LEM Commercial

D-Drive series

Multi-Function Network DSP Power Amplifier

User Manual

1. Overview

Device is a 4in4out network DSP power amplifier, integrated with DSP process, IPS colourful display and other powerful function. This power amplifier support a variety of input methods: analog\Dante network. User can select each analog or Dante signal with its priority, which realize signal backup function. Support constant resistance 8Ω\4Ω and constant voltage 100V\70V.

User can monitor power, current, voltage, temperature and impedance from display in real time. With RJ45\USB and common series connectors, PC software provides user a easy way to control multiple devices, identify device, remotely turn on/off and set DSP function. RS485/GPIO connectors support device being controlled from third-party system.

Typical Applications

- Performing Arts Centers & Theaters
- Sports Arenas & Gymnasiums
- Hotels & Conference Centers
- Shopping Malls & Retail Stores
- Restaurants & Entertainment Venues

2. Key Features

- Optional DANTE network audio (4-channel)
- Dual backup: simultaneous analog and digital audio input with auto-switching
- Network TCP/IP control for multi-device management
- Remote power on/standby control
- Color IPS LCD display (320×240 pixels)
- Built-in DSP processor with 15-band parametric EQ (input), 10-band (output)
- Multi-connection support: USB, TCP/IP, RS485
- Real-time remote monitoring of amplifier status (temperature, power, voltage, current)
- Phoenix terminal inputs；Speakon & Phoenix terminal outputs
- Stereo, Bridge, Mono, Free Matrix — one-click switching
- Input sensitivity adjustable: 26dBu ~42 dBu
- Configurable power-on state: Power On or Standby
- Fixed voltage / fixed impedance: 100 V, 70 V, 8 Ω, 4 Ω，2 Ω
- FIR phase correction — 4 × 2048 Taps per channel
- AES/EBU digital input
- Dual Ethernet ports supporting chain connection of up to 5 units
- 79 user preset slots

