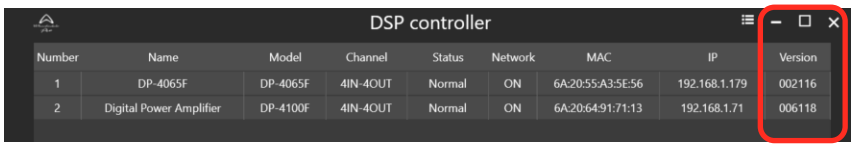
DSP Controller v1.1.8 Software Guide

Table of Contents

Amplifier Versions

There are two versions of DP-F and DP-N series amplifiers, each version has slightly different software features and some layout differences. This manual includes sections detailing both shared features and unique features.
Sections are labeled in header pages as either;

V1 002116 Firmware
V2 006118 Firmware



Number	Name	Model	Channel	Status	Network	MAC	IP	Version
1	DP-4065F	DP-4065F	4IN-4OUT	Normal	ON	6A:20:55:A3:5E:56	192.168.1.179	002116
2	Digital Power Amplifier	DP-4100F	4IN-4OUT	Normal	ON	6A:20:64:91:71:13	192.168.1.71	006118

Or both when features detailed are the same across both versions. Some sections will also include a small note with the specified firmware and version number where small differences are described.

Amplifier version can be identified from the front and back panel, differences are shown below;
V1 002116 Firmware

V2 006118 Firmware

All software and hardware differences are detailed in the table on the next page.

Amplifier Versions

SOFTWARE FEATURES - DSP Control Software v 1.1.8	Original Versions	Updated Sept 23 versions only
Added input groups function. EQ, Level, Polarity and Mute	Yes	Yes
Added General tab for mute, delay and volume shortcuts.	Yes	Yes
Amp will start in Factory mode by default now with no need to enter a password.	Yes	Yes
Permissions page has been updated to have three access levels "User", "Installer" and "Factory" with independent passwords and customisable accessibility.	Yes	Yes
"Demo mode" replaced with "Virtual Device" page with more options and list customisation.	Yes	Yes
Virtual device settings can be saved and assigned to physical devices.	Yes	Yes
Physical devices can be saved to a virtual device.	Yes	Yes
"Device Mirror" page removed.	Yes	Yes
"Phase" now changed to "Polarity" in Output section.	Yes	Yes
"Save your changes" popup has now been removed when returning to home page, with settings now being automatically saved persistently.	Yes	Yes
IP Address in Device View	can be viewed	can be viewed and changed
New light mode theme now available for the software GUI.	Yes	Yes
*Threshold can now be adjusted for input backup failover.	No	Yes
*Analogue input source can be chosen for each input DSP channel.	No	Yes
*Output Mutes can now be linked.	No	Yes
*Input volume can now be linked.	No	Yes
*Input source can now be independently muted.	No	Yes
*Added input source delay section with up to 100 ms of Delay.	No	Yes
*Added multiband input compressor functionality.	No	Yes
*Output EQ now has 8 filters available.	No	Yes
*Input Source now has naming option.	No	Yes
*Added input groups Delay function	No	Yes

HARDWARE FEATURES	Original Versions	Updated Sept 23 versions only
*2 channel AES/EBU input now available.	No	Yes
*Multicast IP settings now available.	No	Yes
*New colour IPS display.	No	Yes
*Encoder size reduced.	No	Yes
*Updated front panel menu functions.	No	Yes
*Rear panel speakON connectors now labelled with ChA and B on A connector, and ChC and D on C connector.	No	Yes
*40 device presets can now be stored to an amplifier.	No	Yes
*RJ45 connector rotated 180 degrees.	No	Yes
*Locking XLR connectors now included	No	Yes

Original Versions= V1 002116 Firmware | Updated Sept 23 versions only = V2 006118 Firmware

V1 002116 & V2 006118 Firmware Amplifiers
Shared Software features guide

Installation and Connection
Main Device Page
Amplifier Control Page (navigation)

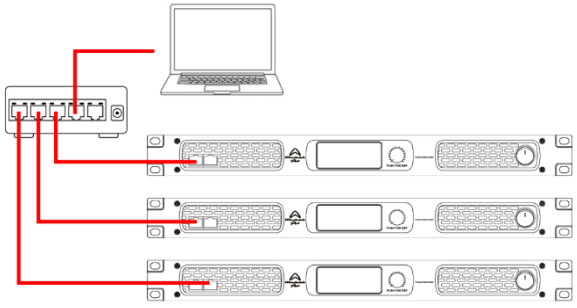
Installation and Connection

Download and install the DSP Controller Software from www.wharfedalepro.com/downloads
Software is compatible with a Windows PC only.

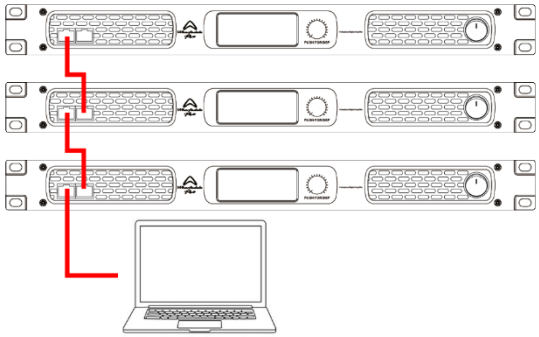
Connect amplifier network to the PC using the front panel RJ45 connectors, you can connect via a switch, daisy chain amplifiers or use a Wi-Fi router / access point. Ensure network cable length is no longer than 100 meters maximum.

For DP-F or software control only, ethernet network speed is 100 Mbps minimum.
For DP-N and Dante ™ connectivity, it is recommended to use gigabit Ethernet (1 Gbps) for best performance.
Wi-Fi connection is not possible when using Dante ™.

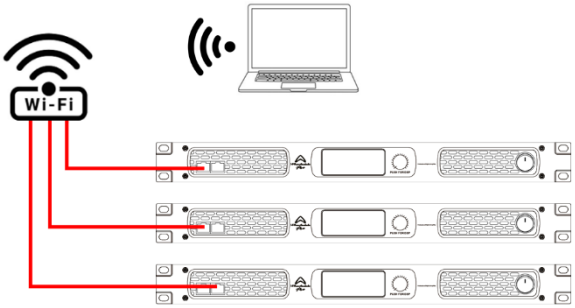
Example configurations



Network Switch Connection



Daisy Chain Connection



Wi-Fi Connection

Network Configuration

If using a DHCP server, set amplifier to “Auto-DHCP” IP mode
Otherwise, set amplifier to “User-Set” IP mode and enter appropriate IP address for your network adaptor.

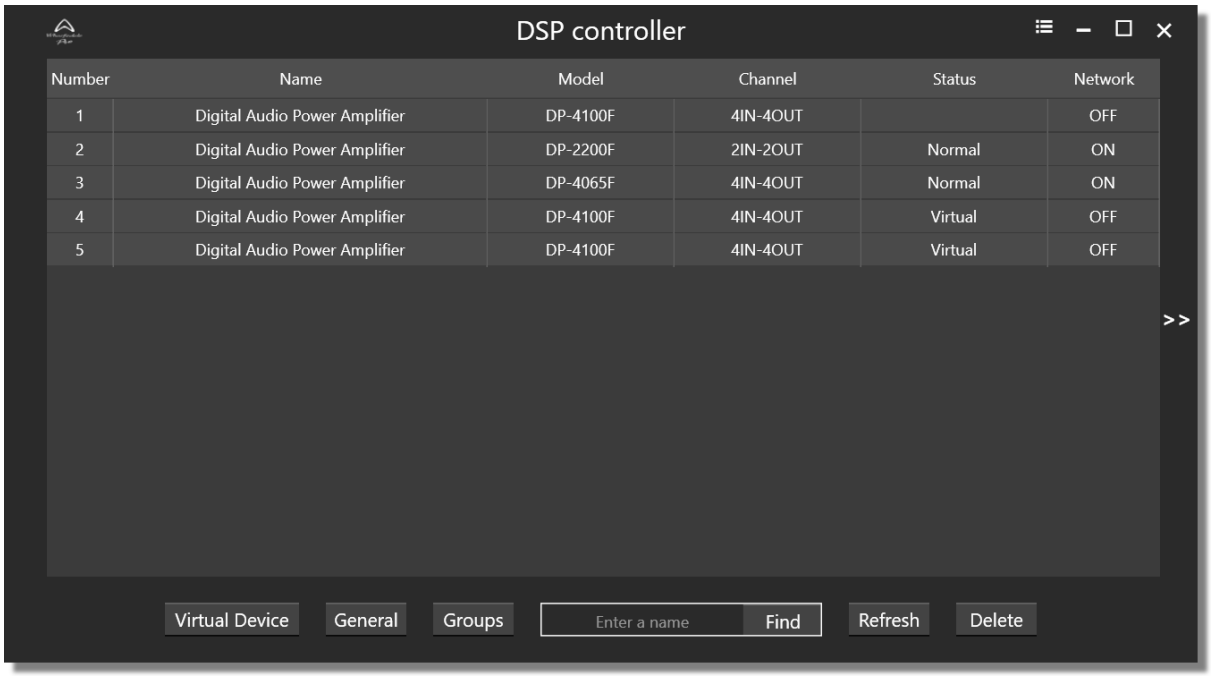
***IP Mode can be set from the amplifier front panel:**
> Click encoder to access menu
> Navigate to and click on “Settings”
> Click on “IP Mode” to change between “Auto-DHCP” and “User-Set”
> Click on “Amp IP” to manually enter an IP address

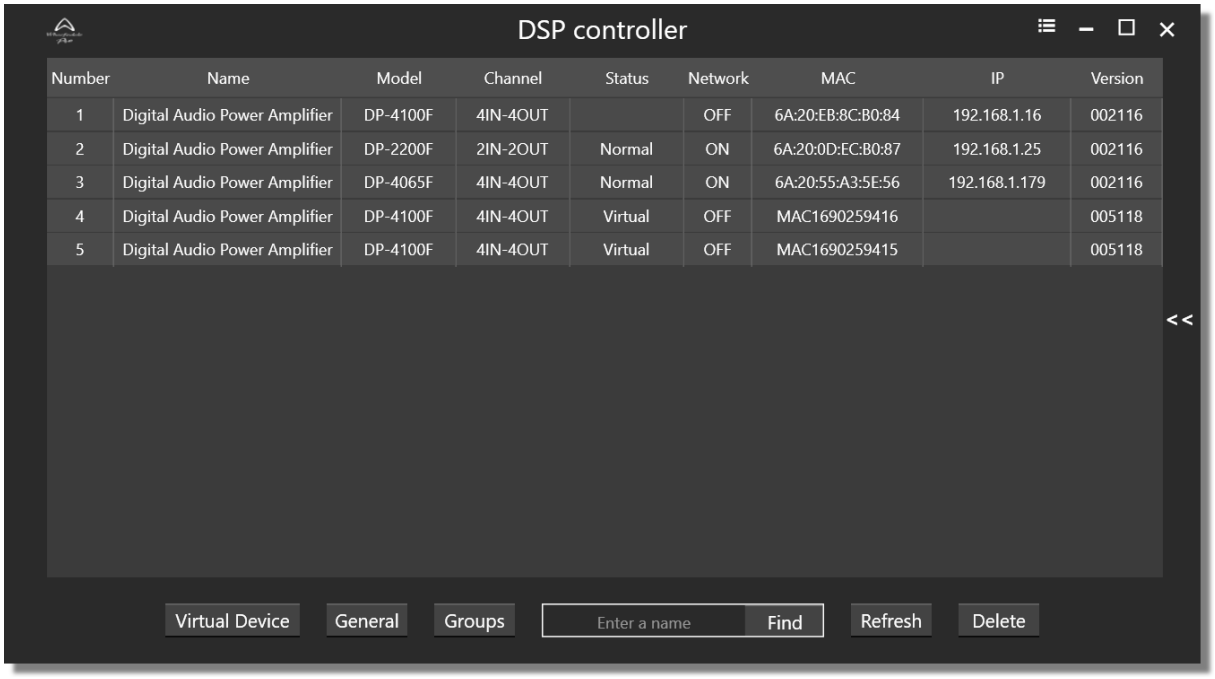
V2 006118 Firmware Amplifiers have a Multicast IP option, selectable from the front panel settings Menu. This should be used when networking several amplifiers from one single amplifier.

