some menu pages have no softkey functions.

In the descriptions of the menus which follow, availability of softkey functions are indicated at the appropriate places by the use of the softkey symbol:

If available, softkey functions are enabled by pressing the Fn button [7]. This will open a screen overlay, which will indicate the action that each of the softkeys now in use will have.

Many of the overlays time-out after approx. 5 seconds if no selection is made. Others remain in place, and require definite input from the user.

Menu entry level softkeys – Locate and Lock functions

Some softkey functions are available from the menu entry level (i.e., when the six main menu icons are displayed):

 – opens an overlay with the following options:

 – Locate unit. This is a useful feature when using multiple units with Intelli-Ware. Selecting Locate causes the unit's icon on the Intelli-Ware screen to flash to allow immediate identification. All six softkeys on the front panel also flash. The Locate function can be cancelled by pressing h .
(A corresponding Locate function can be initiated from Intelli-Ware)

 – Lock/Unlock function. This is a useful safety feature; pressing Lock/Unlock prohibits access to the Audio, Settings or Security menus. A padlock symbol appears on the icons for those menus. To unlock, press Fn, then Lock/Unlock again to open the Unlocking the unit data entry window.

A 4-digit PIN needs to be entered to unlock the menus. Press Enter to select the first digit position, and again, to allow digits 0 to 9 to be entered with the rotary encoder. Press Enter when the correct digit is showing. Note that the digit position reverts to an asterisk. Using the rotary encoder, scroll to the remaining digit positions, entering the correct digit each time. When all four digits have been entered, press Apply h. The menus will now be unlocked. Note the BACK/HOME button can be used to cancel the PIN at any time.

The factory default PIN is 1234. See "Security Menu" for details of how to change the PIN.

For full details on how to import presets from other manufacturer's DSP devices please visit the Apex website (www.apex-audio.be) and download the latest white-paper.

The Intelli-Power10 has 100 internal memories for storing Presets; 10 are pre-configured Factory Presets, and the other 90 are denoted User Presets. The User Presets are arranged into nine banks – called Categories - of ten. A Preset is a complete set of unit parameters and settings, including all audio parameters such as input selection and level, equalisation, delay, input/output routing, crossover configuration, limiter settings and so on.

You can set up the Intelli-Power10 (e.g. for a particular speaker make, model and configuration), and store the settings in a User Preset so that they can be recalled again for future use. You can also name each User Preset and sort them into meaningful categories (for example, by speaker manufacturer) to enable easy access. Presets may be also be protected to prevent inadvertent overwriting.

```
Preset Categories                        1/2    ▶
0:  Factory Presets
1:  [User Presets]
2:  [User Presets]
3:  [User Presets]
4:  [User Presets]
```

The Preset menu initially offers a choice of the Factory Preset bank (Bank 0) or the nine User Presets banks (Banks 1 to 9). Only the first five banks can be displayed; use the Scroll buttons h and i to see the others.

Factory Presets

(Fn ◯) – A Factory Preset may be recalled (loaded) by pressing the Fn button from a Category list. This opens an option window: Press Recall to load the Preset, or Recall & Mute to recall it, but mute the outputs (for safety). The Factory Preset Bank is empty in the Intelli-Power10 at present.

User Presets

Use the rotary control to highlight one of the User Preset Categories, press Enter to select it.

```
Category 1:   User Presets              1/2    ▶
1:  FOH 4-way
2:  [Empty]
3:  [Empty]
4:  [Empty]
5:  [Empty]
```

Initially all User Preset memories are empty. (Once Presets have been renamed by the user (see below), the names appear in the list instead.) Only the first five memories can be displayed; use the Scroll button [2] to see the others. More details about a Preset can be obtained by pressing the Enter button, which confirms the Name and a Description.

```
[User Presets]/Preset 1
   Name:
   Unnamed preset
   Descr.:
   New Preset description
```

Recalling a User Preset

(Fn ◯) – A User Preset may be recalled (loaded) by pressing the Fn button from a Category list. This opens an option window: Press Recall to load the Preset, or Recall&Mute to recall it, but mute the outputs (for safety).

Naming and saving a Preset

Naming a Preset before saving it is strongly recommended. When an empty Preset is selected from a Category List, the Name field (initially Unnamed Preset) is highlighted to indicate that character editing may be performed. When complete, press BACK/HOME to highlight the entire field, and then turn the rotary control to select the Description field; this may be edited in exactly the same way.

After pressing BACK/HOME again, press the Fn button, which will open an overlay. Press Save to store the current unit parameters in the Preset memory, together with the new Name and Description; alternatively, select Cancel.

Editing a Preset

A Preset may be overwritten and/or renamed once it has been created. To edit a Preset, select it from its Category list and open its Preset Details screen. Press the Fn button and select Edit from the overlay (the ENABLE button). The Name field will now be highlighted for editing.

Note that it is not necessary to actually have a Preset loaded into the unit to edit its Name and Description. However, when the edited fields are saved, the current unit parameters will be stored, which will overwrite the previous contents of the Preset memory location.

Clearing a Preset

To erase the contents of a Preset memory, select the Preset from its Category list and open its Preset Details screen. Press the Fn button and select Erase from the overlay (the Fn button).

Naming User Preset Categories

Preset Categories may be renamed using Intelli-Ware. It is not possible to perform this function from the unit's front panel. Please see the Intelli-Ware's Help files for more information.

Audio Menu

The Audio Menu is where all audio parameters and settings are adjusted. The top page of the Audio Menu offers five further submenus:
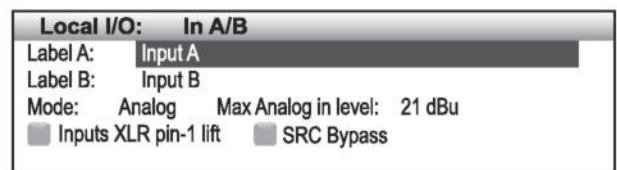

Local I/O → Routing → Gain → Delay → PEQ → Meters

Press **Enter** to select one of the submenus.

Local I/O submenu

The Local I/O submenu is concerned with the physical inputs of the unit. The initial selection of Local I/O will display the settings for Inputs A and B; The MUTE/ENABLE buttons for these inputs will illuminate green to confirm which channels' settings are being displayed. Note that I/O settings are always displayed for channels in pairs; the corresponding settings for other pairs of input or output channels may be displayed by pressing the MUTE/ENABLE button for either channel of the pair.

Input settings

Local I/O:	In A/B	
Label A:	Input A	
Label B:	Input B	
Mode:	Analog	Max Analog in level: 21 dBu
☐ Inputs XLR pin-1 lift	☐ SRC Bypass	

he screen shows the connectivity parameters for the selected input channels. Use the rotary control to move the highlight up and down the list.

Label A and B – this lets you change the name of the input channels (from Input A, etc.) to one of your choice, to suit the application in which the Intelli-Power10 is being used..

Mode – set to Analog when using in an analogue system, and AES3 or DANTE with a digital system. The channel's input A-D converter is in circuit when Analog is selected, and bypassed in the AES3 setting. Because the AES digital format carries two audio channels (as multiplexed data), selection of AES3 puts both input channels A and B into the digital mode, though only Input A's physical connector is used. The same principle applies to input Channels C and D. When AES3 is selected, the DIG LED will illuminate if a valid AES3 signal is detected, and blink if not.

SRC bypass – the Intelli-Power10 digital inputs are able to accept input sample rates of between 32 and 192 kHz. Sample Rate Converters (SRCs) are fitted to each input to convert the sample rate of the incoming audio to that of the internal processing. The default is for the SRCs to be in circuit, but depending on the synchronisation topology being employed, they may be bypassed by ticking the checkbox.

Routing submenu

The Intelli-Power10 output has a corresponding Routing Matrix screen, showing which inputs are routed to outputs.
When **Routing** is selected from the Audio submenu, the screen initially shows the routing for all outputs.

	A	B	C	D	
OUT 1/2	✓	☐	☐	☐	
OUT 3/4	☐	☐	✓	☐	

In this example the Intelli-Power10 is loaded with a 2 x 2-way configuration.Output one and two are fed from input A where input B feeds outputs 3 and 4.

Gain

Two gain parameters are available for adjustment. Use the rotary control to move the highlight to the parameter required.

Gain INA (Input A)		
Gain:	0.0	dB
Polarity:	Normal	

Gain – this sets the gain of the input stage for the selected Input Channel (post the ADC in the case of analogue inputs). 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.

Polarity – this allows polarity inversion to be applied to the selected Input Channel. The options are Normal and Inverted.

Delay

Each Input Channel of the Intelli-Power 10 may have up to 1.5 s of delay inserted. This would normally be used for time-aligning speakers in a multiway speakersystem,. Please refer to the speaker manufacturer specifications for the correct settings.. Use the rotary control to highlight the parameter required; five are available for adjustment:

Delay:	INA (Input A)			
☐ Enable				
Duration:	0.000	ms	0	smpl
Distance:	0.00	m	0.00	ft
Common Temp:	21.0	°C	69.8	°F
Common Humidity:	50.0	%		

Enable – either the **ENABLE** or **Ente**r buttons may be pressed to insert delay in the channel. Default is Off.