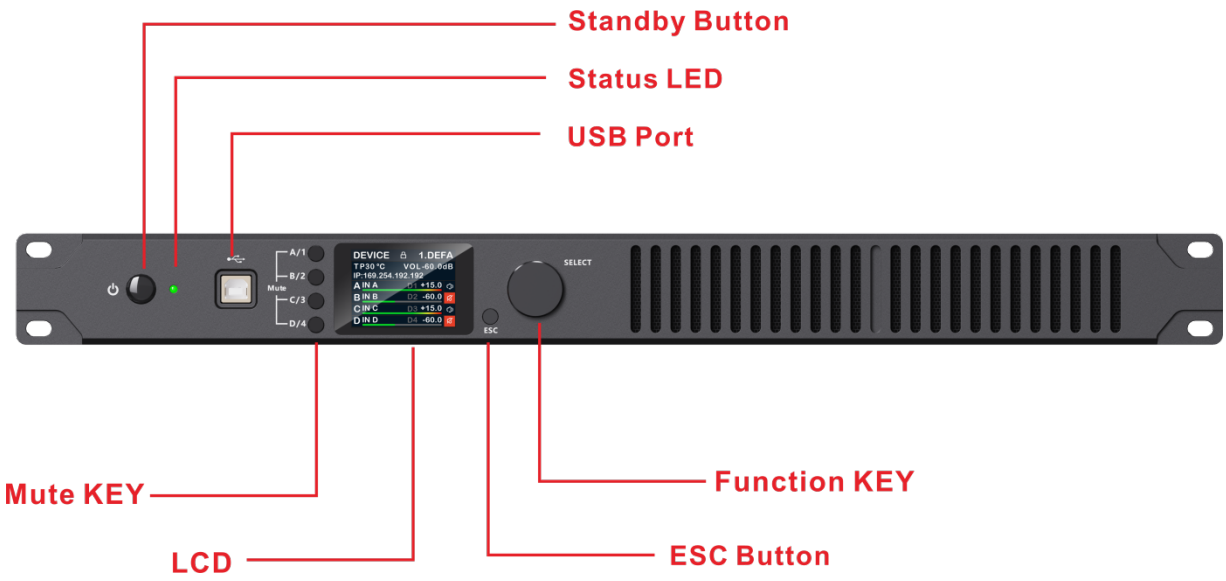
3. Technical Specifications

Parameter	Value
Channels	4x4
Output Power (8 Ω)	4 × 300 W
Output Power (4 Ω)	4 × 450 W
Bridge Power (8 Ω)	2 × 900 W
Min. Load Impedance	4 Ω per channel / 8 Ω in bridge mode
Fixed Voltage Output	100 V / 70 V
Frequency Response	20 Hz – 20 kHz (±0.5 dB) @ 1 W to full power, 8 Ω
THD+N	< 1% @ 1 W to full power
Signal-to-Noise Ratio	95dB
Channel Separation	<-78dB @1KHz,0dBu
Sampling Rate	96 kHz / 24-bit
Input Sensitivity	26 dBu ~ 44 dBu
Max. Input Level	19dBu（6.904V）
Input Interface	4 ×Phoenix terminal
Output Interface	Speakon × 2 + 8-pin Phoenix terminal (5.08 mm)
Audio Inputs	Analog / DANTE (optional) /AES67/ AES / Pink Noise / White Noise / Sine Wave
DSP Matrix	4 × 4
Input EQ	15-band parametric EQ
Output EQ	10-band parametric EQ
Crossover	Butterworth Bessel : 6–48 dB; Linkwitz-Riley: 12–48 dB
Input Delay	4 × 2000ms
Output Delay	4 × 2000 ms
FIR	4 channels × 2048 Taps
DSP Presets	79 slots
Control Interfaces	Ethernet (TCP/IP) / USB / RS485
Network Standard	100BASE-T, RJ45
Display	320 × 240 px, IPS color LCD
Cooling	Smart temperature-controlled fan
Protection	Limiter, Over-temperature, DC, HF, Short-circuit, BEMF, Peak current, Inrush current, Power-on delay, Breaker, Over/under voltage

Parameter	Value
Power Supply	AC 100–240 V, 50/60 Hz
Power Cable	3 × 0.75 mm²
Dimensions (W×D×H)	483 × 305 × 44.5 mm (1U rack)
Net Weight	5 kg
Operating Temperature	−20 °C to +60 °C

4. Panel Layout

4.1 Front Panel



Parameter	Value
Standby Button	Press to toggle Power ON / Standby
Status LED	Green = Running / Orange = Standby
USB-B Port	USB connection for PC control software
Channel Mute Keys	Mute individual output channels (A / B / C / D)
Color LCD Display	Shows device name, preset, temperature, volume, and channel status
Function / Button	Rotate to navigate menus; press to confirm
ESC Button	Return to previous menu
Ventilation Grille	Right-side airflow exhaust

4.2 Rear Panel

Parameter	Value
Power Inlet & Switch	IEC power socket with on/off switch (AC 100~240 V)
Speakon Outputs (OUT 1–4)	Speakon connectors for channels 1–2 (OUT1&2) and 3–4 (OUT3&4)
Phoenix Terminal	8-pin 5.08 mm terminal block for speaker connections

Parameter	Value
4× Phoenix Termina	Analog audio inputs for channels A / B / C / D
AES/EBU Input	Digital audio input (AES 3&4, AES 1&2)
RS485 Port	Serial control interface (5V power pin included)
LAN Ports	TCP/IP network control (dual ports for daisy-chain)
DANTE Ports (optional)	Network audio input (replaces or shares LAN ports)

5.System Requirements

The Web interface allows users to perform quick parameter interaction and configuration on one or multiple devices.All device configuration parameters can be saved to disk files, providing a convenient method for preset scene configuration, as well as parameter switching and restoration across multiple devices or different application sites.

UI is developed using an in-house control library and can be personalized and customized according to customer requirements, effectively enhancing the user experience.

5.1 Operating Environment

Connect and configure the device by entering its IP address in any standard web browser on devices running:

- Windows, macOS, HarmonyOS, or Kylin OS
- IOS or Android (mobile phones and tablets)

5.2 Connection Methods

Parameter	Value
USB	Direct connection via USB-B cable
TCP/IP	Network connection — enter device IP address
RS485	Multi-drop serial bus

5.3 Operation Steps

Simply enter the device's IP address to directly access the interface for debugging.