*For DP-N Dante ™ IP settings, please use Audinate Dante ™ Controller software and related documentation

Main Device Page - List View

Once network is connected, open the DSP Controller Software. Once loaded you will see the Main Device List View. This page lists all connected, previously connected and virtual devices. With each line representing one amplifier. You can view more details by clicking the **> >** icon to the right of the window.

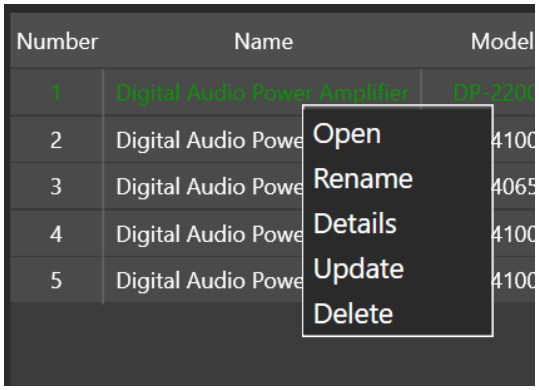




Main Device Page - List View

Name: Displays the name of the amplifier, right click to edit. This name is also displayed on the front panel display.
Model: Amplifier model name
Channel: Details the input and output channel configuration
Status: Shows the fault or warning state, will light orange for a warning and red for a fault.
Or indicate virtual / offline state.
Network: Indicates current network state ON or OFF
MAC: Amplifier MAC address
IP: Network IP address
Version: Displays installed firmware version for the amplifier

Virtual Device: Click to access virtual devices window
General: Click to access General control window for Mute, Output Delay and Volume shortcut functions
Groups: Click to access Groups window to configure and control input channel groups
Find: Enter text here to search and highlight specific amplifier name in the list view
Refresh: Click to refresh the network
Delete: Select an amplifier line and click here to remove from the list view.

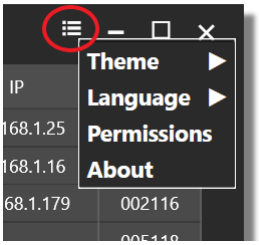


You can select an amplifier line and right click to access the following amplifier specific functions.

Open: Will open the amplifier configuration page
Rename: Change the name displayed in the software and front panel of the device.
Details: Displays more detailed amplifier information with option to save to a .txt file.
Update: Firmware update option.
IMPORTANT: **Refer to software release documentation before updating amplifier firmware**
Delete: Deletes the amplifier from the list view

You can access further software options using the menu button

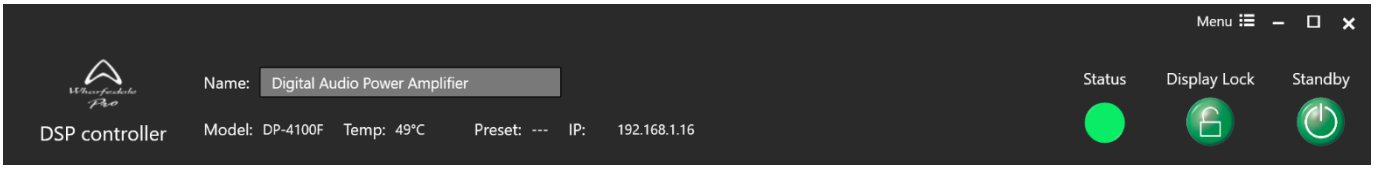
Theme: Light or Dark mode software theme options
Language: Language options (English or Chinese)
Permissions: Opens the permissions window for access level configuration
About: Displays DSP Controller software version



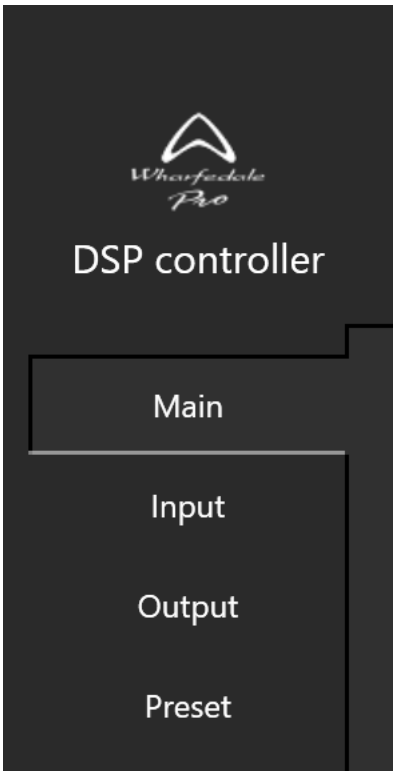
Key functions are detailed on the next page.

Amplifier Control Pages

By double clicking, or right clicking and selecting open on an amplifier line you can access individual Amplifier Control Pages. The top bar of this page contains the following functions;



Name: Displays amplifier name, click to rename
Model: Displays amplifier model
Temp: Overall amplifier temperature sensor reading
Preset: Displays the name of currently loaded device preset
IP: Displays the amplifier IP address, in v2 006118 amplifiers this can be used to change the IP address
Status: Overall fault or warning status. Green is OK, Flashing Green is standby, Orange is a warning, Red is a fault.
Display Lock: Click to lock the front panel display functions of the amplifier
Standby: Puts the amplifier into a power saving standby mode
Menu: Access to theme, permissions, and language options



Navigation

You can navigate to different sections of the amplifier DSP control using the left hand side menu:

Main: Overall Channel gain, sensitivity, mute and internal sensor readings

Input: Access input matrix and DSP functions

Output: Access output DSP settings

Preset: Access device and channel preset store and recall options

Each sections functions and operation are detailed on the following pages.

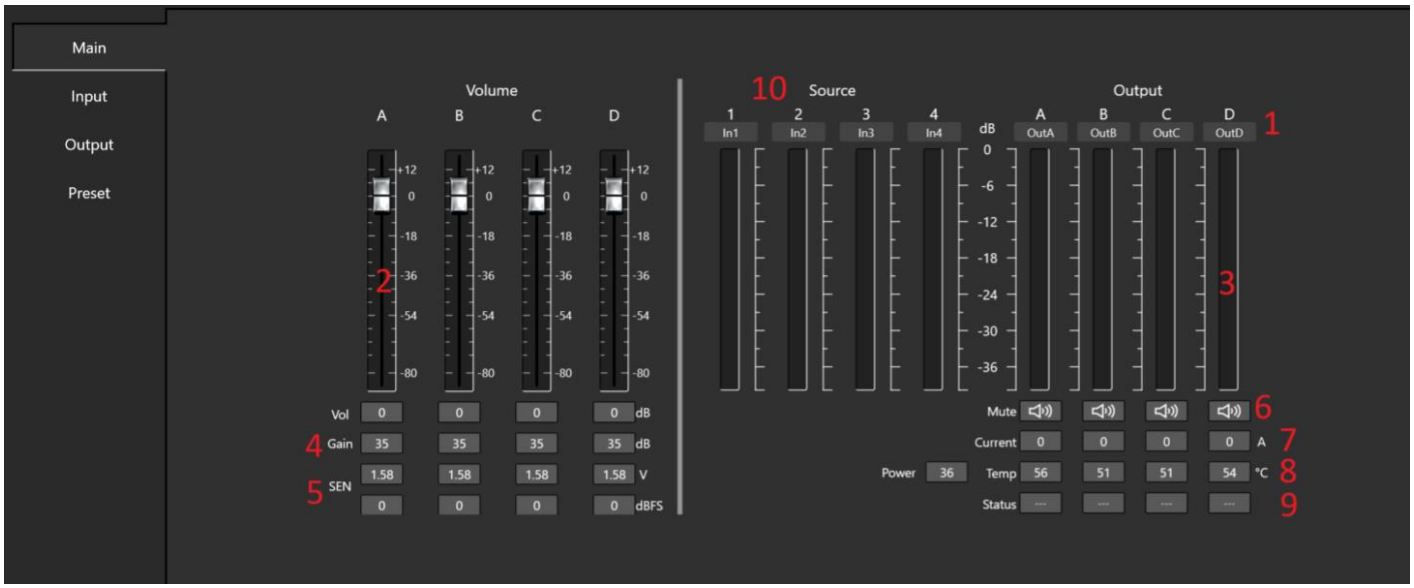
To return to the Main Device Page, click the X in the top right of the window
All setting changes will be saved persistently to the amplifier

V2 006118 Firmware Amplifiers
Specific Software features guide

Amplifier Control Section

Main Page

The main page displays all amplifier channels and Gain faders. Along with internal sensor functions.



1: Displays amplifier channel and preset "Out Type" name, click to edit channel name

2: Fader for amplifier Gain control / attenuation, numerical value can be entered by clicking the box under the fader control

3: Output channel dBu level meter

4: Channel amplifier Gain value. This is fixed at 35 dB amp gain

5: Input sensitivity, shown in volts and dBFS. This corresponds to the maximum input value before clipping for either analogue (V) or Digital (dBFS) signals.

6: Output channel Mute button

7: Current draw reading of amplifier channel

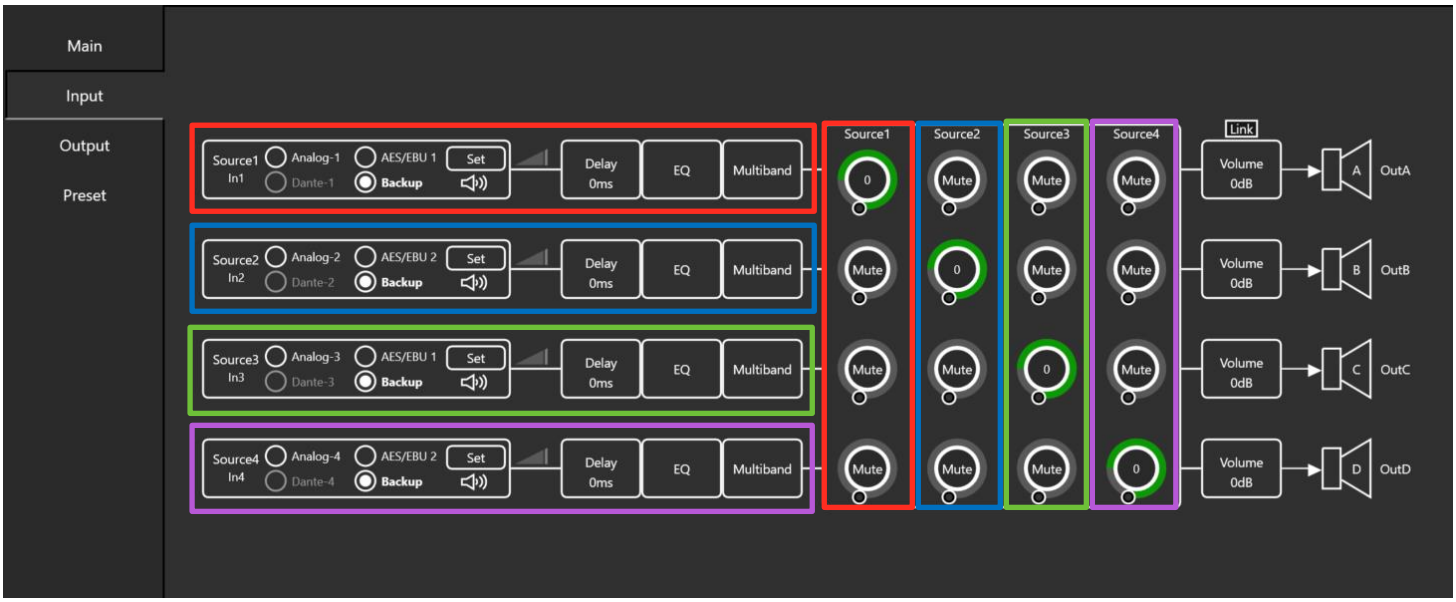
8: Power and Temperature sensor reading of amplifier channel

9: Channel warning or fault status reading

10: Input Source Meter and Input labels, click to edit input source channel name

Input Page and Matrix

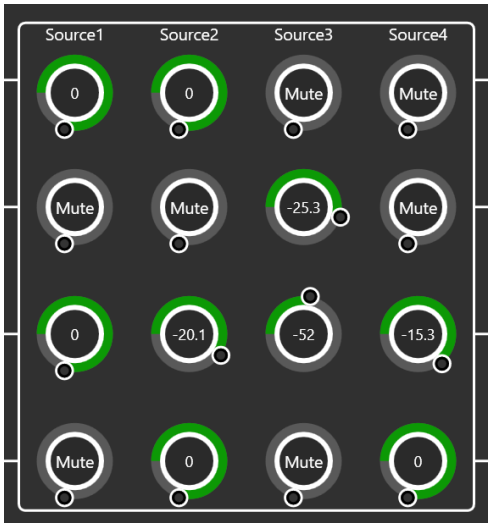
The input page allows configuration of input DSP settings for each amplifier.