Duration – allows the delay to be set in units of time, from 0 to 1.5 s, in microsecond increments. Note that the duration is also displayed as the equivalent number of digital samples.

Distance – this provides an alternative method of setting the delay time, in units of distance, from 0 to 500 m. Entering a delay in terms of distance will usually be more convenient in real-world situations. Note that distance may also be entered in feet, if preferred. (The internal distance-to-time conversion is based on a nominal speed of sound of 346.5 m/s (1,137 ft/s), at 20 °C and 50% RH)

Temperature – the speed of sound varies with temperature; this parameter is used in conjunction with Distance. The ambient temperature may be entered here to obtain a more accurate delay value. The range available is -20 °C to +50 °C and the default value is +21 °C. Note that the temperature may be entered in °F if preferred, and that the value used applies to all delay settings throughout the unit.

Humidity – the speed of sound also varies with the relative humidity (RH) of the air. If known, the RH may be entered here, as a percentage from 0% to 100%, with a default value of 50%. Note that the humidity value used applies to all delay settings throughout the unit.

Parametric EQ

As well as a graphic equaliser, each Input Channel of the Intelli-Power10 is equipped with a 12-band parametric equaliser. This provides an alternative and more accurate method of tailoring the frequency response, and is useful when running RTA analysis during room tuning.

To enable the entire Parametric EQ section, press the **Enable** button. Default is Off.

Param. EQ	INA (Input A)				1/3 ▶
No	En	Type	Freq(Hz)	Gain(dB)	Q
1	☐	Bell-Sym	31.0	0.0	2.50
2	☐	Bell-Sym	63.0	0.0	2.50
3	☐	Bell-Sym	125.0	0.0	2.50
4	☐	Bell-Sym	200.0	0.0	2.50

All 12 filters offer an identical selection of filter types (see below). The filter parameters are displayed across three screen pages; press the h and i buttons to scroll between pages. For each filter, five EQ parameters are available for adjustment:

Enable – the **Enter** button enables the filter. Default is Off.

Type – 16 different algorithms are available for each filter. The default is Bell-Sym. The full list is:

TYPE	DISPLAYED AS:	GAIN?	Q?
Bell-Symmetrical	Bell-Sym	✔	✔
Bell-Asymmetrical	Bell-Asym	✔	✔
Notch	Notch		✔
Low-Shelving 6dB/oct	Low-Shelv 6dB/o	✔	
Low-Shelving 12dB/oct	Low-Shelv 12dB/o	✔	
High-Shelving 6dB/oct	High-Shelv 6dB/o	✔	
High-Shelving 12dB/oct	High-Shelv 12dB/o	✔	
All-Pass 90°	All-Pass 90		
All-Pass 180°	All-Pass 180		✔
Low-Pass 6dB/oct	L-Pass 6dB/o		
Low-Pass 12dB/oct	L-Pass 12dB/o		
Low-Pass Vari-Q 12dB/oct	L-Pass VarQ 12dB/o		✔
High-Pass 6dB/oct	H-Pass 6dB/o		
High-Pass 12dB/oct	H-Pass 12dB/o		
High-Pass Vari-Q 12dB/oct	H-Pass VarQ 12dB/o		✔
Band-Pass	Band-Pass		✔

The Gain? And Q? columns in the table show whether these two parameters are fixed or available for adjustment (⊠) for each filter type. Note that Type is a common parameter which applies to all 12 filters making up the equaliser

Frequency – this shows the centre frequency of the selected filter. It may be varied over the range 10 Hz to 22 kHz, in 0.1 Hz increments. Note that the default values are at standard frequencies:

FILTER	DEFAULT FREQUENCY
1	31.5 Hz
2	63.0 Hz
3	125 Hz
4	200 Hz
5	315 Hz
6	500 Hz
7	800 Hz
8	1.25 kHz
9	2 kHz
10	3.15 kHz
11	6.3 kHz
12	12.5 kHz

Gain – for filter types allowing adjustable gain, this parameter allows between -40 and +15 dB of gain to be applied at the selected frequency.

Q - for filter types allowing adjustable Q, the bandwidth of the filter section may be set in the range from Q = 0.1 (wide) to 48 (a very narrow notch).

IMPORTANT NOTE: The input section's parametric equaliser function is not available if the Intelli-Power 10 sample rate is set to 176.4 kHz or 192 kHz.

Meters submenu

This submenu lets you configure how the Intelli-Power 10 bar-graph meters function.

Meters		
Fallback time:	Normal	
Peak Hold:	1.0	s
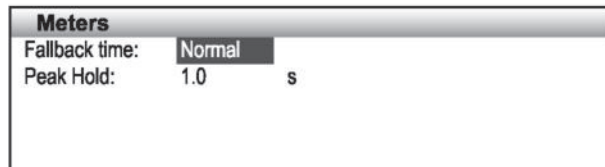
Fallback time – default setting is Normal, but may be set to Fast if preferred; this may make monitoring of rapid, transient signals easier.

Peak Hold – may be set at any time between 0.2 s and 3 s. The default is 2 s.

Settings Menu

The Settings Menu is where some of the unit's basic operating conditions are defined. Once these have been established, the menu will only rarely need to be accessed. The top page of the Settings Menu offers four further submenus:

Name   Network   Clock   LCD

Press Enter to select one of the submenus.

Name submenu

In the name submenu you can give each Intelli-Power10 an individual name.
That becomes handy when operating several Intelli-Power10 devices in larger setups.

Network submenu

Network	1/2 ▶
☐	☐ Enable SNMP
IP Addr:	000 .000 .000 .000
IP Mask:	000 .000 .000 .000
Gateway:	000 .000 .000 .000
MAC Addr:	00-00-00-00-00-00

Quick set up tip :

· Connect a standard network cable between your PC and any of the ethernet ports of the Intelli-Power10.

· Set your PC to DHCP and the Intelli-Device in Enable Auto IP

· It can take a minute or more before the connection is established, this is normal.

· If the white Led lights up, you are connected.

Note: If your PC network port is set to static IP while the Intelli-Device is in Auto IP mode, the Intelli-Device will still pop-up in Intelli-ware on your PC but all the icons and controls will be greyed out.

When the Intelli-Power10 is being used with Apex's Intelli-Ware software application, an Ethernet network connection needs to be established between the computer running Intelli-Ware and the unit(s). Network settings are available in this submenu help to permit this connection to be set up correctly.
In most cases all that needs to be done is enable the **AUTO-IP** box. A valid IP address will then be assigned to the Intelli-X³ (note that this is not an instant process and will take a few seconds). If a static IP address is to be used then scroll to the IP Address and SubNet fields to enter the correct settings.
If using external network management and monitoring applications then ensure that the **SMNP** box (Simple Network Management Protocol) is enabled. Generally such applications are only used for managing very large networks (in large corporations etc.) but can be implemented in fixed installations such a broadcast facilities or large AV installations.

After any changes have been made in the Network submenu, exiting the page (by pressing **BACK/HOME**) first opens a screen requesting confirmation that the changes are to be applied.

?	Apply
	Cancel
Apply your changes?	

Notes on networking

Providing that the network is properly configured, Intelli-Ware is capable of automatically detecting and controlling any Intelli-X³ device connected to the network. Please refer to the Intelli-Ware documentation for more details on controlling the Intelli-X³ remotely.

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 Intelli-X³, 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 Intelli-X³ 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 Intelli-X³ will use the IP address provided by it. If no DHCP server is available, the Intelli-X³ will automatically select a unique and unused IP address in the range 169.254.1.0 to 169.254.254.255 (this is referred to as Auto-IP).

Further information

In most applications, communication between the Intelli-X³ and Intelli-Ware software will not require any configuration and will effectively work 'out of the box'. However, when the Intelli-Power10 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 Intelli-Power10 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 Intelli-Ware). Multicasting is preferred over broadcasting as it is more suited for network bandwidth control.

Note that if IGMP (Internet Group Multicast Protocol) features are available in your access point/switch then do enable them. By default, most network equipment will flood multicast traffic to all hosts which is not ideal. If your access point or switch also has IGMP snooping capability then enable this too.

The default outgoing multicast address is: **239.128.0**

By default, the Intelli-Power10 uses the following UDP ports:

Port	Use
50000	Outgoing multicast notifications
50001	Incoming multicast notifications (currently unused)
50002	Incoming unicast commands

Ethernet cables

Nowadays, computers and network devices automatically detect the type of connection (irrespective of whether straight or crossover Ethernet cabling is used). The Intelli-Power10 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 100 meters.

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 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.

It is good practice to keep the firmware of your access point up-to-date, as you would do with your Intelli-Power10. Some required features may not be present at the time of purchase but may have been added by now.

Recent Wi-Fi™ certified access points have basic Quality of Service (QoS) features called Wi-Fi Multimedia (WMM). These features are not always enabled by default. For reliable and fast communication between the Intelli-Power10 and Intelli-Ware this function should be enabled.

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.

If you wish to purchase a wireless access point, do consult with your Apex distributor or with Apex directly to obtain a list of recommended units.

⏰ Clock submenu

The Intelli-Power10 maintains an event log which may be viewed on the front panel LCD or by using Intelli-Ware; the Clock submenu allows the internal clock/calendar to be set correctly so that the log details are accurate.