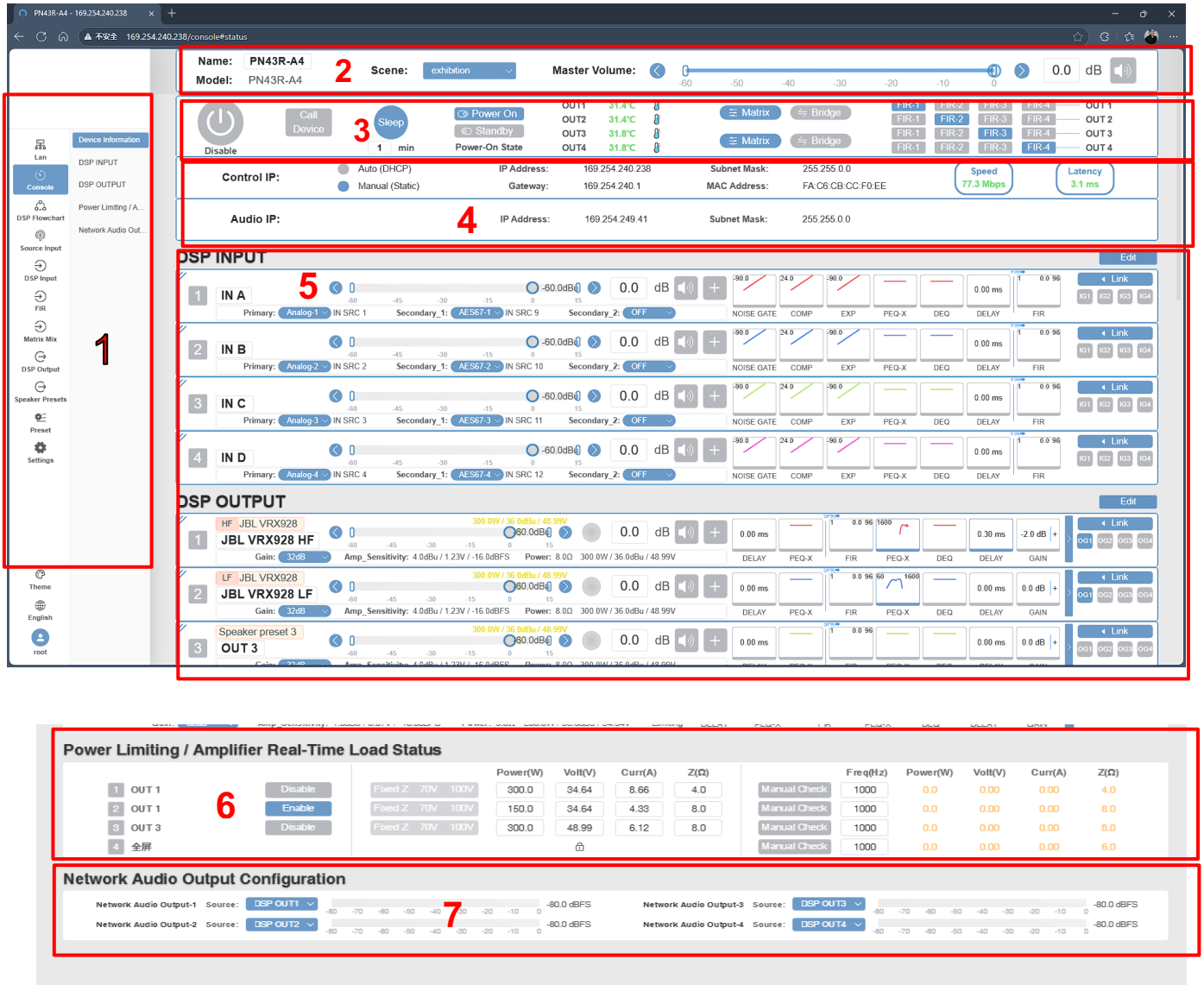
Notes：The device obtains an IP address via DHCP by default；If the device is not connected to a router, its initial IP address will be 169.254.X.X with a subnet mask of 255.255.0.0

In this case, set your computer's IP address to the same network segment (IP: 169.254.X.X) Subnet Mask: 255.255.0.0).