Each input source selection and EQ row related to the corresponding column in the input selection matrix.
The above image details where each input source and related EQ section
If summing multiple input sources to one output channel, it is recommended to link input source EQ's to ensure any changes made affect both input sources.

The LINK button above the right hand side Volume controls can be used to give linked volume control over amplifier channels. This will also affect the faders in the MAIN page.

Input Matrix



The input Matrix section can be used to mix input sources fed to output channel

You can mute or unmute by clicking on the inside section of the circle

Numerical values can be entered by right clicking the inside section of the circle

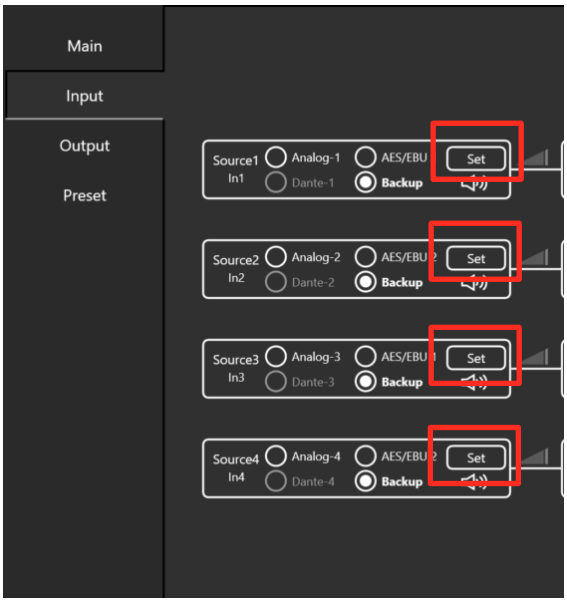
Manual level can be set by clicking the small outer circle and rotating the control

This allows the same input signal to be used across 4 channels

It can be useful to SUM stereo sources in mono for subs or fills etc

Input Set Page – Source Selector

The input Set page allows configuration of input sources.



Depending on amplifier type (DP-F or DP-N) up to four choices are available.

Analog – Delay and Trim can be adjusted to balance for seamless digital input failover, you may also pick the input source using the drop-down menu. For example, Input 1 can be routed to all four channel sources allowing all 4 separate input DSP sections to be utilized from just one XLR input. Or any combination as required. Select this box to force only Analog input to be used.

Dante™ – Configure Dante™ source using Dante™ Controller, select this box to force only Dante™ input to be used. You can also adjust Delay and trim settings to balance for seamless input failover.

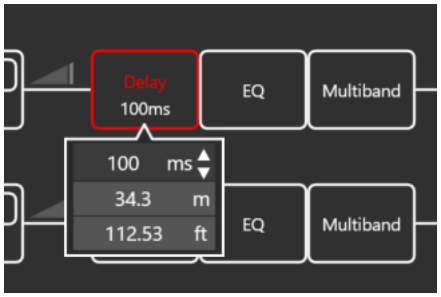
AES/EBU – Channel 1 and 2 use AES/EBU input 1 and 2 respectively, Channel 3 and 4 use AES/EBU input 1 and 2 respectively. Delay and trim settings can be adjusted to balance for seamless input failover. Select this box to force only AES/EBU input.

Backup – Backup can be selected for input source failover, this is based on a level detection with threshold adjustment. Set this to just above the noise floor of the analog audio level. The failover transition is instant so as long as input sources are correctly level and delay balanced this transition will not be noticed.

You can change the failover order by clicking the **>** button.

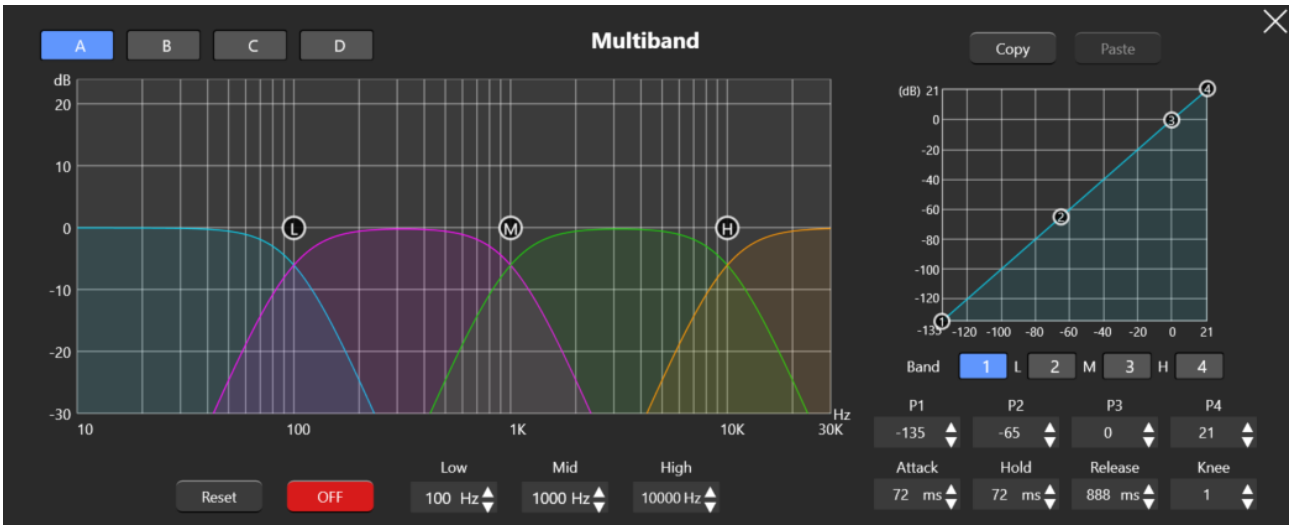
Delay and Meters

Input delay up to 100 ms can be added to each input source. To the left of this field you can view input channel meters.



Input EQ can be accessed using the EQ button here, details for this page are in the later section of this manual.

Multiband Input Limiter



Each input has a 4 way multiband limiter available, by default this is set to OFF.

Channels can be selected using the A, B, C and D controls on the top left.

You can adjust band frequencies using the Low, Mid and High crossover controls and power limits for each of the four bands using the P1, 2, 3 and 4 sections on the right or in the graph section. Time constants can also be adjusted in these sections.

Simply, select which band you wish to edit using the BAND buttons under the graph, then adjust as required.

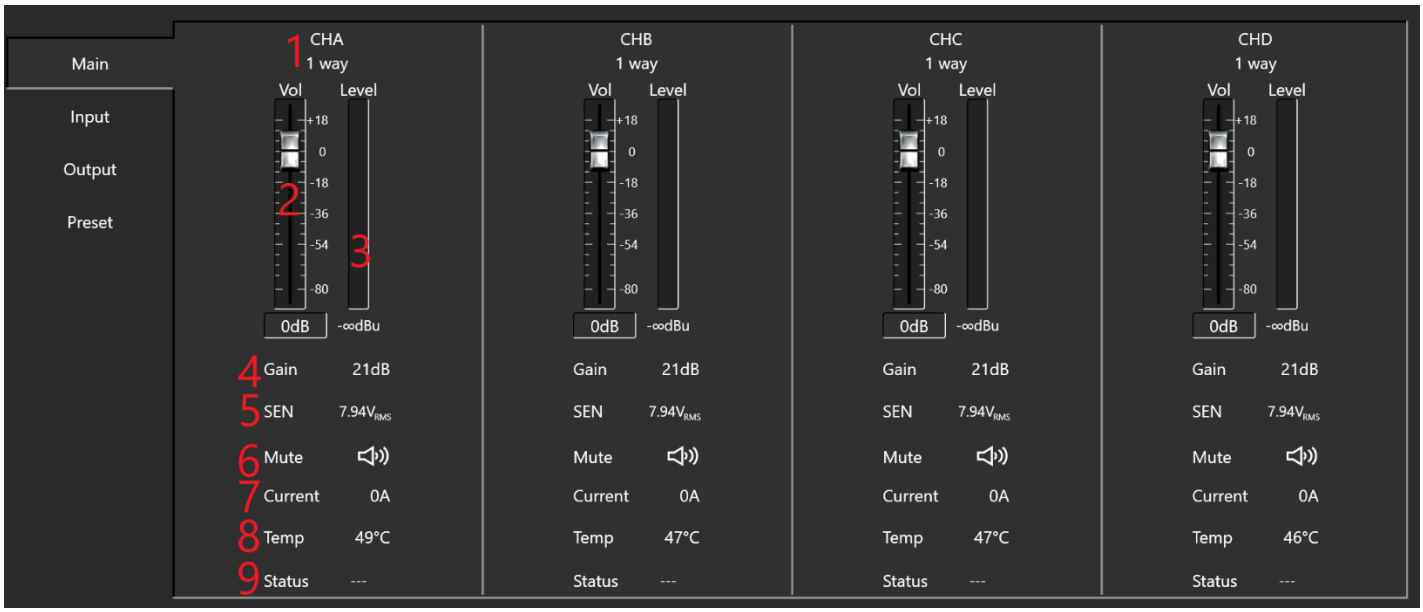
All P values are in dBu, from -135 dBu up to + 21 dBu.

V1 002116 Firmware Amplifiers
Specific Software features guide

Amplifier Control Section

Main Page

The main page displays all amplifier channels and Gain faders. Along with internal sensor functions.



1: Displays amplifier channel and preset "Out Type" name

2: Fader for amplifier Gain control / attenuation, numerical value can be entered by clicking the box under the fader control

3: Output channel dBu level meter

4: Channel amplifier Gain value. This will change depending on the volume set in the channel. It is suggested to set 35 dB amplifier gain structure, matched across amplifiers, this can be done using the following values for each amplifier model;

DP-4035F(N) +18 dB
DP-4065F(N) +16 dB
DP-4100F(N) +14 dB
DP-2200F(N) +11 dB

5: Input sensitivity setting for specified amplifier gain value.