Date and Time	
Date:	08 /APR/ 2011
Time:	12 :07 :31

Date: This field is selected by default; to change the date, press **Enter** to highlight the day only, then either press **Enter** again to modify the day with the rotary control, or use the rotary control to select either the month or the year. These can then be altered in the same manner.

Time: Clock setting is performed in the same manner; from the initial submenu select the Time: field with the rotary control and then press **Enter** to select the hour.

LCD submenu

Two parameters in this menu lets you adjust the LCD screen brightness and contrats to suit your working environment. The scaling is as a percentage of the maximum brightness, and the default value is 100%

LCD	
LCD Backlight:	100
LCD Contrast	65

🔒 Security Menu

It may be advisable to "lock" certain features of the Intelli-Power10, to prevent inadvertent system changes from being made at a critical time. The Security menu offers three options, the default state being that all restrictions are 'off', and thus all the relevant changes can be made if wished.

Security	
☐	Allow Mute
✔	Allow Preset recall

A tick in the checkbox means that the operating function is enabled. Press Enter to remove/replace the tick. The three options are:

Allow mute – when unticked, the front panel MUTE buttons become inoperative. This applies to both the Input channels and Output channels. Note that it is the MUTE buttons themselves that are disabled – active channels cannot be inadvertently muted, and channels already muted cannot become unmuted.

Allow preset recall – when unticked, it is not possible to load a different Preset .

Security menu softkeys – Locking and PIN change

From the Security menu, the following softkey functions are available:

Fn ⊙ – Change Password. This allows the Password needed for the Unlock function to be changed from the factory default code (1234). Pressing Change Password opens the Modifying the Password dialogue box:

Unlocking the unit		Apply
Enter Password	****	Cancel

Scroll to the Old Password Code field, and enter the current Password using the same method as for entering the Password to unlock. (You cannot change the Password without knowing the current one). Then scroll to the New Password field and enter the new Password. Press Apply to make the change or BACK/HOME to Cancel.

⊙ UNDO – **Lock/Unlock** function. This is the same Lock function that is available from the main menu top page. Selecting Lock prohibits access to the Audio, Settings or Security menus. Because the Security menu is no longer accessible once Lock is applied, unlocking must be selected from the main menu top page.

About Menu

About			1/2 ▶
Owner:	Apex		
Device ID:	00000000137052bd		
Firmware:	1.3.0.0		

About					2/2 ▶
Intern temp:	30.3	°C	86.0	°F	
Battery:	OK				

This page gives permanent information regarding the particular Intelli-Power 10 unit. None of the fields are modifiable. The data displayed consists of:

Owner: this will normally be 'Apex'
Device ID: unique hardware identification number
Firmware: the version number of the internal software

Press ◀ to open the second page..

Internal temp: the unit's internal temperature in both °C and °F.
Battery: state of the internal device which maintains the non-volatile memories when the unit is off.

Press ◀ to return to page 1.

Log Menu

Log			1/5 ▶
08.04.2011	12:59:19	Device unlocked	
08.04.2011	12:58:15	Device locked	
08.04.2011	09:30:34	Audio Sync changed: INTERNAL	
08.04.2011	09:30:28	Device started	
08.04.2011	09:30:26	Preset changed: Default preset	

The last 25 events of the internal event log are displayed across five pages. Use the h and i buttons to scroll between the pages.

The log lists the events in reverse order, with the most recent at the top of Page 1. The date and time of the event appears against a brief description.

Electrical specifications

Balanced line level input

Connectors	3-pin XLR (software switch-able between analog and AES-3)
Type	electronically balanced
Impedance	>10 k ohms, balanced
Common mode rejection	>90 dB
Max input level	21 or 24 dBu software selectable, balanced, 1% THD+N
Frequency response	20 Hz - 20 kHz, ±0,5 dB
THD+N	less than 0,005%, +4 dBu, 20 Hz- 20 kHz, 22 kHz BW
Dynamic range	120 dB, 20 Hz to 20 kHz, un-weighted at +21 dBu headroom settings
Crosstalk	>90 dB
AD conversion	24-bit, sigma-delta

AES-3 inputs

Connector	3-pin XLR (software switch-able between analog and AES-3)
Type	transformer isolated
Impedance	110 ohms, balanced
Supported formats	AES-3 and SPDIF up to 24-bit
Supported sample rates	32 to 192 kHz

Dante Pri / Sec AoE network

Connector:	Neutrik EtherCon

Power Outputs

Connectors:	2x NL4 + 1x NL8
Power stage:	class D, DC coupled driven from DAC
Ouptut power:	50Hz burst rms 1/3 12dB crest factor
	4x 2500W, 2ohm
	4x 2500W, 4ohm
	4x 1600w, 8ohm
Frequency response:	20 Hz - 20 kHz, ±0.2 dB, load independant
	Phase response: ±6 deg 20hz - 20kHz
	THD+N: 0,005%, -20 dBu, 20Hz- 20 kHz, 22 kHz BW
Dynamic range:	123 dB, 20 Hz to 20kHz, un-weighted
Crosstalk:	>90 dB
DA conversion resolution:	24-bit, DC coupled

Digital processing

Sample rate:	44,1 kHz, 48 kHz, 88,2 kHz, 96 kHz, 176,4 kHz or 192 kHz selectable
Internal processing:	32-bit floating point
Input	4 in

Network remote control

Built-in Ethernet switch	IEEE 802.3 10Base-T/100 Base-TX
Connectors	3 x Neutrik EtherCon, Auto MDI-MDIX
Protocol	Proprietary UDP/IP based, SNMP

Mains

Connector:	Neutrik PowerCon
Voltage:	240Vac/50hz or 120Vac/60hz (internally switchable),
Power consumption:	<3500VA

DSP specifications

Input channels functions

Gain	-80 to +15 dB, 0,1 dB steps
Polarity	normal / inverted
Delay	
Duration	0 to 1500 ms, sample rate depend steps,
Distance	0 to 500 m
Temperature	-20 to 50 °C (-4 to 122 °F), 0,1° steps
Relative humidity	0 to 100%, 0,1% steps
	(Temperature and relative humidity are common to all delays)
GEQ	30-band ISO centred, +/-15 dB,
	proportional-Q or constant-Q mode selectable
PEQ	
Bands	12
Filter types	Bell-Symmetrical, Bell-Asymmetrical, Notch, Low-Shelving 6dB/oct,
	Low-Shelving 12 dB/oct, High-Shelving 6 dB/oct,
	High-Shelving 12 dB/oct, All-Pass 90°, All-Pass 180°,
	High-Pass 6 dB/oct, High-Pass 12 dB/oct, High-Pass Vari-Q 12 dB/oct,
	Low-Pass 6 dB/oct, Low-Pass 12 dB/oct, Low-Pass Vari-Q 12 dB/oct,
	Band-Pass
Frequency	10 Hz to 22 kHz, 0,1 Hz steps
Gain	-40 to +15 dB, 0,1 dB steps (when applicable)
Q	0,1 to 48, 0,01steps (when applicable)

Compressor

Threshold	-80 to 0 dBfs, 0,1 dB steps
Ratio	1:1 to 20:1, 0,1 steps
Knee	hard or soft
Attack time	0,5 to 100 ms, 0,1 ms steps
Release time	5 to 5000 ms, 0,1 ms steps
Side-chain mode	flat, high-pass or band-pass mode
Make-up gain	0 to +10 dB, 0,1 dB steps

Mix matrix functions

Gain   -80 to +15 dB, 0,1 dB steps

Routing   enabled/disabled

Output channels functions

Delay

Duration	0 to 1500 ms, sample rate depend steps,
Distance	0 to 500 m
Temperature	-20 to 50 °C (-4 to 122 °F), 0,1° steps
Relative humidity	0 to 100%, 0,1% steps
	(Temperature and relative humidity are common to all delays)

Driver alignment

Duration	0 to 30 ms, sample rate depend steps,
Distance	0 to 1029 cm, 0,1 cm steps
	(temperature and relative humidity independent)

PEQ

Bands	12
Filter types	Bell-Symmetrical, Bell-Asymmetrical, Notch, Low-Shelving 6 dB/oct, Low-Shelving 12 dB/oct, High-Shelving 6 dB/oct , High-Shelving 12 dB/oct, All-Pass 90°, All-Pass 180°, High-Pass 6 dB/oct, High-Pass 12 dB/oct, High-Pass Vari-Q 12 dB/oct, Low-Pass 6 dB/oct, Low-Pass 12 dB/oct, Low-Pass Vari-Q 12 dB/oct, Band-Pass
Frequency	10 Hz to 22 kHz, 0,1 Hz steps
Gain	-40 to +15 dB, 0,1 dB steps (when applicable)
Q	0,1 to 48, 0,01 steps (when applicable)

High-pass and low-pass crossover

Filter types	Butterworth 6 to 48 dB/octave, 6 dB steps
	Linkwitz-Riley 12 to 48 dB/octave, 12 dB steps
	Bessel 12 to 48 dB/octave, 6 dB steps
Frequency	10 Hz to 20 kHz, 0,1 Hz steps

FIR filters

At 48 kHz:	5 x 1024 taps or 8 x 512 taps;
At 96 kHz:	3 x 1024 taps or 7 x 512 taps; 3584 taps total maximum