The device's IP address can be viewed on its screen after power-on;

6. Software Interface Overview

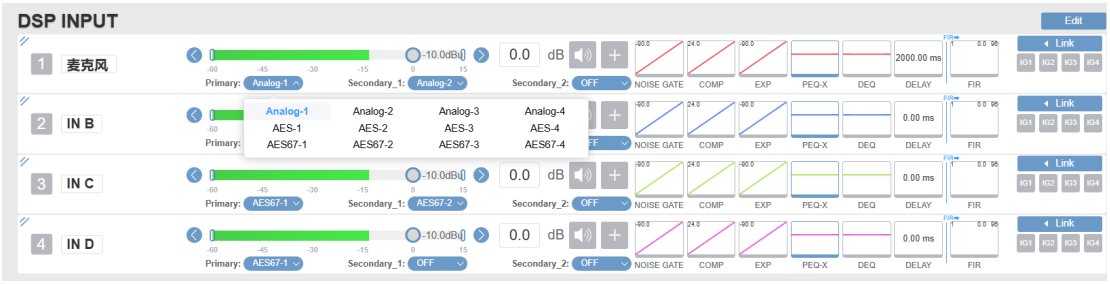
The main window is organized into the following areas

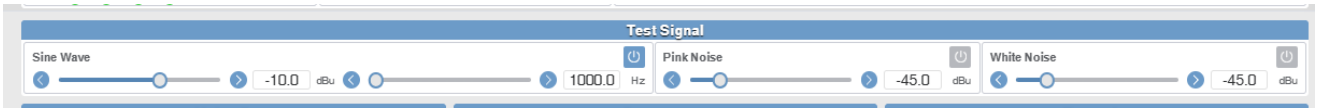


Order	Area
1	Menu Bar/ DSP menu
2	Local / Network Audio IP Address
3	Amplifier Status & Matrix Mixer Settings
4	Local / Network Audio IP Address
5	Input / Output Channel Interface
6	Amplifier Limiter / Real-time Amplifier Load Status Interface
7	Network Audio Output Configuration

7. DSP Module Reference

7.1 Input Module

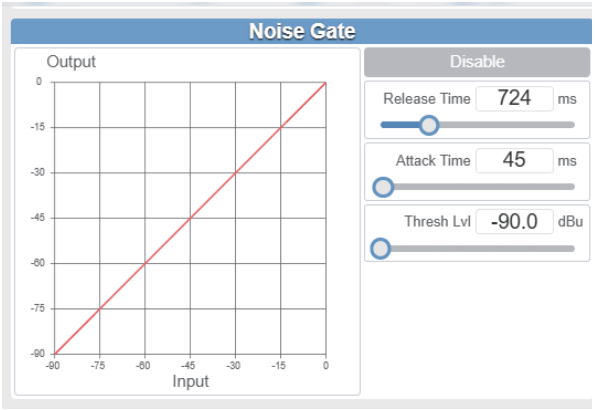




Controls polarity, mute, input source, and input sensitivity for each of the four channels.

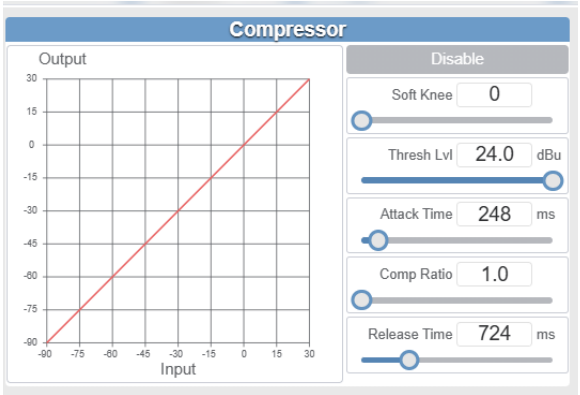
- Input Sources: Analog, Sine Wave, Pink Noise, White Noise, DANTE, AES
- Auto-switching: When both Analog and DANTE are connected, the higher-priority source (based on selection) plays first; the other takes over if the primary is lost.