6: Output channel Mute button

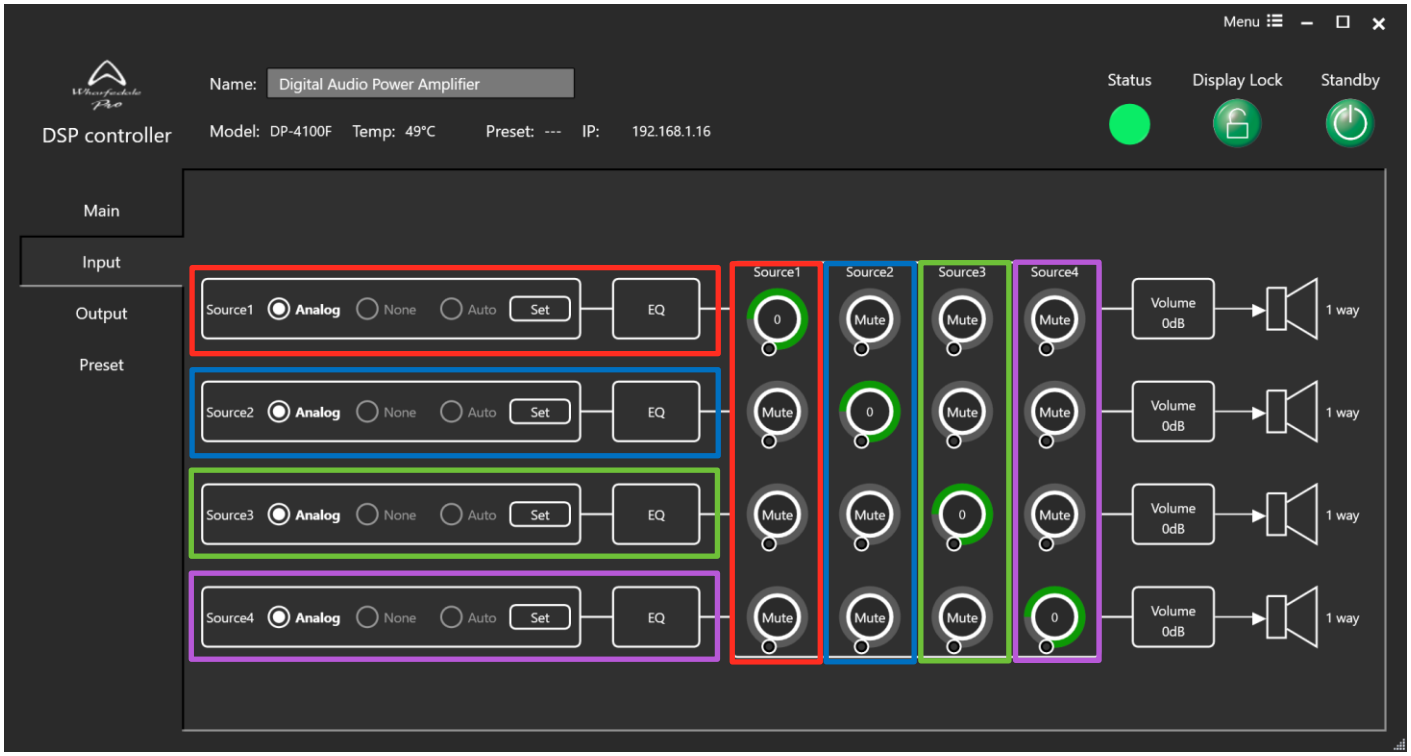
7: Current draw reading of amplifier channel

8: Temperature sensor reading of amplifier channel

9: Channel warning or fault status reading

Input Page and Matrix

The input page allows configuration of input DSP settings for each amplifier.



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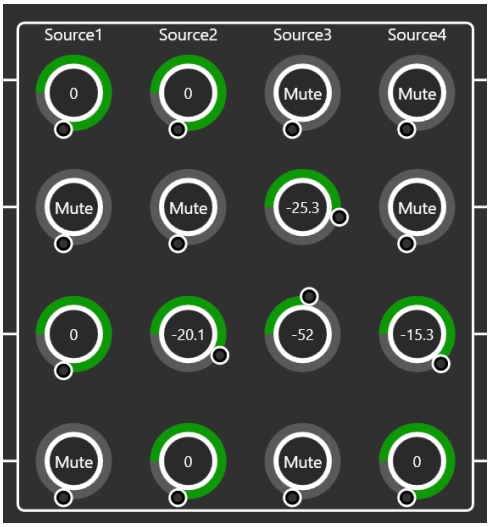
Input Matrix



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Numerical values can be entered by right clicking the inside section of the circle

Manual level can be set by clicking the small outer circle and rotating the control

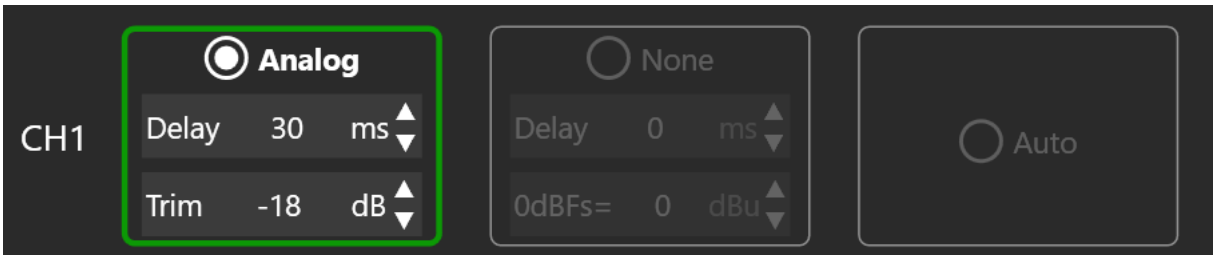
This allows the same input signal to be used across 4 channels

It can be useful to SUM stereo sources in mono for subs or fills etc

Input Set Page - Source Selector

Click the "Set" button to access source selection options

In DP-F series, only analog input is available, and this page only includes input delay and input level trim.
Input delay can be up to 30 ms
Input Trim is +/- 18 dB



For DP-N series, Analog or Dante ™ input is available. With independent delay and trim options for each input type.

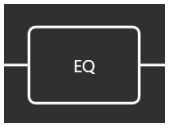
You can select input type, using the circular button at the top of each box, or choose Auto.

Auto mode will prioritize Dante ™ audio input, and automatically swap to Analog if level drops below -80 dBu.
Dante ™ 0dBFs reference point, and delay, can be set to match analog input level to ensure seamless failover.
Once signal is detected on the Dante ™ channel above the -80 dBu threshold, Dante ™ audio will be prioritized once again.

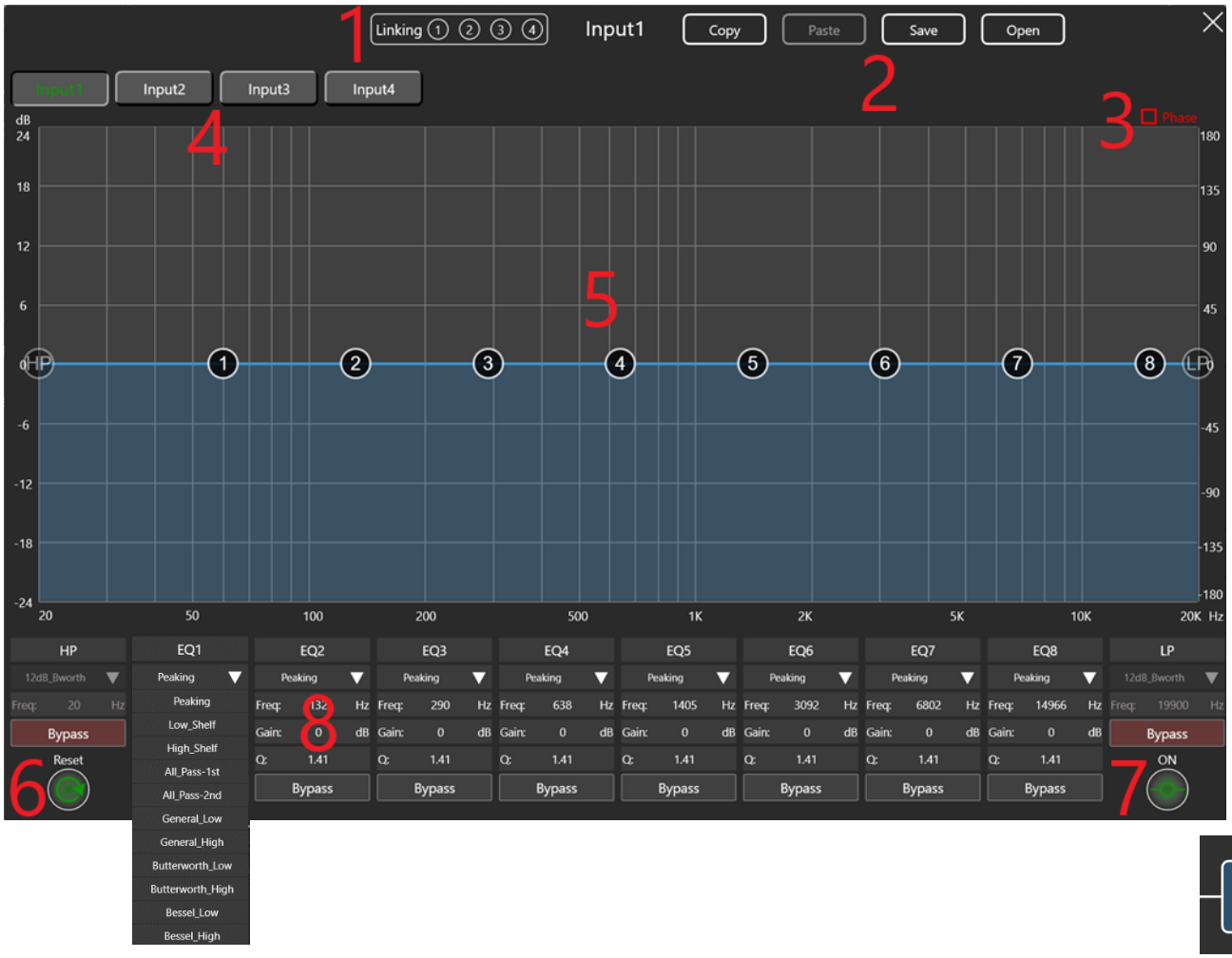
V1 002116 & V2 006118 Firmware Amplifiers
Shared Software features guide

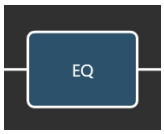
Amplifier Control Section
Permissions Settings
General Page
Groups Page
Fault and Warning Notifications

Input Page - Input EQ



The Input EQ window can be opened using the button on each corresponding channel.

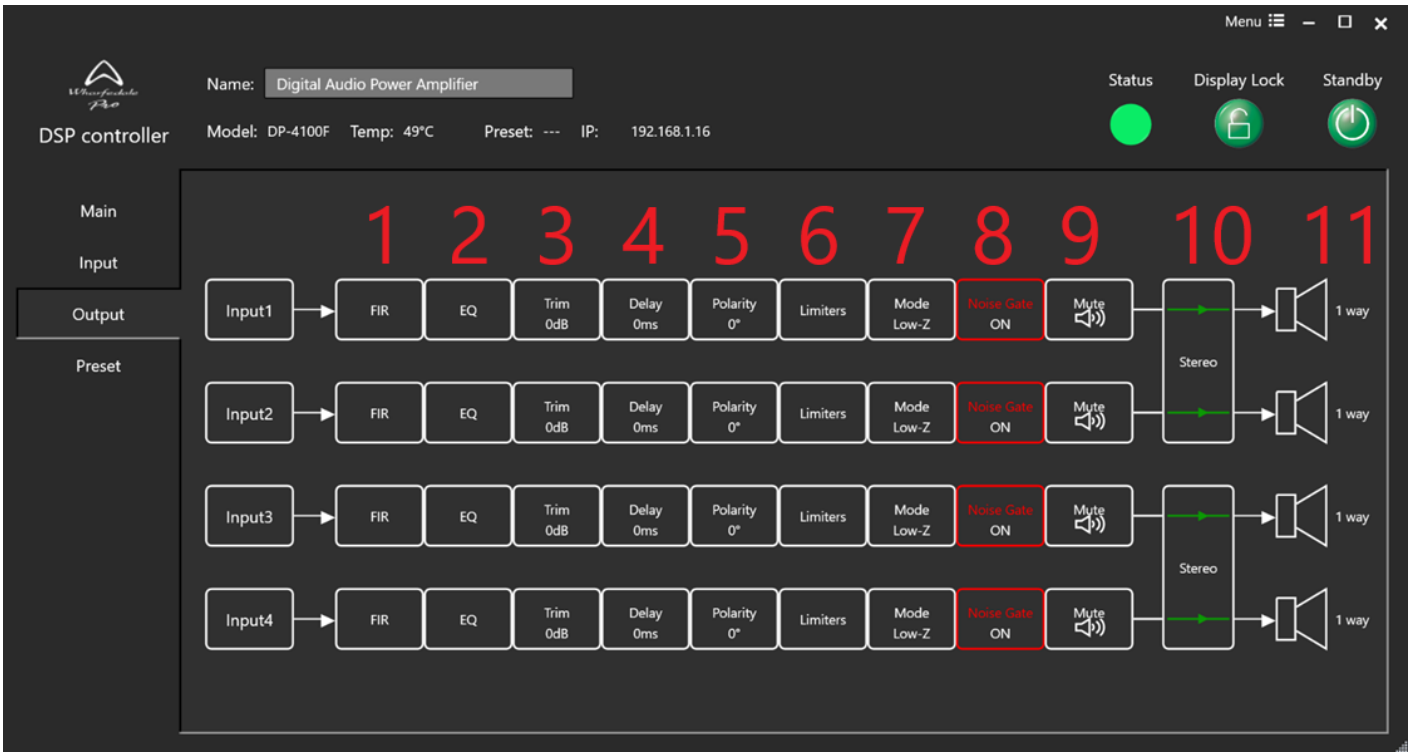


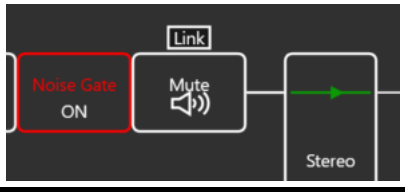


1. Input EQ channels can be linked using the circular buttons, linked channels will be indicated with a blue highlight
2. Input EQ settings can be copied and pasted from one channel to another, or saved to the PC with a .eq8 file
3. The EQ effect on phase can be displayed by clicking this button
4. Input EQ channel navigation buttons
5. Input EQ main display and mouse edit area
6. Reset button to flatten and set EQ to default state
7. EQ on or bypass option
8. Filter text input area, with dropdown menu for various filter type options and individual filter bypass

Output Page

In the output section you have all the settings to optimize your loudspeaker system performance, this is also all the information included when saving or recalling a specific channel preset file.