Gain   -80 to +15 dB, 0,1 dB steps

Polarity   normal / inverted

Limiter

Type	Dual-stage, RMS + Peak limiter
RMS threshold	-80 to 0 dBfs (or dBu equivalent), 0,1 dB steps
Peak threshold	-80 to 0 dBfs (or dBu equivalent), 0,1 dB steps
RMS attack	0,1 to 100 ms, 0,1 ms steps
Peak attack	0 ms
Release	5 to 5000 ms, 0,1 ms steps

Environment

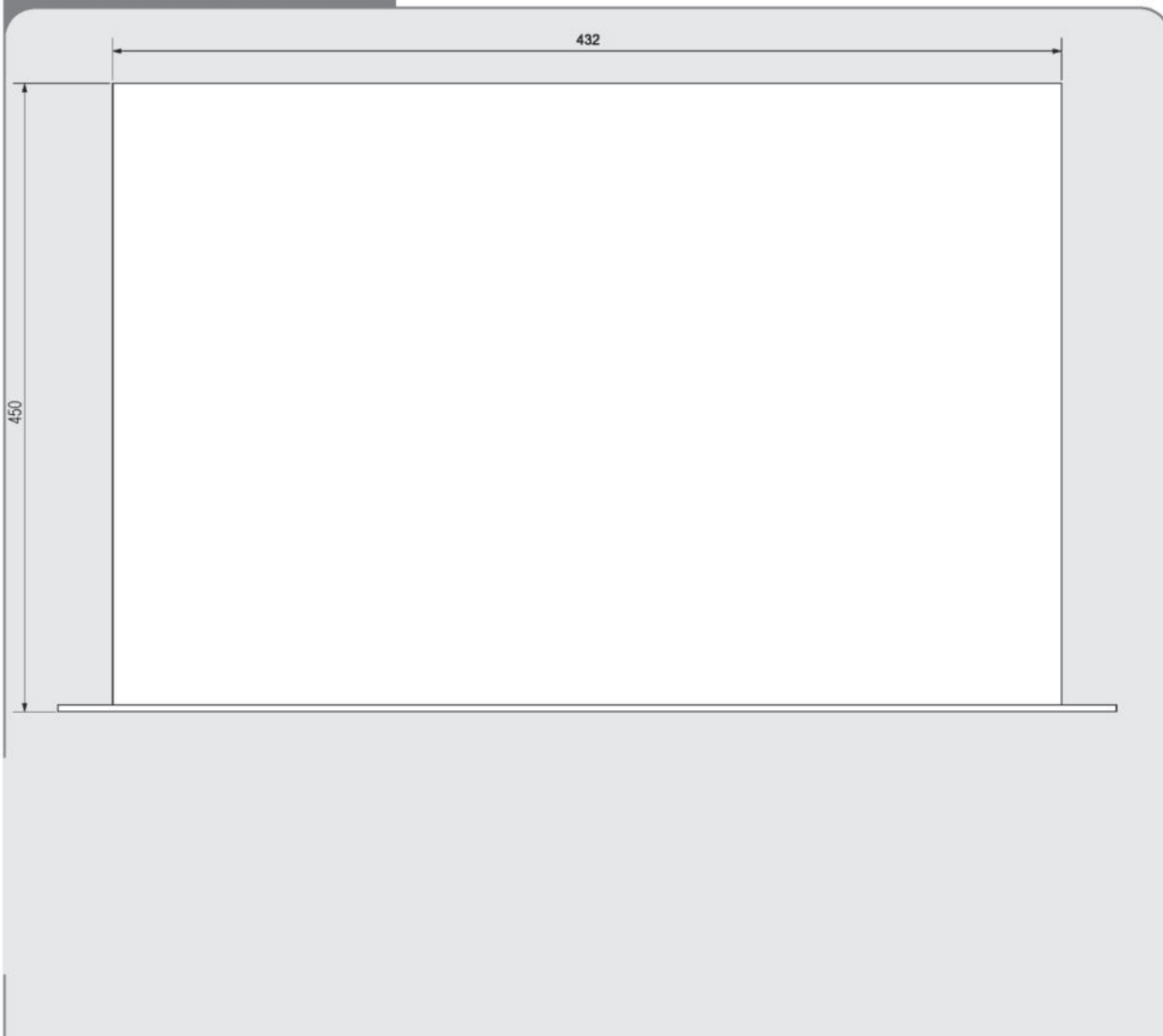**Operating**
Temperature: 0 to 50 °C (32 to 122 °F)
Relative humidity: 10 to 60%, non-condensing

Storage
Temperature: -20 to 70 °C (-20 to 158 °F)

432

450

Dimensions

Unit
  Width   483 mm (19-inch)
  Height   43,6 mm (1,75 inch - 1U)
  Depth   450 mm

Package
  Width   590 mm
  Height   125 mm
  Depth   550 mm

Weight

Unit (Nett),,   Intelli-Power10   15.5 kg

Gross (Shipping)   Intelli-Power10   17 kg

In the interest of product development, Apex reserves the right to modify or improve specifications of this product at any time, without prior notice and without any obligation to change or update equipment already delivered.

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.

Warranty claims other than those indicated above are expressly excluded.

W   Intelli-Ware control software

The Intelli-Ware software provides an unified interface for the Apex-Intelli series family, optimized for a wireless touch-screen or Tablet PC. The interface mirrors the powerful, but intuitive design of the hardware, whereby operation is predominantly icon driven. Intelli-ware also provides comprehensive system-wide ganging, copy/paste and data management facilities, allowing complex configurations to be configured, presented and stored in a more efficient and intuitive way.
The software operates on any Microsoft® Windows® PC with a standard Ethernet network interface.
The Intelli-Ware control software may also be accessed via media tablet devices such as the Apple® iPad™ by using remote desktop connectivity software that requires additional configuration.
This manual describes the functionality of the Intelli-Ware Controller software suite.

W   Home Screen
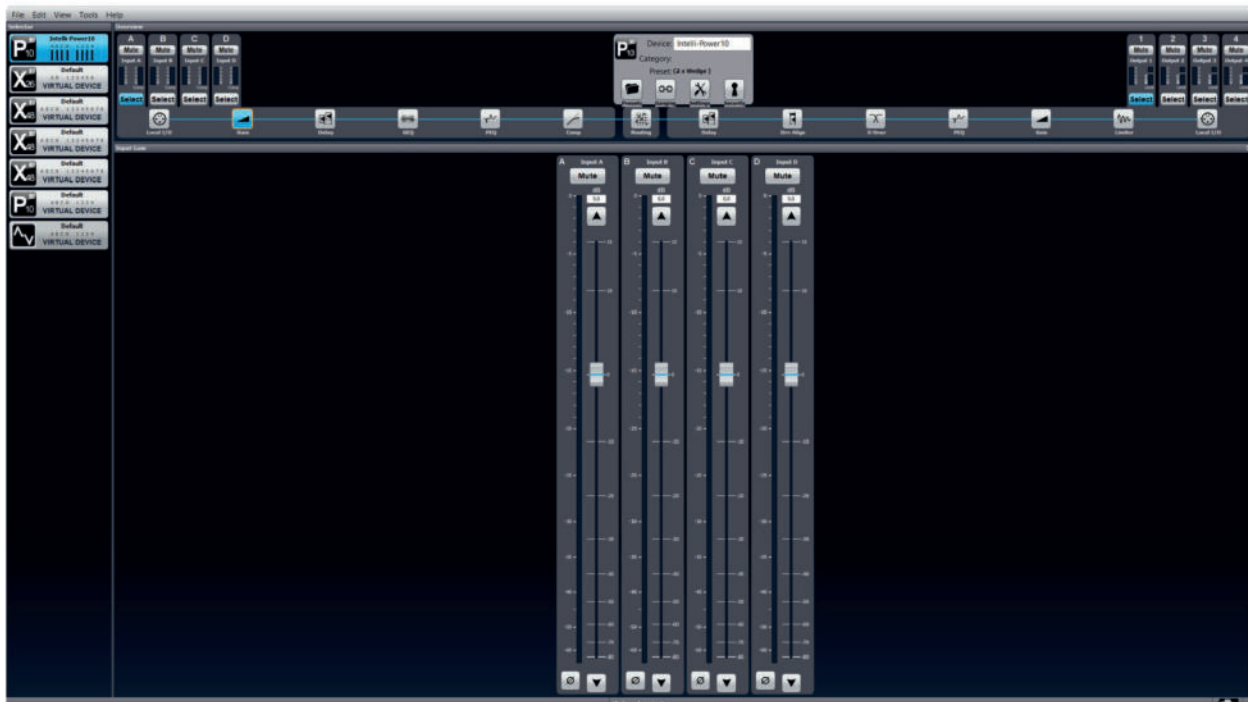
The Intelli-Ware software is available for download from **www.Apex-audio.be.**
Make sure that your PC is set to DHCP mode and the Intelli-Power10 to automatic in network settings (see section network submenu on page 23 for more detailed info about network set up). It will take some time before the two devices are connected. That is normal in DHCP mode.
The home screen will pop up, where we defined three areas, the menu bar, the selector and the overview area.

W   Menu Bar

• **File > Add virtual device.** This will pop up a list of all virtual devices that you can select. The selected devices will show up in the selector window, alongside the online devices.