7.2 Noise Gate/ Compressor/ Expander



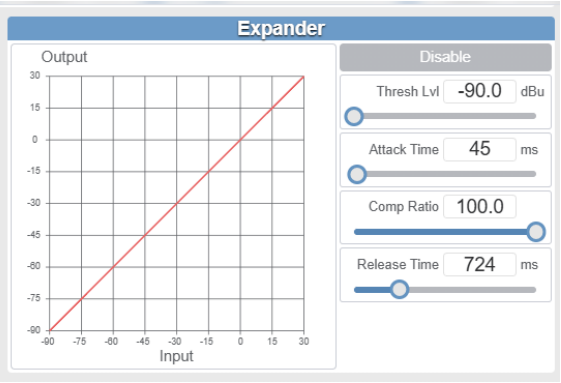
Noise Gate:

- Threshold (Trigger Level): −90 d Bu to 0 d Bu
- Attack Time: 1–2895 ms
- Release Time: 1–2895 ms
- Toggle the gate on/off per channel via the switch button



Compressor:

- Soft knee: 0 to 30;
- Threshold: -90 to 24 dB;
- Attack: 1 to 2895 ms;
- Ratio: 1 to 100;
- Release: 1 to 2895 ms;
- Click to enable this function;



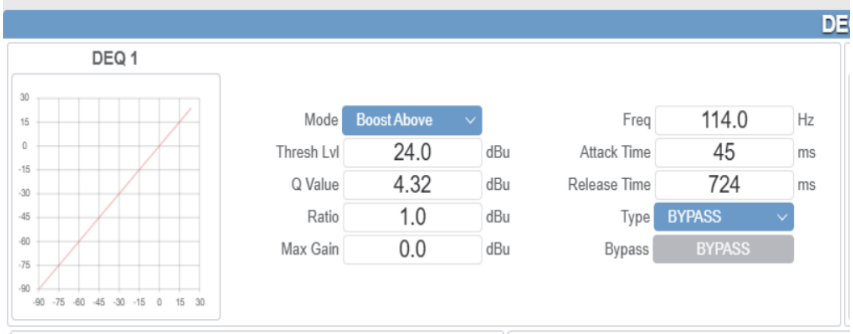
Expander:

- Threshold (Trigger Level): −90 d Bu to 24 d Bu
- Attack Time: 1–2895 ms
- Ratio : 1–100%
- Release: 1 to 2895 ms;

7.3 Input EQ (PEQ-X)

- 15-band parametric equalizer per input channel
- Adjustable parameters: Type, Frequency (Hz), Q value, Gain (dB)
- Functions: Phase curve view, show/hide control points, global bypass, EQ presets, copy/paste, reset
- EQ presets can be saved, recalled, deleted, and renamed