NOTE: V2 006118 Firmware amplifiers also give the option to link all output mute controls together

Output Page

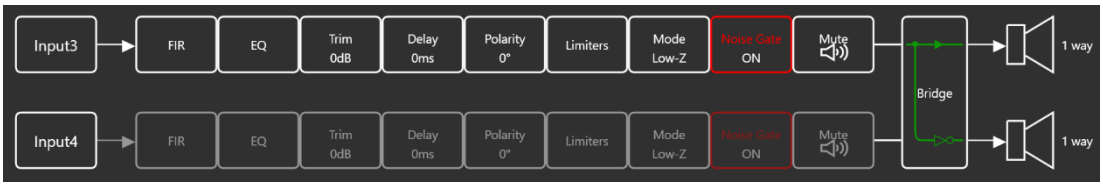
1. **FIR section**: 512 taps @ 48 Khz sample rate FIR coefficient text file can be loaded via third party software
2. **Output EQ:**
   V1 02116 Firmware - 5 band parametric EQ with HP and LP filters. See Input EQ page for detailed overview.
   V2 06118 Firmware - 8 band parametric EQ with HP and LP filters. See Input EQ page for detailed overview.

   NOTE: Presets made with V2 06118 Firmware will recall into the V1 02116 Firmware amplifiers, but will ignore filters 6, 7 and 8.

3. **Trim:** adjustable output channel Gain control up to +18 dB
4. **Delay:** up to 20 ms delay option per channel
5. **Polarity:** 180 degree polarity flip option
6. **Limiters:** RMS and PEAK voltage limiter control window, including calculator for load impedance and watts value.

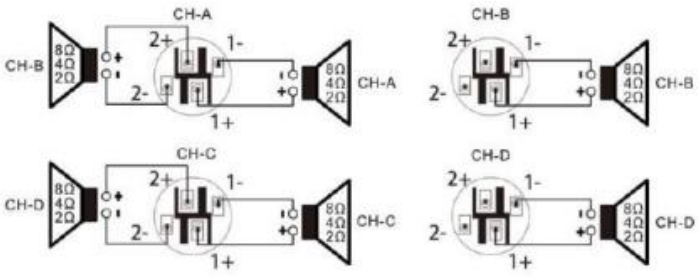
   AUTO will calculate automatic time constant value based on signal detection
   RMS Release is based on a multiple of 4 times the RMS attack value

7. **Mode:** Lo-Z, 70v or 100v (DP-2200F(N) only) options. Selecting 70v or 100v will grey out limiter setting and calculate automatically based on selection
8. **Noise gate:** On by default, click to turn off. Will mute amplifier channels when low signal threshold is detected.
9. **Mute:** Output mute controls
10. **Stereo / Bridge mode switch:** Click to activate bridge mode, this will grey out channel B or D.
    WARNING: ENSURE LIMITER SETTING IS CHECKED AND RE-CALCULATED CORRECTLY AFTER SWITCHING TO BRIDGE MODE WHEN USING V1 02116 FIRMWARE AMPLIFIERS

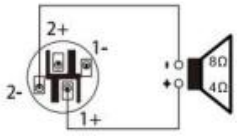


OUTPUT CONNECTIONS

DEFAULT MODE

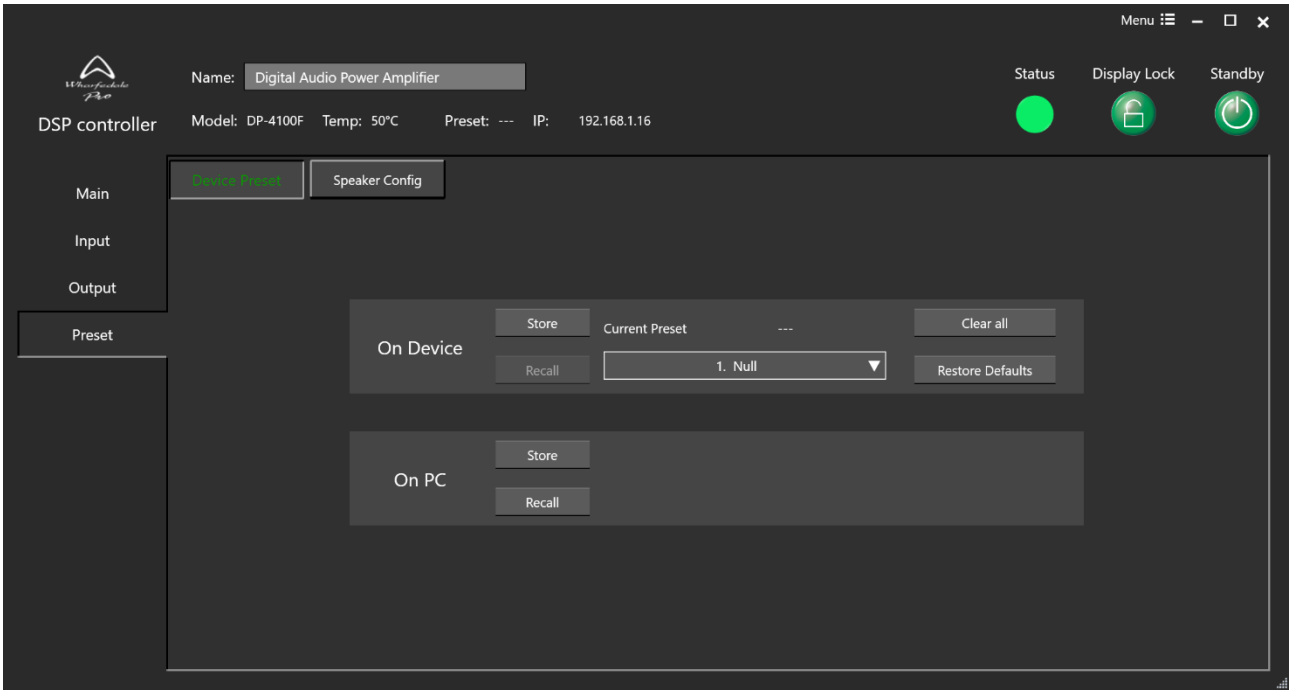


BRIDGE MODE



Preset Page – Device Preset

Preset page functions are split across two sections, Device Preset and Speaker Config.



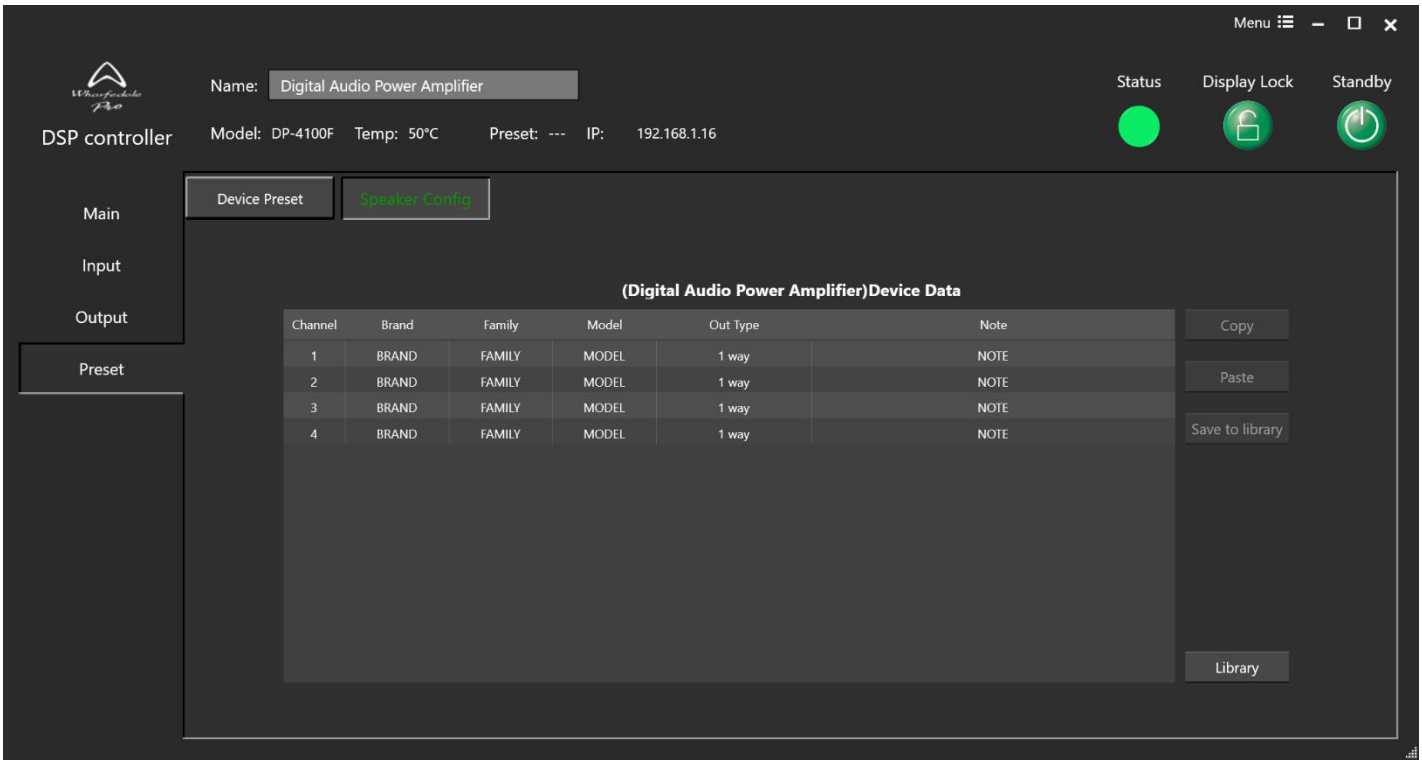
On Device: Storing a preset here will save Input and Output page settings across all channels, to the amplifiers internal memory. Clicking store will give a text prompt to enter preset name. You can clear all saved presets using the "clear all" button and restore amplifier channel defaults using the "Restore Defaults" button.

You can recall On Device presets from the amplifier front panel, and the recalled preset name will show on the bottom of the main front panel page, and in the "Preset" section at the top bar of the software.