• **File > Open preset.** From this sub menu, presets that are stored on the computer can be recalled to the virtual or online device.

• **File > Quit.** This wil shut down the Intelli-Ware software.

• **Edit > Copy device.** This will copy the complete device that is highlighted in blue in the selector bar.

• **Edit > Copy Channel in.** This will copy the selected input channel's processing that is selected from the highlighted device.

• **Edit > Copy Channel out.** This will copy the selected output channel processing that is selected from the highlighted device.

• **Edit > Copy xxx** This will copy any specific function that is currently being selected.

• **Edit > Paste xxx** This will paste any specific function or complete device, depending on what is being copied to the clipboard.

• **View > Panes > Log.** This will enable the log screen in the bottom of the home screen (default is off).
• **View > Status bar.** This will enable the status bar with indication of the battery level of the PC and the current content on the clipboard.
• **View > Full screen.** Toggles between full screen and resizable window.

• **Help > About Intelli-Ware.** Indication of the current firmware version and the release notes for that version.

• **Tools > Firmware manager.** From this menu the firmware of the connected device(s) can get updated. Please make sure to backup your device(s) before performing a firmware update, since it will erase all of your presets and settings, including acces rights and passwords.
• **Tools > Analyser bridge settings.** Here you can select the integration with Rational Acoustics Smaart 7 or 8 and WaveCapture LiveCapture whether the measurement software runs either on the same computer or on any computer in the same network.

W **Selector Bar**

In the selector bar, all the connected devices are shown, alongside with the virtual devices that can be selected from the file menu.
This selector bar can contain all of the Intelli family devices: Intelli-P10, IX^2-26, IX^2-48, IX^3-48, IX^2-Z and IX-Notch.
Selecting a device can be done by a mouse click and the selected device will show up in the overview screen.
You can change the order of the devices by dragging and dropping the device to your preferred order.
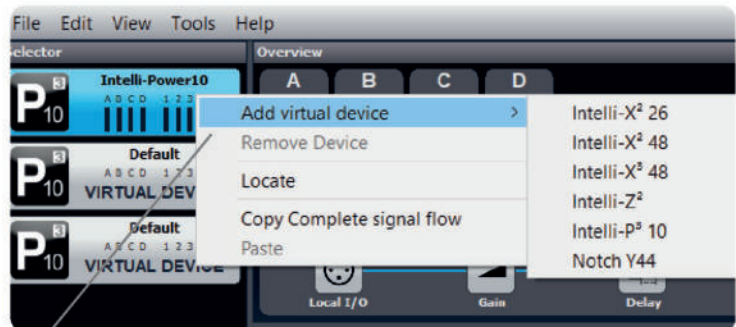
A right click on a device will open a second window with some extra functions:

· Add a virtual device like in the File menu
· Remove a device from the selector page
· Locate a device will trigger the 6 Leds from the frontpanel to blink.
· Copy and paste function to and from a device's current status

W Overview screen

The selected device will appear in the overview screen.
This is the actual work area from where you can select and control the complete functionality of the selected device.
This chapter describes all the functions of the Intelli-Power10.
In the topcenter of the overview window, you can find the device window. It shows general information of the device.

You can give each Intelli-Power10 an individual name.
This becomes handy when operating several Intelli-Power10 devices in larger setups.

The current preset and preset bank (Category) are indicated.

W Preset Menu

These padlock icons indicate the security status of the preset. Recall, overwrite or erasing can be tolerated (green) or forbidden (red) as discribed later from the security menu.

Clicking on the presets icon will open the preset window.

From this window all preset handling can be performed as described in the preset menu on page 18.

W Ganging Menu

The Intelli-Power10 has a very sophisticated and easy to use ganging system.
It is possible to gang only one or more functions, a complete in- or output channel, or two or more devices.
This can be very handy when you have a left and right system. Any adjustments to either the left or the right amplifier will be copied immediately to the other side.

Clicking on the ganging icon will open the ganging window.
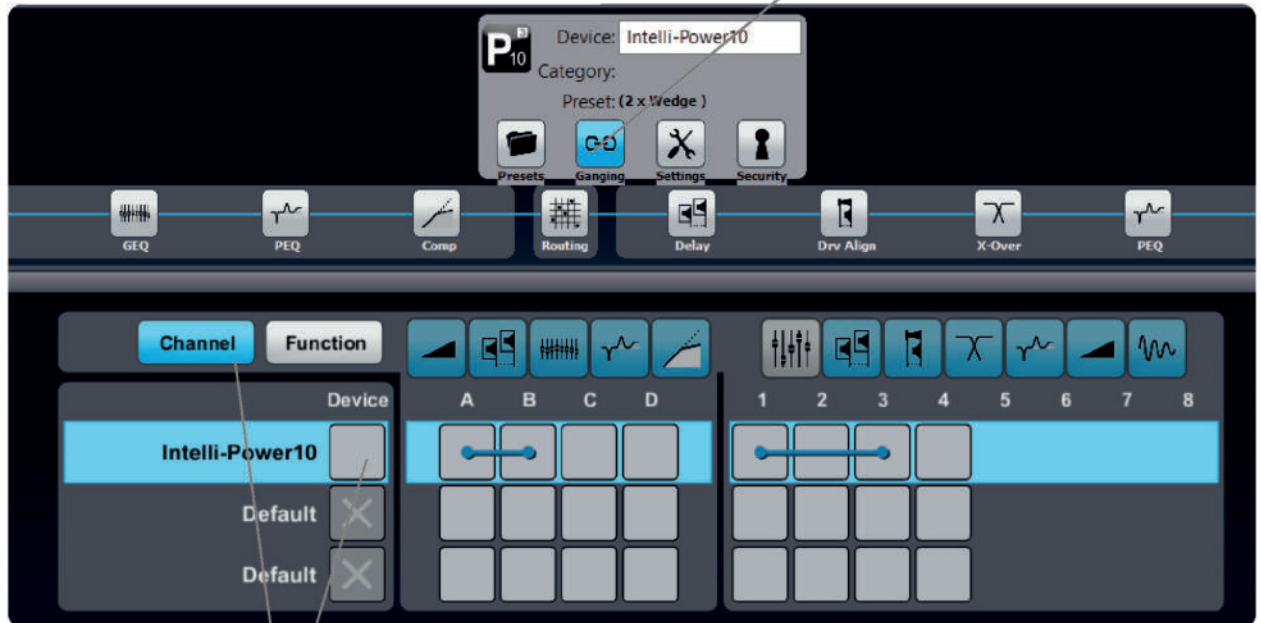
Ganging channels: select the first channel by clicking under ABCD or 1234, the icon will turn green, selecting any other channel will gang both channels. This is indicated with a blue line. All icons that are in gang mode will turn blue.
It is not necessary that channels are adjacent !
A double click on the blue line will break the gang.
Ganging complete devices is done in the exact same way.

Ganging function(s): select the function window. Now you can select for any function different channels to gang. The possibilities are endless. In this example, the graphic Eq is linked for input A and B and the delay is linked for output 1 and 4. You could now select another function link for other in- and outputs.

Clicking on the settings icon will open the settings window.
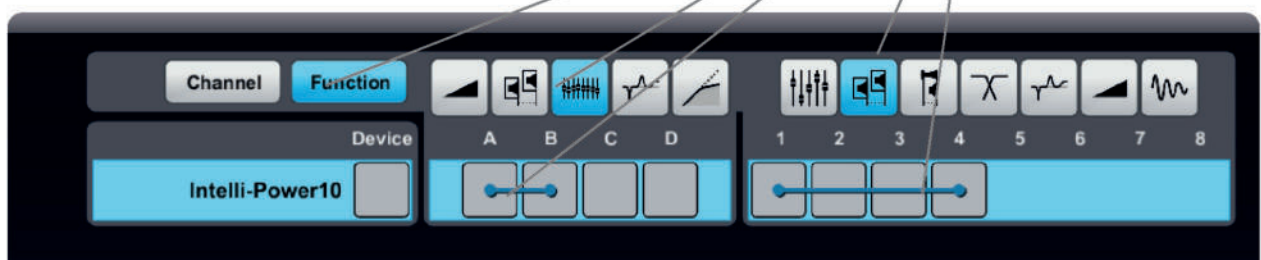
The network window displays the current network settings and status. Standard setting is "automatic". You can change the settings if necessary. Please read the network section on page 23.