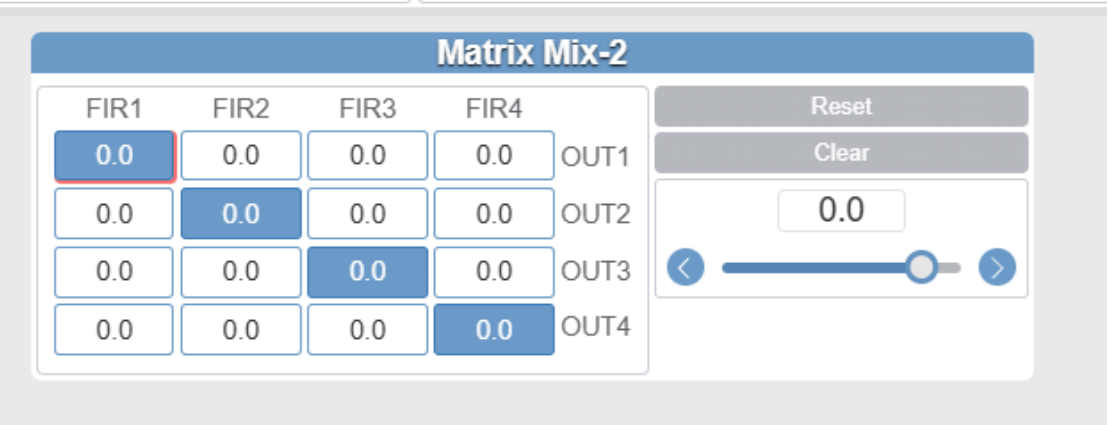
7.4 DEQ



•Mode: Boost Above\Boost Below\Cut Above\Cut Below

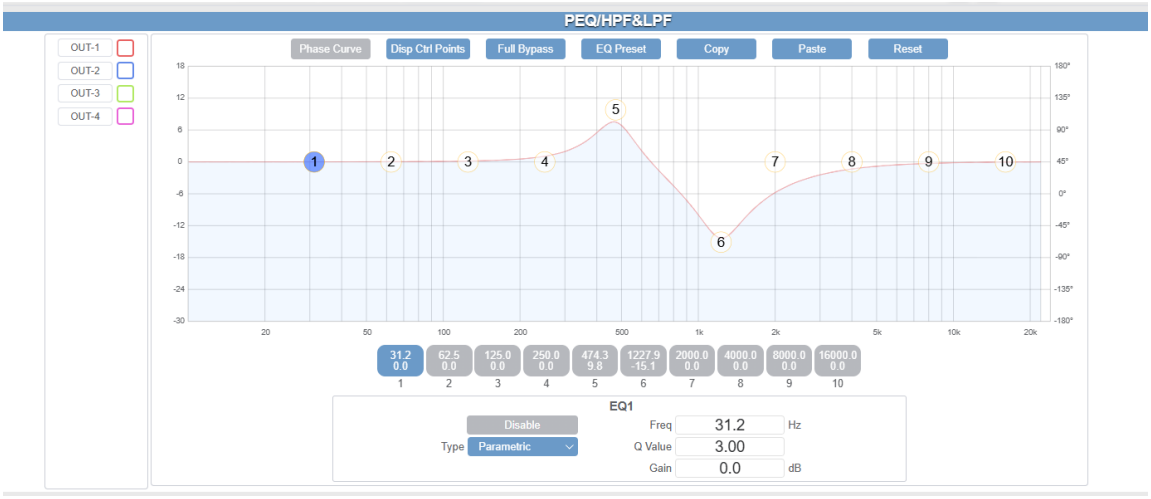
- Threshold: -90 to 24.0dBu
- Q: 0.27 to 15
- Ratio: 1.0 to 100.0
- Max Gain: 0.0 to 12.0
- Attack: 1 to 2895ms
- Frequency: 20 to 22000Hz
- Release: 1 to 2895ms
- Type: BYPASS\PEQ

7.5 Matrix Mixer



- 4 × 4 routing matrix — any input to any output
- Each cross-point has an independent gain value
- Double-click a cell to toggle the mix on/off (lit = active)
- Reset button restores 1-to-1 default routing; Clear removes all routing

7.6 Output EQ

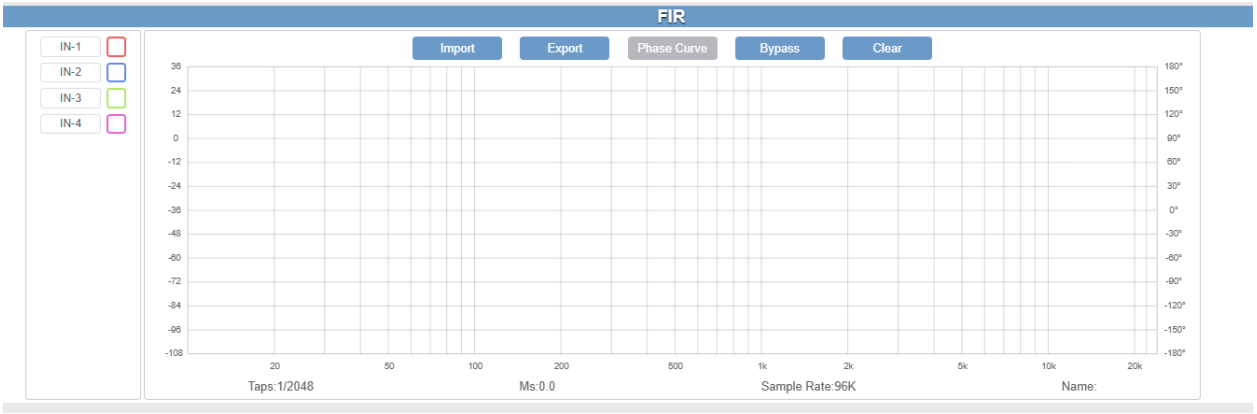


10-band parametric EQ on each output channel.