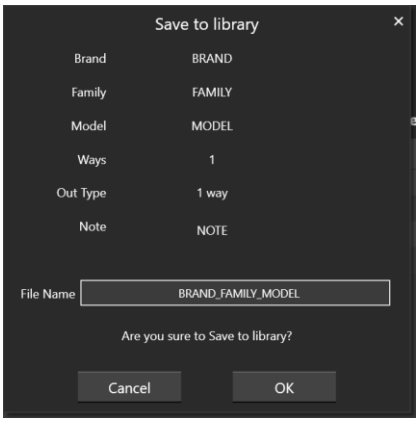
WARNING: v1 2116 Firmware Only FIR and channel naming settings will not save or recall when using On Device presets. For FIR based preset recall it is essential to use only On PC device presets. FIR files will save and recall correctly on v2 5118 firmware amplifiers.

On PC: Storing a preset here will save all Input and Output settings to the PC memory as a .sd file. Storing and recalling here will work on all settings including FIR but will not recall channel naming settings.

Preset Page - Speaker Config

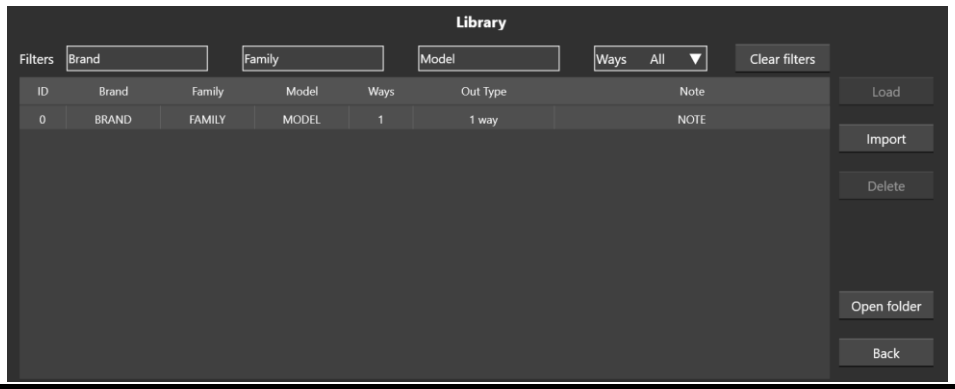


The speaker config page is where you can label and save, or recall individual channel presets.



Double click on each column to edit the text, you can then select the channel and click "Save to Library" and a popup will give you the option to enter a custom file name instead of the automatically populated default.

Once presets are saved, you can navigate to "Library" to view and recall them. These files are saved locally to the PC as .sl files and can be accessed by clicking the "open folder" button. This Library will show on all amplifiers connected to the software.

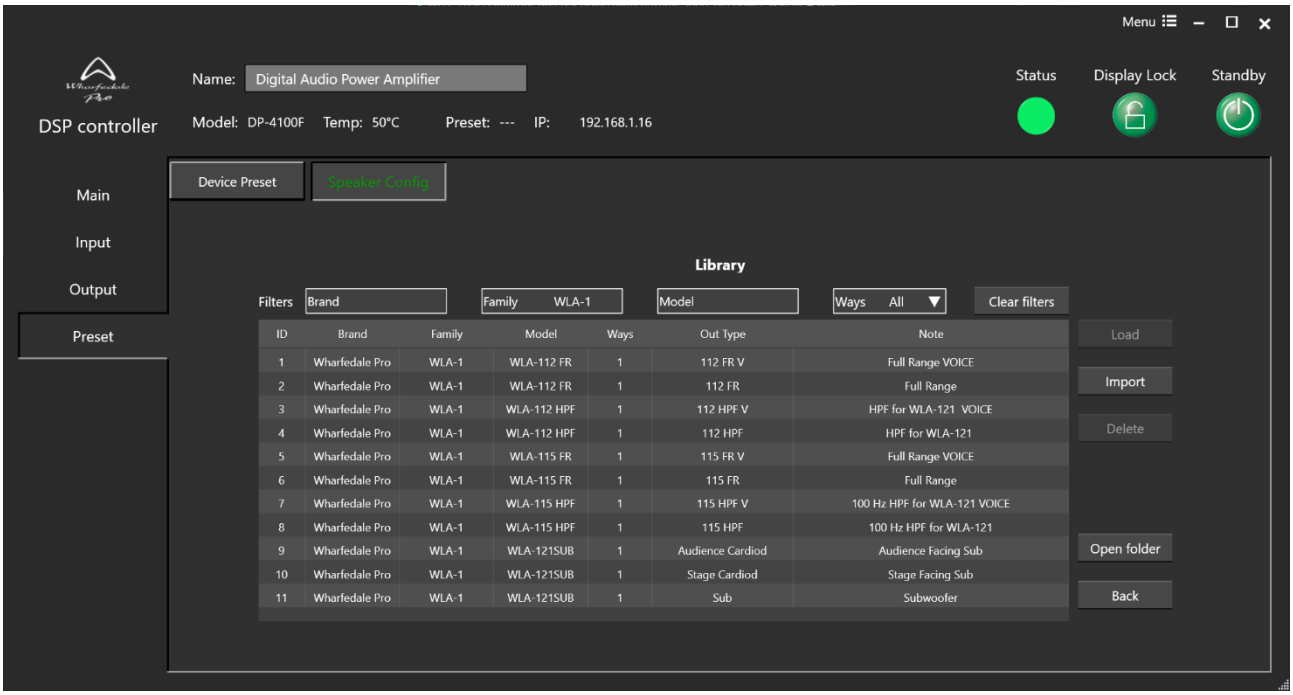


Preset Page – Import and recall

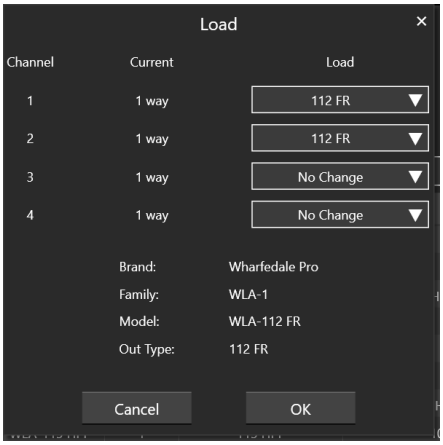
Once in the Library view, you can also import presets.
The Wharfedale Pro Preset Library contains all loudspeaker models DP-F and DP-N series presets and can be downloaded separately from www.wharfedalepro.com/downloads

Once this is downloaded to your PC, you can click Import and navigate to the specific presets you need, select them and click open to add to the library.

You will then be able to see the full list of presets, and use the navigation filters to find specific ones.



To recall a preset to a channel, select it to highlight in green. Then click “Load”.



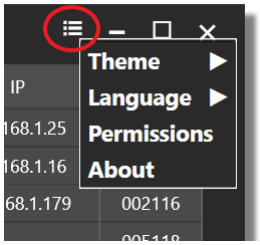
You can then select each channel you wish to load the preset into With the option to load the same preset into multiple channels.

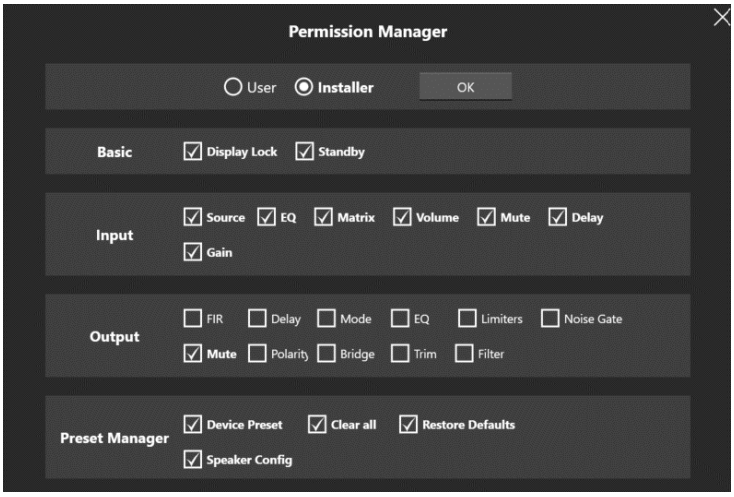
The preset “Out Type” naming value will be shown on all corresponding input and output labels across the software.

TIP: Use the Out type naming field to customize channel naming and make navigation easier once your system is setup.

Permissions Page

DSP Controller v1.1.8 is now equipped with three access levels, these can be selected by clicking the top right menu button on either the Main Device list view or amplifier control pages and selecting Permissions.



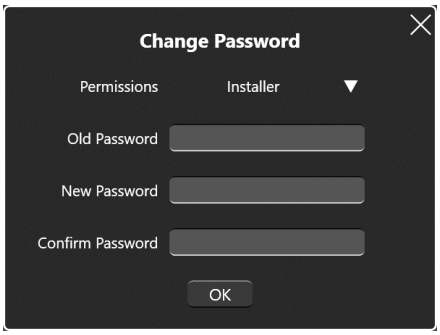


Clicking “Change Password” will give a popup where the passwords for Installer and Factory mode can be set

WARNING: Choose a memorable password and keep a note of it!
If you forget your password, please contact applications@wharfedalepro.com for instructions on recovery

The default passwords are:

Installer: 000000
Factory: 111111



DEFAULT ACCESS LEVELS

USER Main page accessible, input page locked excluding Levels and Mute, output page locked excluding Mute, preset pages locked

INSTALLER Main page accessible, Input page accessible, output page locked excluding Mute, preset pages accessible

FACTORY All pages accessible

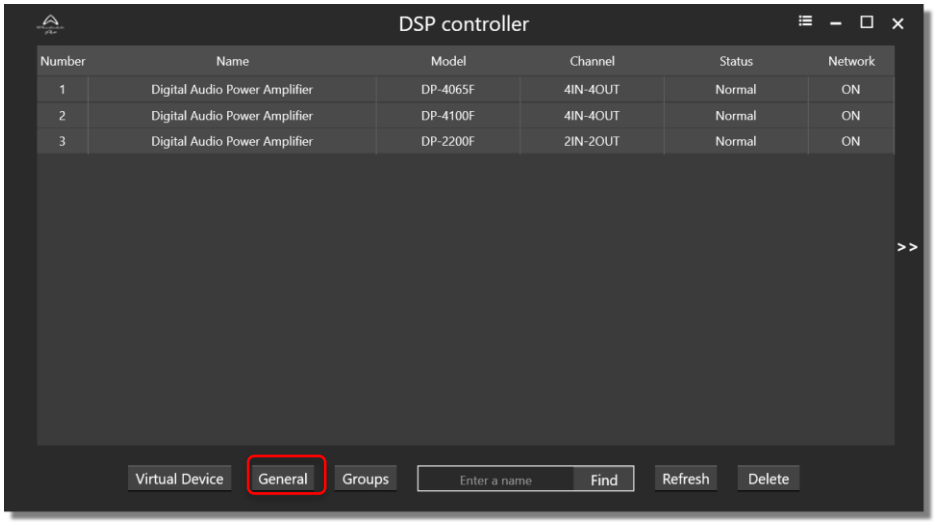
Clicking the “Set” button will allow full customization of Installer access levels, and user access levels excluding the Output section which remains fully locked except Mute controls.
Groups and General pages are accessible at all access levels.