Meters have two options: Fallback time and peak hold time as described in the meter submenu on page 25.
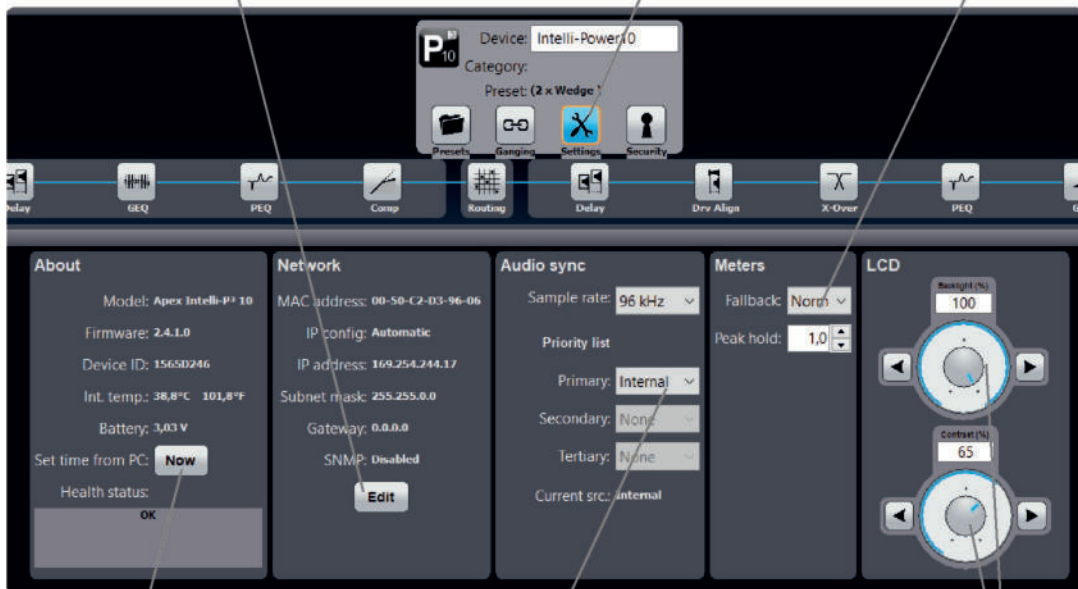
The about window carries device information. It's also possible to copy the time from the PC to the Intelli-Power 10. This is important for the "Log" function.

In the Audio Sync menu settings are made for the SRC from 44.1 kHz to 192 kHz. The IP10 can have up to three different clock sources which switch automatically when a clock source is missing. Default is internal 96 kHz.

Two parameters in this menu lets you adjust the LCD screen brightness and contrast to suit your working environment. The scaling is as a percentage of the maximum brightness, and the default value is 100%.

The security menu from the device is split into two main areas, each with its own password: **device security** and **preset security**.

Clicking on the security icon will open the security overview window.
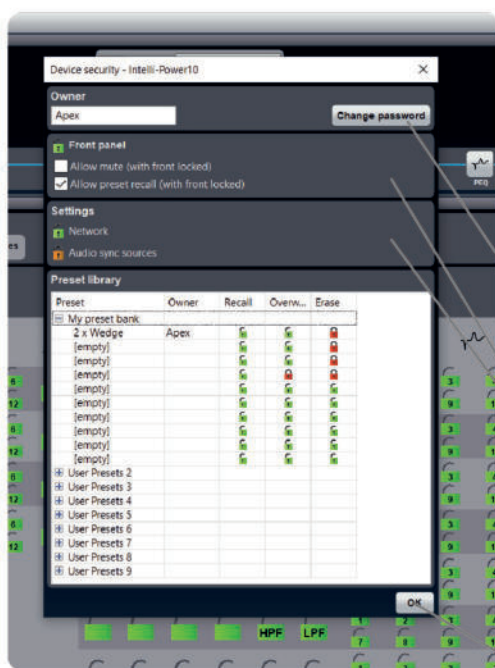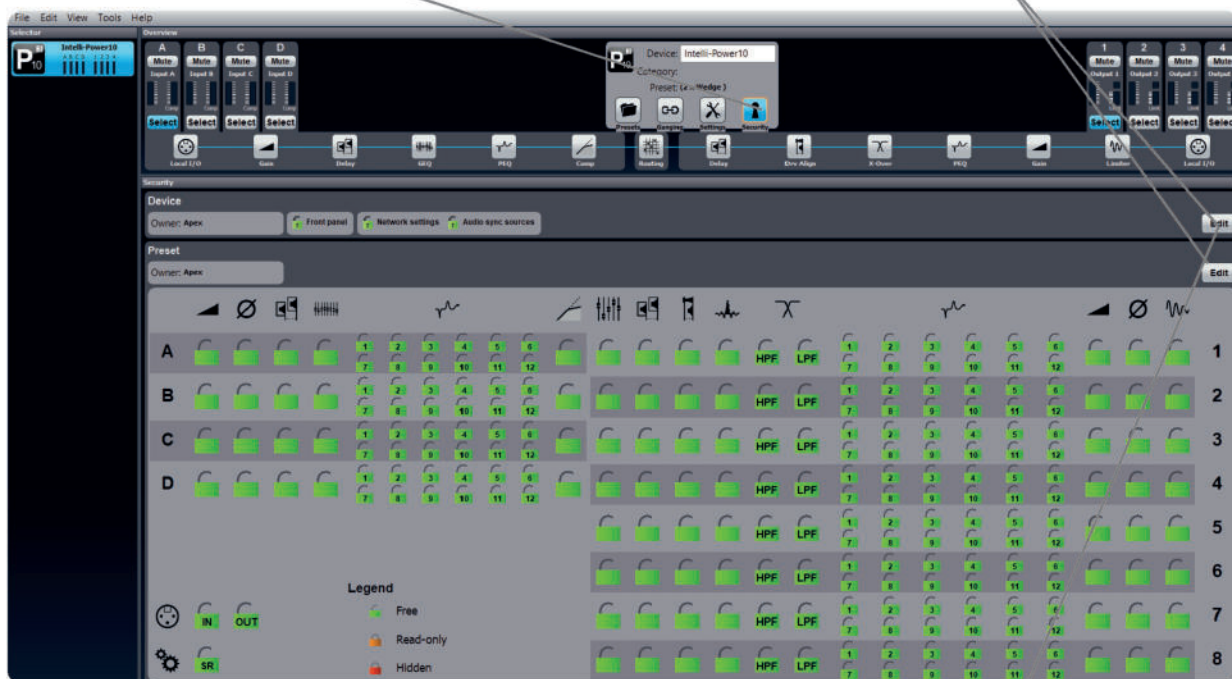
Device security: here you can lock, unlock or hide global functions of the device through all of the presets.
Clicking on the Edit box will bring you to the Device Security window password, after entering the device password (default = blank).

Change password: opens a dialog box where you can change the device password.

Front panel and settings: here you can allow or lock global settings for all presets.

Preset library: recall, overwrite and erase permissions are set here.

Click on **OK** to return to the overview window.

Clicking on the preset edit box will bring you to the Preset Security window, after entering the preset password (default = blank).

Reset all: removes all lock or hide functions (green icons)

All read only: all parameters are set to Read Only (orange icons)

All Hidden: all parameters are set to Hidden (red icons)

Change password: opens a dialog box where you can change the preset password (default = blank).
Note: each preset can have its own password!

Every parameter from each in- and output can be set individual to the three stages of security: Free, Read Only or Hidden

For each in- and output channel there is a master security function. Clicking on one of the three icons will set all the parameters of that channel to the desired status.
Note: since the IP-10 has only four outputs, channels 5 to 8 have no function.

W Editing presets

The Apex Intellipower-10 control software is designed with an analogue style signal flow interface. As a result, editing has become very fast and easy, regardless of the massive amount of parameters that can be controled.

Local I/O

Every in- and output has a dedicated mute- and select button. These are always visible regardless from any submenu.
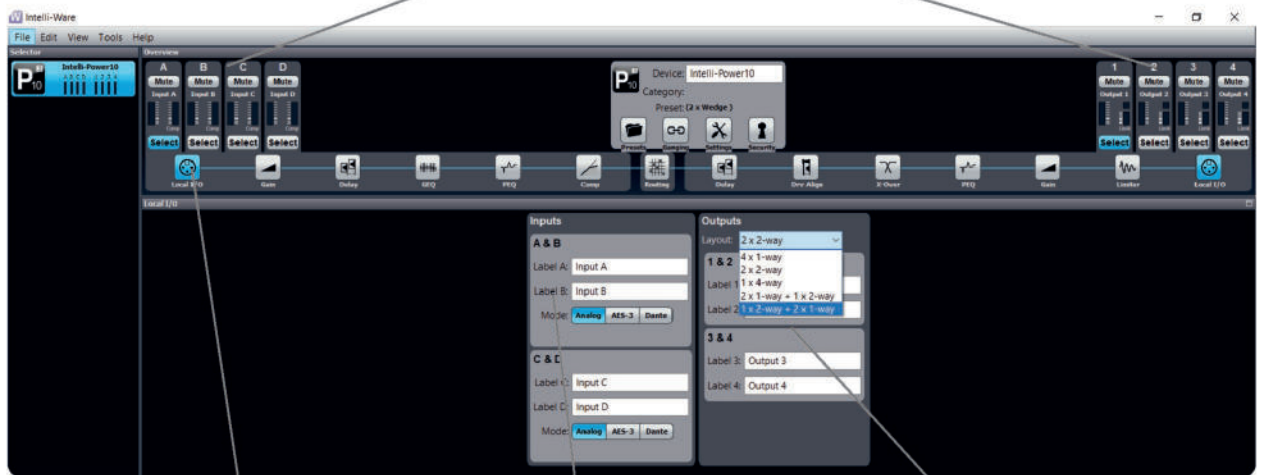
Local I/O: This is the first setting in the signal flow. Here you can set the in- and output settings for the device.
Note: all the parameters from the signal flow can be different for each preset!

Outputs: here you can label each output. This is also the place where you decide the lay-out of the amplifier.
There are five options available from the drop down menu.

Inputs: here you can label each input and select (in pairs) the input source from the three options: Analog, AES 3 or Dante (if the Dante card is installed).