7.7 Output Delay

- Up to 2000 ms per output channel
- Units: ms, cm, or ft (feet)
- Enable/disable per channel; reset button restores default (0 ms)

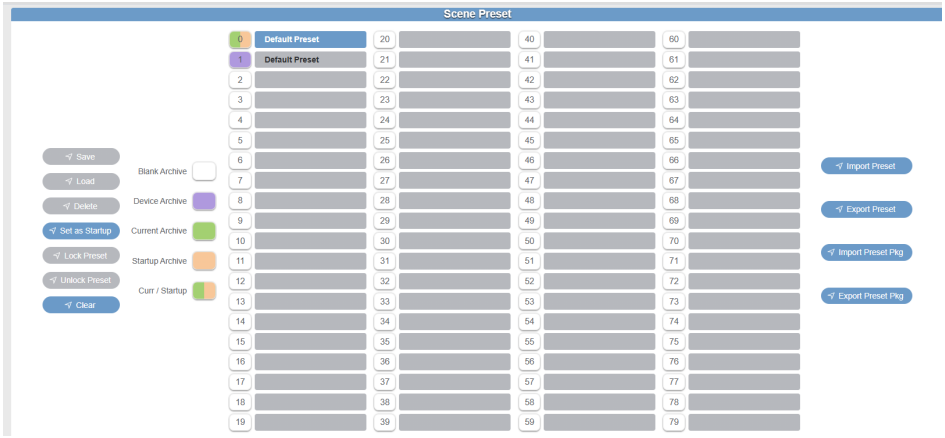
7.8 FIR Filter



- Each of the 4 channels supports up to 2048 Taps (8 selectable stages: 256–2048)
- Import: Import the configured 96K sample rate curve into the device
- Export: Export and save the FIR curve
- Phase Curve: Display the phase curve of the FIR
- Bypass: Default is bypass mode; disable bypass to apply the curve effect
- Clear: Clear the FIR curve;

8. Device Management

8.1 Presets



As shown in the figure above, the left side of the preset interface displays the preset slots.

Preset 0 (Auto) is a system-reserved preset slot and cannot be used directly.

Preset 1 (Default) is the factory default preset, which can only be recalled; it cannot be deleted or overwritten. After recalling, all device parameters will be restored to factory defaults.Other preset slots can be freely saved, recalled, deleted, etc.

The function buttons on the right side of the preset interface are as follows:

Save: Save the current device parameters to the selected preset slot.

Recall: Load the selected preset into the current device parameters.

Delete: Delete the parameters of the selected preset.

Clear: Clear all preset records except the system presets.Set as Power-on Preset: Set the selected preset as the one that the device will automatically load at next power-on.

Preset Lock: Set a password to lock the saved preset.

Preset Unlock: Enter the password to unlock the preset.

Import Preset: Import a single device parameter file from a PC and overwrite the existing parameters.

Export Preset: Save the current device parameters to a PC as a single preset file.

Import Preset Package: Import a parameter package containing multiple presets from a PC.

Export Preset Package: Export all presets in the device to a PC as a preset package file containing multiple presets.

8.2 Channel Linking (Group Mode)

The channel link feature lets you group multiple channels so that adjusting one parameter in the group simultaneously adjusts all others in the same group. Linkable parameters include: Gain, Delay, Phase, HPF, LPF, Noise Gate, and PEQ.

8.3 GPIO

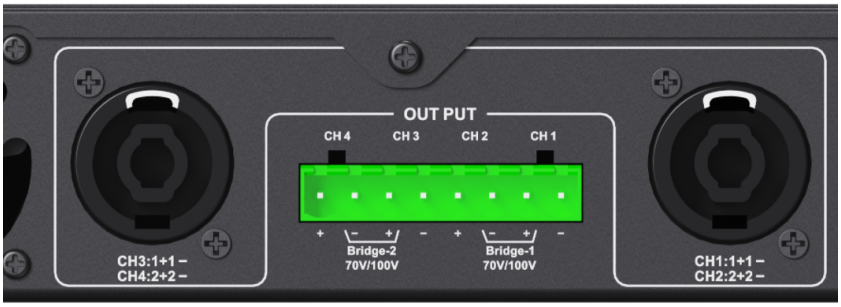
The device is equipped with four GPIO interfaces. You can set the names and functions of the GPIO interfaces here. After configuration, click Save to apply the settings

8.3 Firmware Upgrade

Navigate to System → Firmware Upgrade. Select the upgrade file, then click Start Upgrade. The device will automatically apply the firmware and restart when complete.