General Page

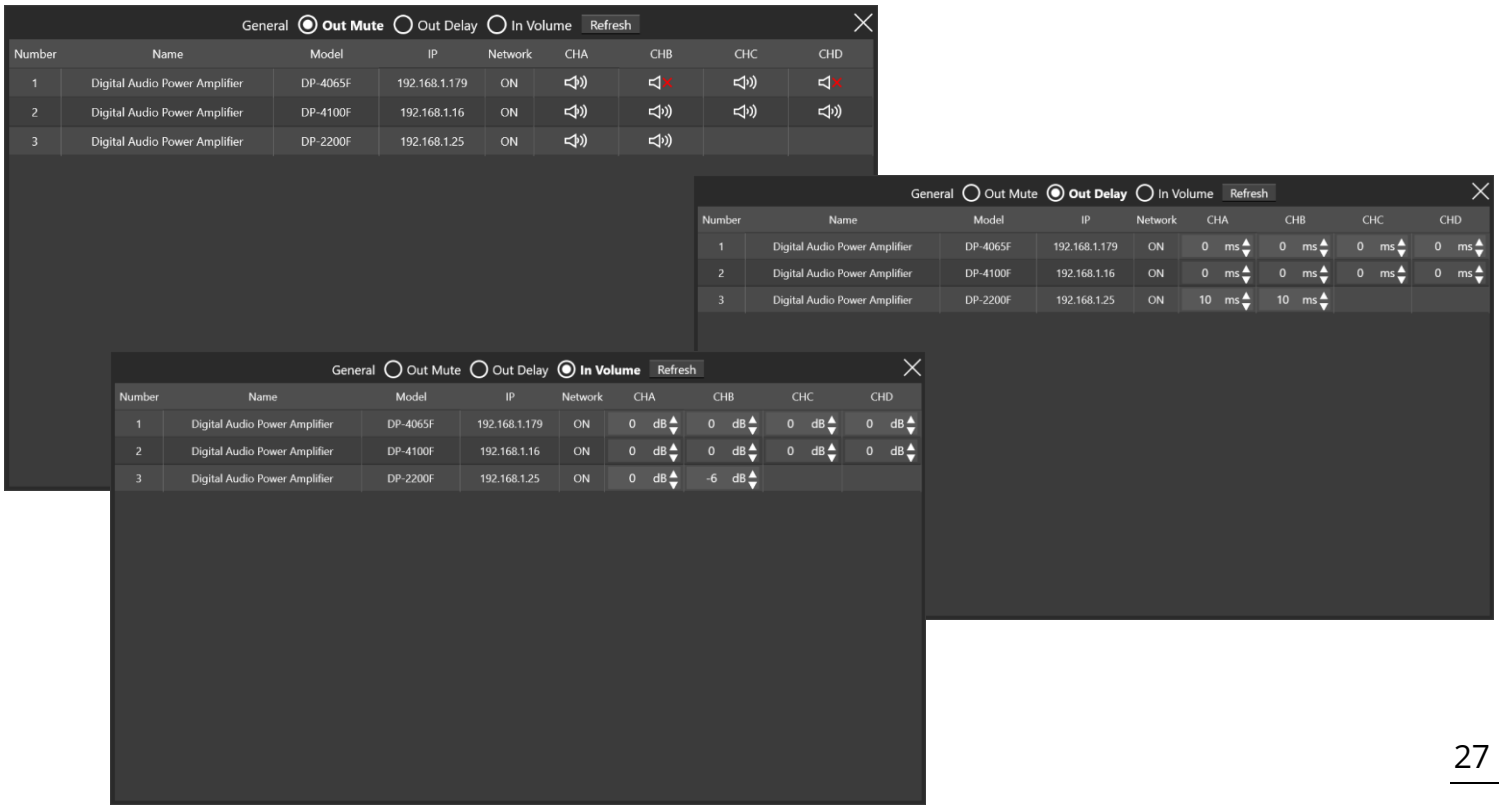
DSP Controller v1.1.8 has a new General page with shortcuts to channel Mutes, output delays and Volume settings.

This is to allow faster system tuning and system checking.

The page is accessed using the “General” button on the main amplifier list view page.



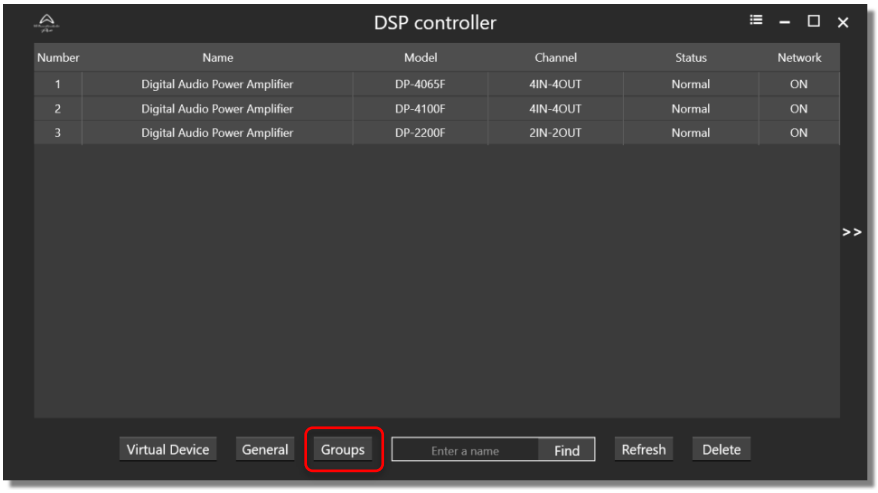
“Refresh” can be used to reset the network and check for any changes to amplifier network.



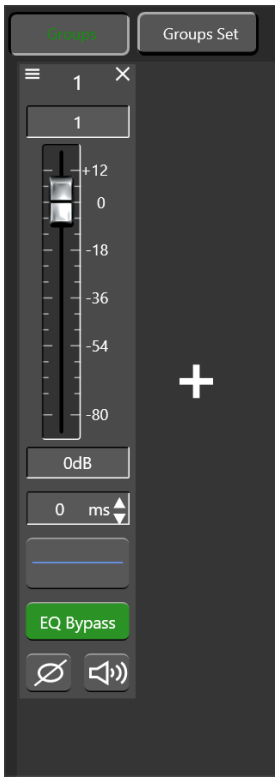
Groups Page – Setup and Assigning Channels

DSP Controller v1.1.8 has a new Groups page to allow input DSP channels to be controlled across multiple channels and amplifiers.

The page is accessed using the “Groups” button on the main amplifier list view page.



You can add groups by clicking the + sign and remove using the X sign on each group

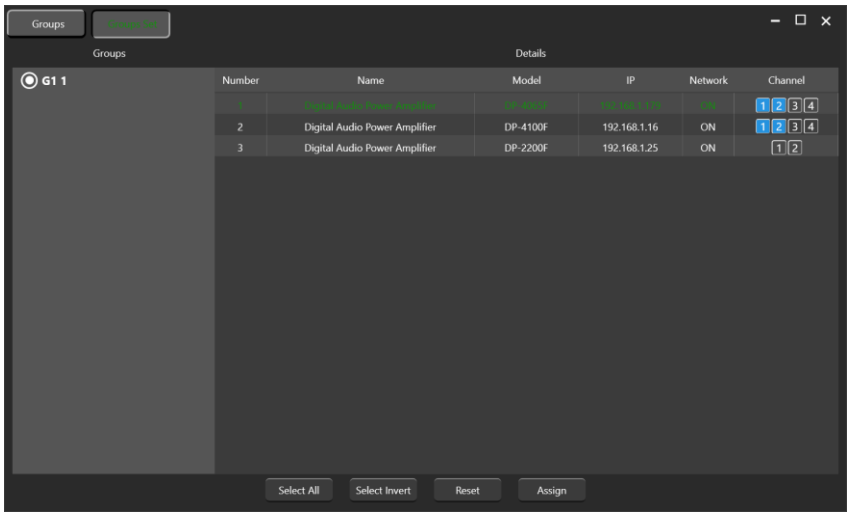


Groups can be labeled using the text input box above the fader control

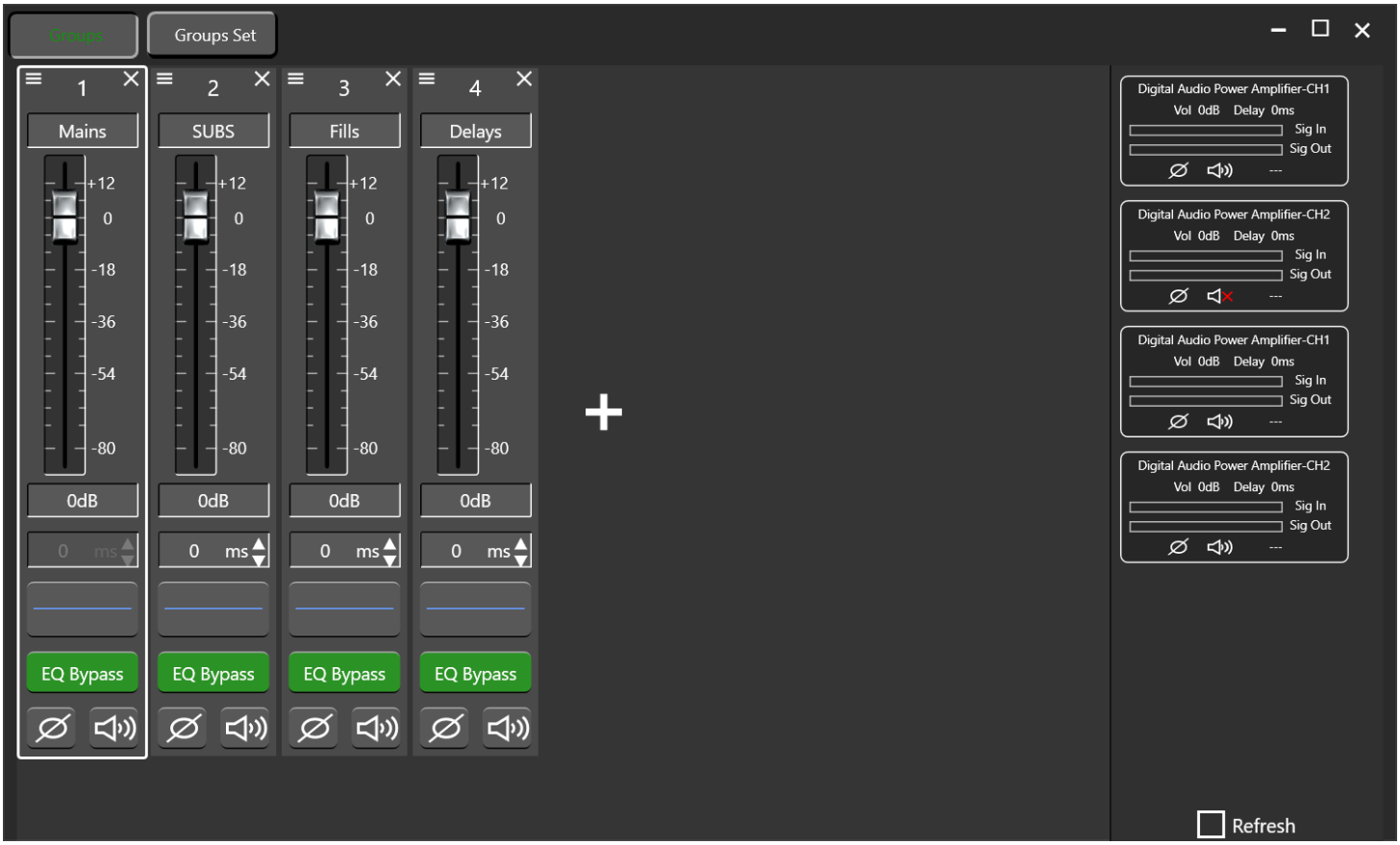
“Groups Set” will open a page to assign input channels to a specific group. Select the group in the list, click each amplifier input channel you wish to group and click Assign.

Options are given for selection; Reset will deselect channels.

Amplifiers removed from the network will remain in the groups view if still assigned. To remove these from the Group Set page, you must delete the group and re start the software.



Groups Page – Mixer View



Once channels are assigned to a group, you can view channel signal meters and feature state readings on the right hand side when the group is selected. Clicking Refresh will re-engage the network and activate the right hand side metering and info view.

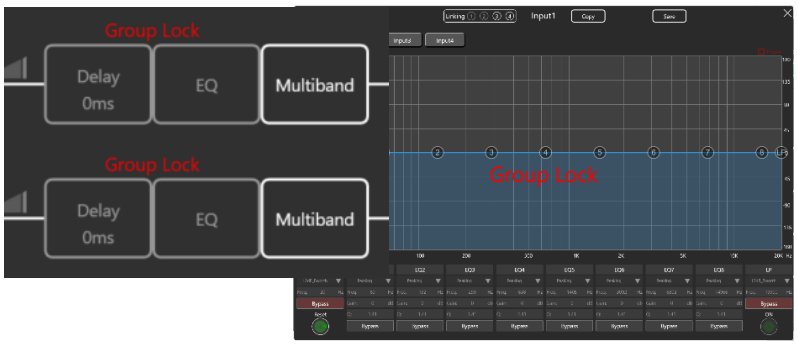
Name groups using the text input field above the faders.