Gain

Gain: opens a window where you can set gain, phase and mute for any of the four inputs, regardless what channel is selected.
Gain can be set with the fader, keyboard arrows or by dialing in the desired level.
Right click on any fader opens a window where you can reset or copy/paste the value.
Note: in- and output gain have identical windows.

Delay

Delay: opens a window where you can set the delay in ms, meters or feet of the four inputs, regardless what channel is selected.
Values can be set with the fader, keyboard arrows or by dialing in the desired level.
Delays can be toggled between enable and disable for A-B comparison.
Right click on any fader opens a window where you can reset or copy/paste the value.

Note: in- and output delay have identical windows.

Environment settings can be adjusted from this window.

Graphic EQ
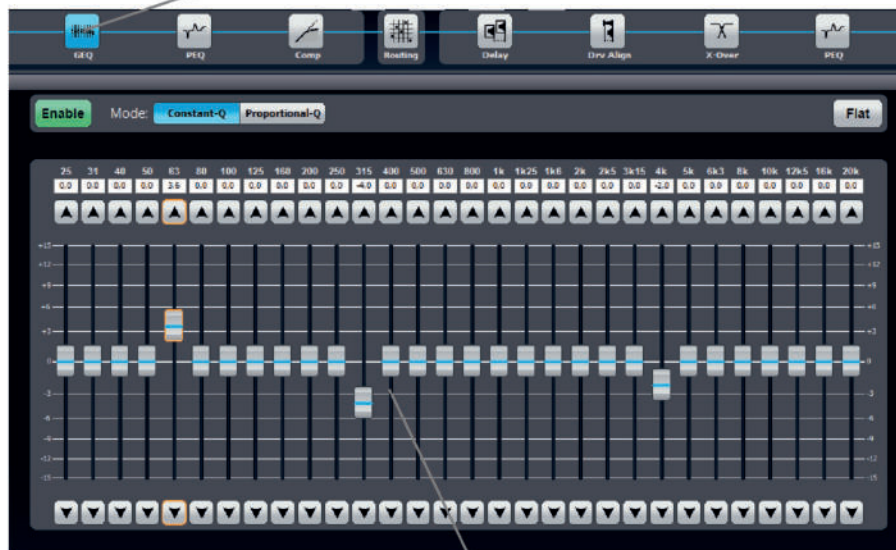
Enable button may be pressed to enable the graphic equaliser. Default is Off.

Mode selects the band-pass filter type used in the equaliser. Default setting is Constant-Q, the alternative is Proportional-Q.

Faders allows 15 dB of cut or boost to be applied in the selected band. Gain can be set with the fader, keyboard arrows or by dialing in the desired level.
Double click on a fader resets his value to 0 db.
Right click on any fader opens a window where you can reset or copy/paste the value.

Parametric EQ

PEQ: opens a window where you can control 12 parametric EQs for every channel.
Note: in- and output parametric EQs have identical windows.

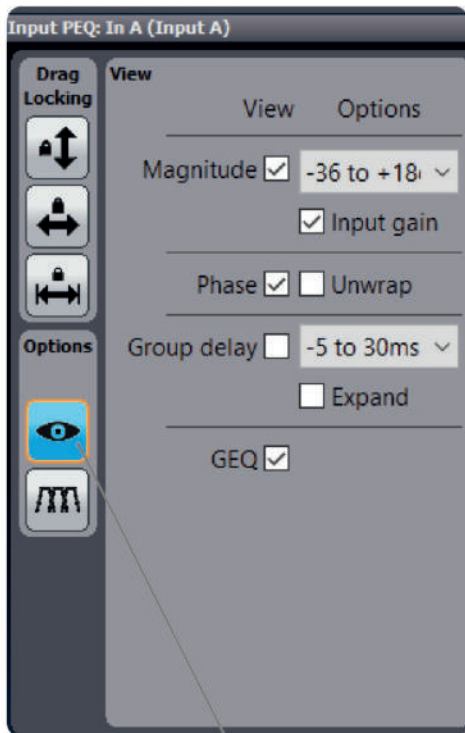Bell/Sym: opens a window with all types of available filters.

The three rotary controlers have acces to Freq, Gain and Q or BW settings.

All: enables or disables all 12 EQs.
1-12: enables or disables each selected EQ.
Enabled channels are indicated by a green frame.
The selected channel is indicated by a blue frame.
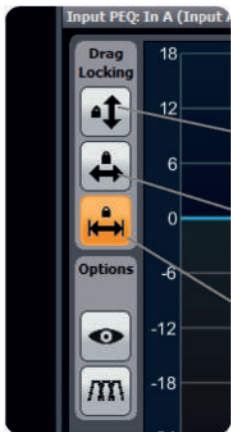
To avoid accidental operations, there are three "Drag Locking" options.

*Locks the gain setting for the selected filter.

*Locks the freq. setting for the selected filter.

*Locks the freq setting when using a touch screen.

Input PEQ: In A (Input A)

Drag Locking

Options

View

	View	Options
Magnitude ☑		-36 to +18 ∨
		☑ Input gain
Phase ☑	☐ Unwrap	
Group delay ☐	-5 to 30ms ∨	
	☐ Expand	
GEQ ☑		

From the options menu, you can select "viewing options" from where you can select what functions have to be included in the total view of the selected channel.

The vertical scale range has three different presets.

Input PEQ: In A (Input A)

Drag Locking

Options

View groups

	1	2
In A	☐	☑
In B	☐	☑
In C	☑	☐
In D	☑	☐

Clear
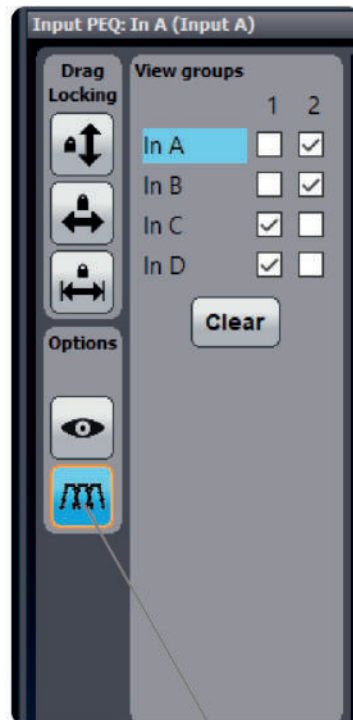
From the options menu, you can select "viewing groups" from where you can select what channels have to be included in the total view of the selected channel.

Note: a right click in any part of the window gives acces to the copy/paste function of the selected channels parametric EQ.
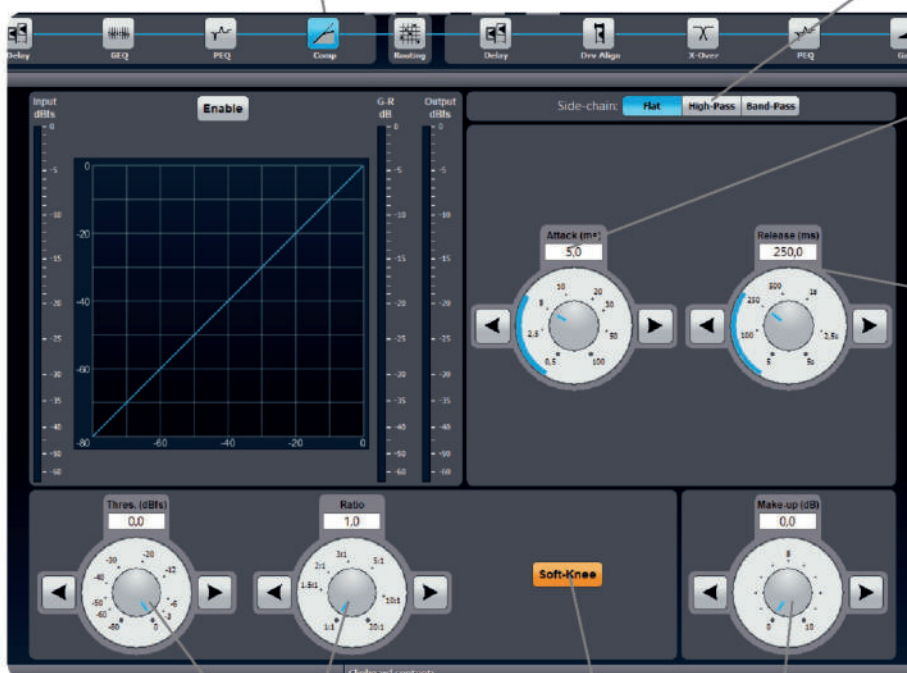
Compressor

The dynamic range of the input channel signal can be controlled with the Compressor section. All the normal compressor parameters are available for adjustment.

Side-chain – this is the internal control path, which monitors the signal level and determines the amount of gain reduction to be applied. Normally, the path has a flat frequency response, but it may be set to High-Pass or Band-Pass if preferred. High-pass mode will fit most applications, avoiding any unpleasant "pumping" or "breathing" effects due to the low-frequency content in the programme material.

Band-pass mode operates in a similar fashion, but may be better suited to audio material containing a lot of high-frequency content.

Flat mode can be selected when the compressor is used as a sound level limiter.