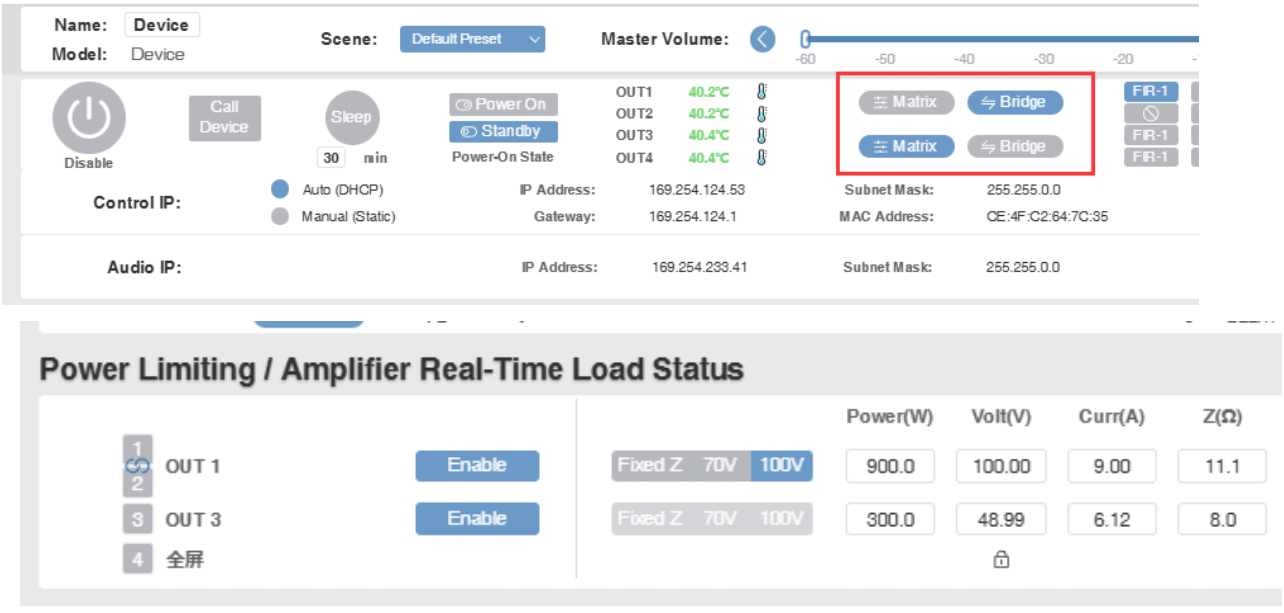
9. Bridge Mode Wiring

In bridge mode, two amplifier channels are combined to drive a single load at higher power.



Bridge Wiring Example (Fixed-voltage speaker)

- Connect speaker (+) to OUT1&2 Speakon — Pin 1+
- Connect speaker (−) to OUT1&2 Speakon — Pin 2−
- The device supports 2 × 900 W bridge output; OUT3&4 can be bridged in the same way
- Phoenix terminal wiring follows the same polarity as Speakon



After wiring, select the corresponding channels on the WEB control panel and set them to bridge mode. Then configure the settings in the Power Limit / Amplifier Real-time Load Status section according to the speaker parameters；

The Device includes comprehensive multi-layer protection:

10. Protection System

The Device includes comprehensive multi-layer protection:

Parameter	Value
Audio Limiter	Prevents output clipping and speaker damage
Over-temperature	Throttles or shuts down when internal temperature exceeds threshold
DC Protection	Detects DC offset at output and mutes to protect speakers
High-frequency Protection	Guards against HF instability
Short-circuit Protection	Detects and responds to speaker line short circuits
BEMF Protection	Handles back-EMF from reactive loads
Peak Current Limiter	Prevents excess instantaneous current
Inrush Current Limiter	Soft-start to reduce power-on current surge
Power-on Delay	Relay delay after power-up to prevent thumps
Breaker Protection	Internal circuit breaker for catastrophic fault events
Over/Under Voltage	Monitors mains voltage and protects against extremes

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