Polarity, mute, level, delay and EQ can be controlled with text input option for level under the fader

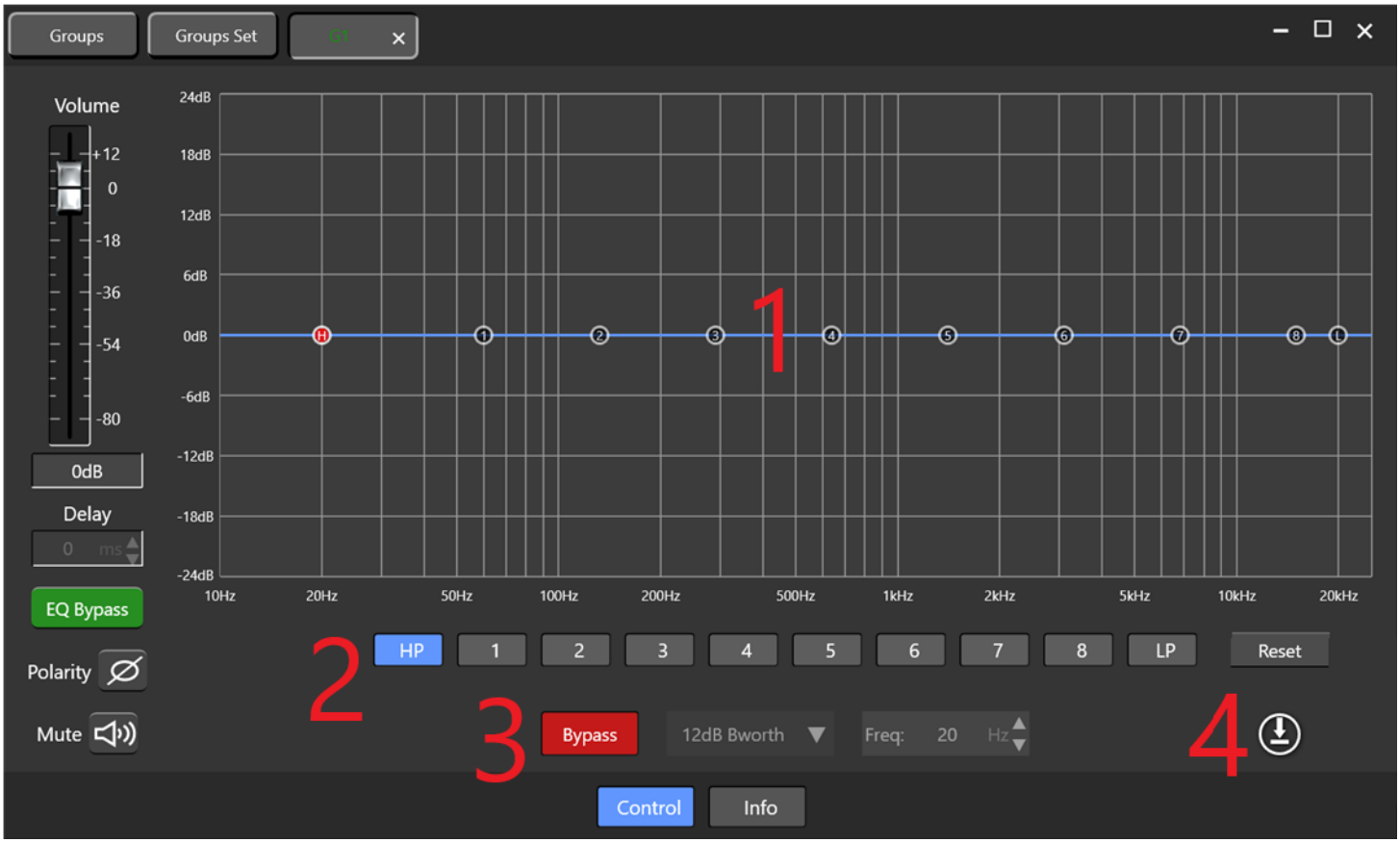
Access EQ view by clicking the box above “EQ Bypass” (highlighted)

NOTE: Delay settings only work in groups consisting of ONLY V2 006118 firmware amplifiers

NOTE: Once input channels are grouped, the individual amplifier setting section will show “Group Lock” and not be adjustable



Groups Page – EQ and Info view

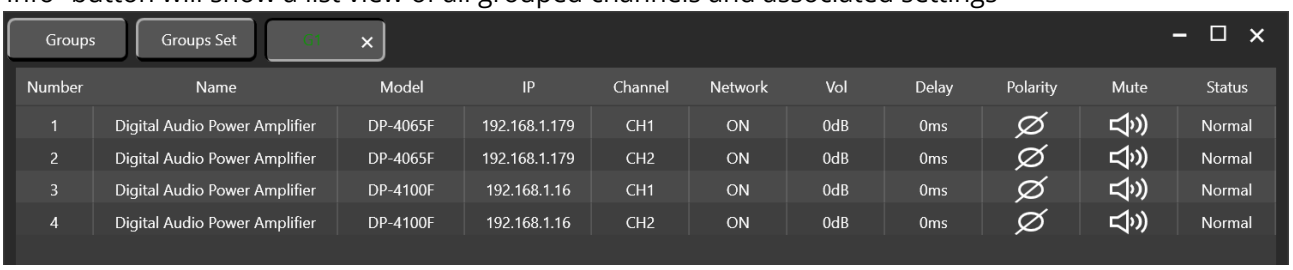


In addition to channel strip controls, the EQ group view has the following functions:

1. Main EQ and edit view
2. Filter selection and reset
3. Bypass and filter type options
4. Download settings to Input channels

NOTE: Once you have made EQ adjustments you must click the download button to send the EQ data to amplifier channels.

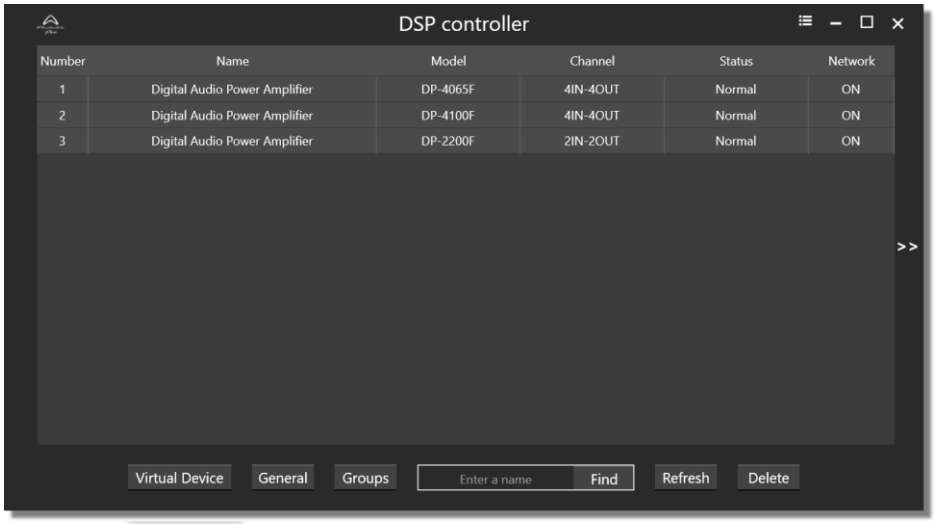
The “Info” button will show a list view of all grouped channels and associated settings



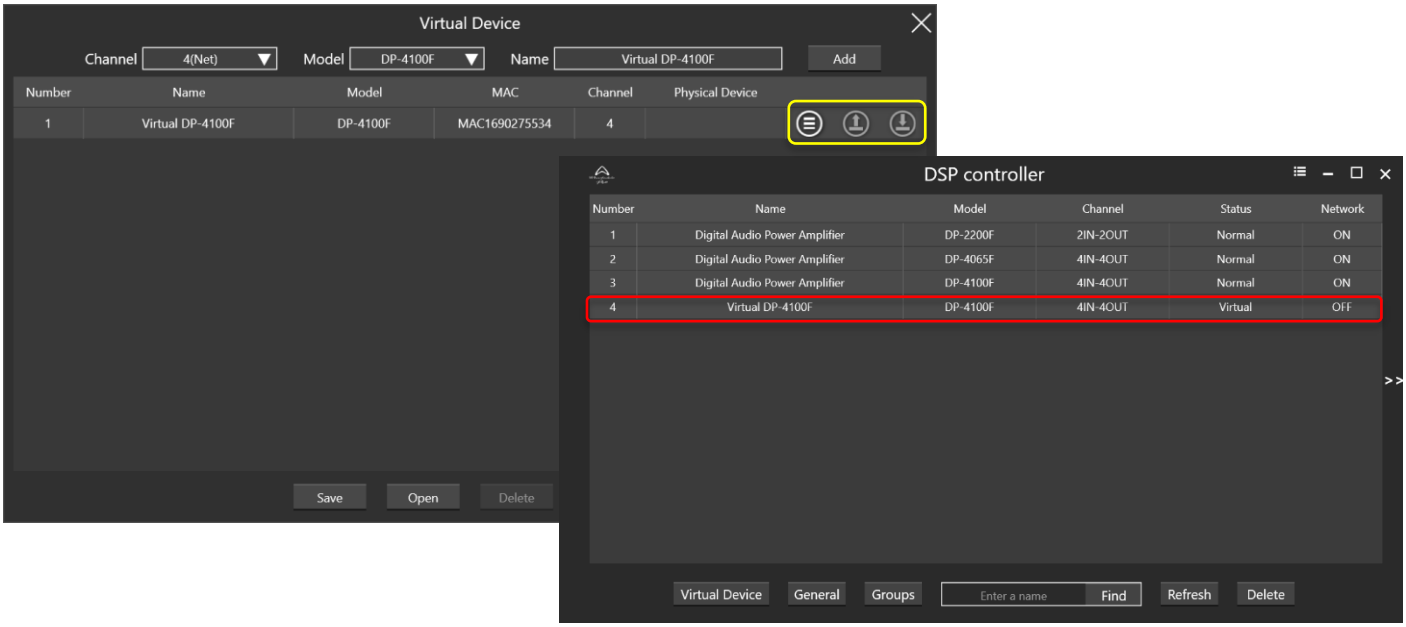
Number	Name	Model	IP	Channel	Network	Vol	Delay	Polarity	Mute	Status
1	Digital Audio Power Amplifier	DP-4065F	192.168.1.179	CH1	ON	0dB	0ms			Normal
2	Digital Audio Power Amplifier	DP-4065F	192.168.1.179	CH2	ON	0dB	0ms			Normal
3	Digital Audio Power Amplifier	DP-4100F	192.168.1.16	CH1	ON	0dB	0ms			Normal
4	Digital Audio Power Amplifier	DP-4100F	192.168.1.16	CH2	ON	0dB	0ms			Normal

Virtual Devices Page

DSP controller v1.1.8 now has a new virtual devices page, this is accessed from the main device list view page:



Select the model type and enter name using the drop-down menus at the top of the window, click add to add the virtual amplifier to the list view. You can then setup the amp as if it was a physical online device.



You can click the assign button (highlighted yellow) to associate the virtual device with physical online devices. Then, either download the data from the physical amp to the virtual device. Or, upload the virtual device data to the physical one.

You may also save and open .svds file virtual devices to / from your PC using the buttons at the bottom of the window.

Fault and Warning Messages

Status：**00** Normal **01** Standby **02** Fault **03** Open **04** Overload **05** Clip **06** Dcp **07** PowerEr **08** ---

00 Normal The channel status is normal

01 Standby The power amplifier is in standby mode

02 Fault The channel is in a protected state

03 Open The output voltage of this channel is greater than 30V and there is no output current

04 Overload The output current of this channel is greater than 10A, and the load impedance is less than 1 ohm

05 Clip The output voltage of this channel is greater than the rated value

06 Dcp This channel outputs an infrasound signal that may damage the high frequency drivers

07 PowerEr Power failure

08 --- ： The power amplifier has no faults, but the output voltage is less than 30V, making it impossible to determine the load impedance.

Status display priority PowerEr > Overload > Fault > Clip > Open >---> Normal