Attack – this sets how rapidly the compressor acts when the programme level exceeds the threshold. The default value is 5 ms, and attack can be set in the range from 0.5 ms to 100 ms.

Release – this sets how long it takes the gain reduction to be removed after the signal level has dropped below the threshold. The default value is 250 ms, and release can be set in the range from 5 ms to 5 s.

Threshold – this is adjustable between -80 dBFS and 0 dBFS (the default value). When the signal level exceeds the threshold – i.e., when the compressor is applying gain reduction – the Comp LED at the top of the input signal meter illuminates.

Ratio – this controls how much the louder signals are compressed. The default is 1:1, which means no compression is applied, and the dynamic range of the output signal is the same as that of the input signal. A ratio of 2:1 means that signals above the threshold have their dynamic range halved. The ratio may be adjusted in the range 1:1 (no compression) to 20:1 (generally regarded as limiting).

Make-up Gain – depending on the type of programme material, using a compressor can reduce (or increase) the overall signal level. Adjusting Make-up Gain allows overall unity gain through the compressor to be restored. A range of 0 dB to +10 dB is available.

Soft-Knee – if this checkbox is ticked, the value of Ratio increases gradually for signals around the threshold level. This can reduce any undesirable artefacts of gain reduction.

Stereo Operation:

It is important to note that when ganging several input channels together, the compressor detection circuits of these channels are linked. Thus, when using the compressor on stereo channels, it is very important to gang left and right channels in order to prevent the stereo image from shifting. When working with separate subwoofers or a centre feed, it is advisable not to gang these channels with the left and rights channels as this may lead to unexpected results.

As opposed to what many compressors do, the ganged channels are not summed before the detection circuit. Instead, it is the highest detected signal that triggers the compression. This implementation gives far better results.

Note: a right click in any part of the window gives acces to the copy/paste function of the selected channels compressor.

Routing

Routing: opens a window where you can route the four input channels to the four amplifier outputs..

Note: the routing window can change depending on the amplifier lay-out. In the example below, the chosen lay-out is 4x1-way.
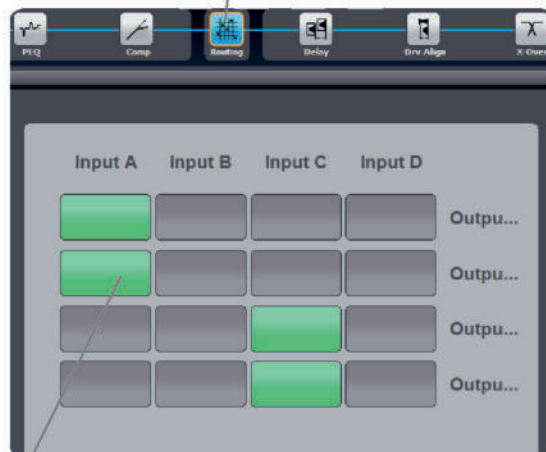
To select a routing-path, double click on any of the grey check boxes. A green check box confirms the patch.
In this example, input A is routed to amp channels 1 & 2, and input C is routed to amp channels 3 & 4.

Driver alignment

In addition to the delay inserted with the delay parameter, each Output Channel may also have an additional delay added. This Driver Alignment delay is included to time-align individual drivers within a cabinet (especially useful for custom designed cabs).

Driver alignment

	Millisecond	Centimetre	Inches	
1 Output 1	1,256	43,1	17,0	Enable
2 Output 2	0,000	0,0	0,0	Enable
3 Output 3	2,090	71,7	28,2	Enable
4 Output 4	0,000	0,0	0,0	Enable

Enable – The ENABLE buttons may be checked to insert driver alignment delay in the channel. Default is Off.
Values can be entered in either milliseconds, centimeters or inches .
Richt click opens the copy/paste field for that channel.

⊠ Crossover

X-over: this screen is where each Output Channel has its frequency response defined, in terms of a hi-pass and a lo-pass filter. As well as being able to set the turn-over frequencies of each filter, it is also possible to define the filter algorithm used to more accurately tailor the response.

FIR files can be loaded into the system.
Please contact Apex for detailed instructions.

Richt click anywhere in the screen opens the copy/paste crossover function for that channel.

Each of the two filters in each crossover has three parameters.

Enable - check this box to set the filter on.

Frequency - the turn-over frequency of each filter is adjustable from 10 Hz to 20 kHz, in 0.1 Hz steps.

Type – 19 different algorithms, based on the three most common filter types are available for each crossover filter. For each filter type, the algorithms differ in the slope of the frequency response (often referred to as the "order" of the filter).
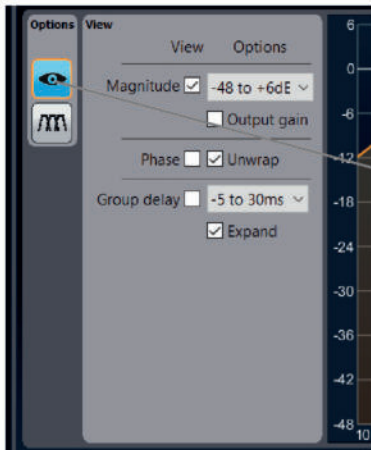
From the options menu, you can select "viewing options" where you can select what functions have to be included in the total view of the selected channel.
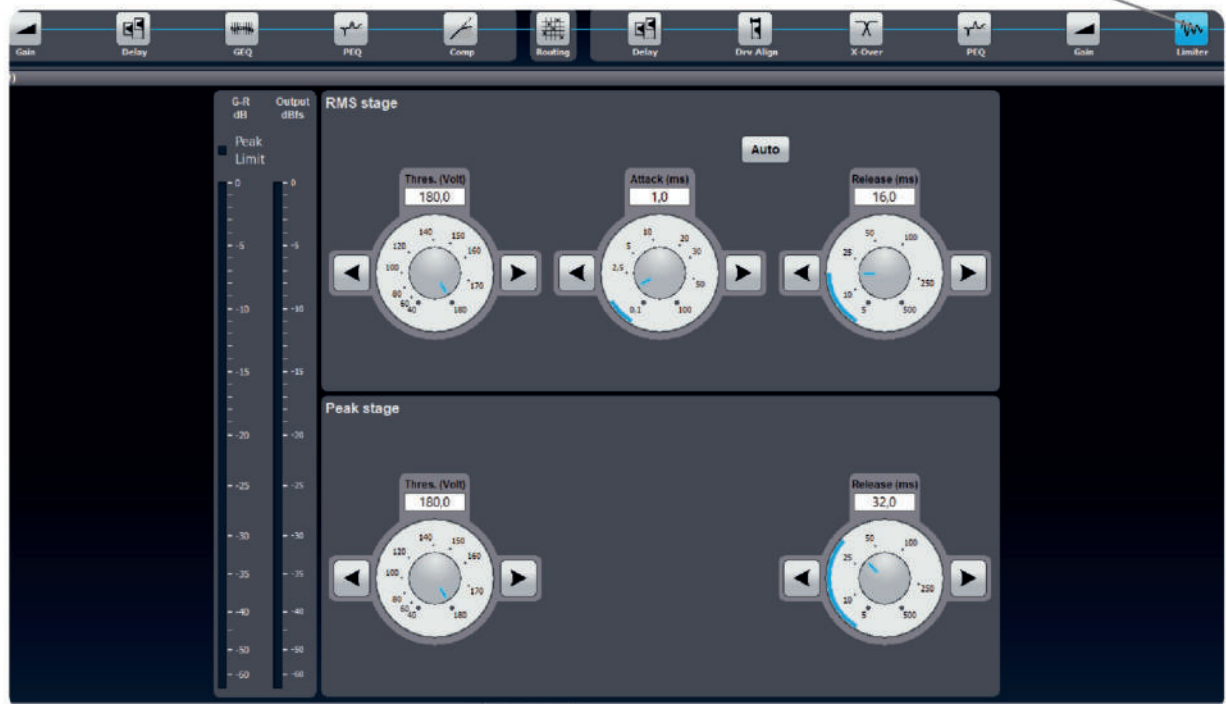
The vertical scale range has four different presets.

From the options menu, you can select "view groups " where you can select what output channels have to be included in the view.
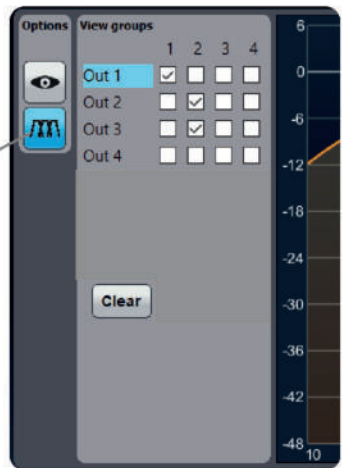
ᴹ Limitter

RMS Threshold - this is the RMS signal level above which limiting is applied. The threshold may be set at any level below 180V (the default) down to 40V.

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. 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.

Auto - this sets an automatic time constant relation between Attack and Release depending on the threshold setting.

Peak Threshold - this is set in an identical manner to RMS Threshold. The software prevents the Peak Threshold from being lower than the RMS Threshold: if this were possible, the peak limiter would be unable to operate. When the signal level exceeds either threshold – i.e., when the limiter is working – the Limit LED at the top of the output signal meter illuminates.

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.

Richt click anywhere in the screen opens the copy/paste limitter function for that channel.