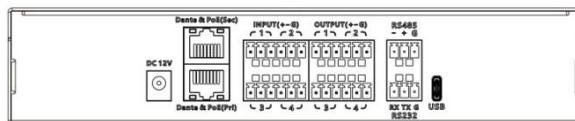
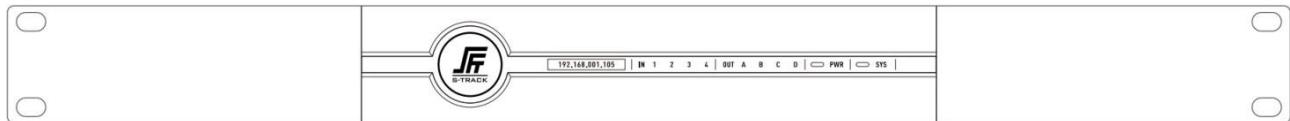


BA-DB44 Digital Signal Processor



Preface

The purpose of this section is to ensure that you can safely and correctly use the product by following this manual, thus avoiding operational risks or damage to property. Before using this product, please read the product manual carefully and keep it for future reference.

Outlined

This manual applies to Digital Audio Processors.

It describes the functions and usage of various functional modules of the Digital Audio Processor and guides you through its installation and commissioning process.

Symbol Conventions

The symbols that may be found in this document are defined as follows.

| Symbol | Description |
|----------------|---|
| Note | Provides additional information to emphasize or supplement important points of the main text. |
| Caution | Indicates a potentially hazardous situation, which if not avoided, could result in equipment damage, data loss, performance degradation, or unexpected results. |
| Danger | Indicates a hazard with a high level of risk, which if not avoided, will result in death or serious injury. |

Safety Instructions



To ensure reliable use of the equipment and the safety of personnel, please observe the following during installation, use and maintenance:

- During the installation and use of the equipment, all electrical safety regulations of the country and the region of use must be strictly observed.
- When installing the equipment, make sure that the input power of the equipment power adapter is 100V-240V, 50/60Hz AC power.
- Keep the working environment well ventilated so that the heat generated by the equipment during operation can be discharged in time to avoid damage to the equipment due to excessive temperature.
- Always unplug the unit's power adapter from the AC power outlet before: A. Removing or reinstalling any part of the equipment; B. Disconnecting or reconnecting any electrical plug or connection of the equipment. Do not operate with electricity.
- There are AC high-voltage parts in the equipment, non-professionals should not disassemble them without permission to avoid the risk of electric shock. Do not repair the equipment privately to avoid aggravating the damage.
- Do not spill any corrosive chemicals or liquids on or near the equipment.
- If the unit emits smoke, odour or noises, turn off the power immediately and unplug the power cord, and contact your dealer or service centre.
- If the appliance is not working properly, contact the shop where you purchased the appliance or the nearest service centre and do not disassemble or modify the appliance in any way. (We cannot be held responsible for problems caused by unapproved modifications or repairs).

 **Caution**

- Do not drop objects on the equipment or vibrate the equipment vigorously, and keep the equipment away from locations with magnetic field interference. Avoid installing the equipment in a place where the surface vibrates or is susceptible to shock (neglecting this may damage the equipment).
- Do not use the equipment in high temperature, low temperature or high humidity environments. Refer to the equipment's data sheet for specific temperature and humidity requirements.
- Use the unit indoors, not in an exposed installation where it may be exposed to rain or extreme humidity.
- When the equipment is not used for a long period of time or in a humid and dewy environment, the main power supply of the equipment should be switched off.
- When cleaning the equipment, please use a sufficiently soft dry cloth or other alternatives to wipe the internal and external surfaces, do not use alkaline detergent to wash, and avoid hard objects to scratch the equipment.
- Please keep all the original packaging materials of the equipment properly, so that in case of problems, use the packaging materials to pack the equipment and send it to the agent or return it to the manufacturer for processing. We will not be responsible for any accidental damage in transit not caused by the original packaging materials.

 **Note****Requirements for the quality of installation and commissioning personnel**

Qualifications or experience in the installation and commissioning of audio and video systems and qualifications to perform related work, in addition to the knowledge and operational skills listed below.

Basic knowledge and installation skills of audio and video systems and components.

Basic knowledge and skills in low voltage cabling and wiring of low voltage electronics.

Basic audio and networking knowledge and skills and the ability to read and understand the contents of this manual.

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Product Introduction

1.1 Introduction

The device supports analog channel 4 into 4 out, USB playback and recording, comprehensive matrix mixing function, equipped with high-performance A/D D/A converter and 32-bit floating-point DSP processor, support 24bit/48KHz sampling frequency, restore high-quality sound, user-friendly operation software interface, easy to operate and powerful performance. Mainly used in a variety of large places, can meet the theater, concert halls, remote video conferencing, stadiums, churches, conference centers, theme parks, public sound reinforcement systems and other aspects of the application needs.

1.2 Product Features

- Highly integrated, integrating a variety of traditional Analog audio processing equipment in a Digital audio processor;
- High-performance 32-bit floating-point DSP processor, all-digital processing, fast response to feedback cancellation, echo cancellation, noise suppression and other core algorithms;
- High-performance A/D, D/A converter, 24bit/48KHz sampling frequency, high-quality Analog → Digital, Digital → Analog conversion;
- 4 Analog input channels and 4 Analog output channels, very small distortion and ultra-low background noise;
- Supports Dante network transmission, which makes audio transmission more stable and faster;
- Humanization, graphical, intuitive and easy-to-operate control software interface;
- Comprehensive matrix mixing functions;
- Scene storage is different from the Analog equipment is one of the most practical and significant features, can store 8 complete scenes, all the scenes can be exported to an external storage device for storage backup, so that the later call at any time.

1.3 Functions

- Comprehensive matrix mixing function, 24bit/48KHz sampling frequency, high performance A/D, D/A converter and 32-bit floating point DSP processor;

DSP audio processing, built-in automatic mixing console, including mixing and automatic mixing functions, but also has a mixing component control function; at the same time with AFC, AEC, ANS module;

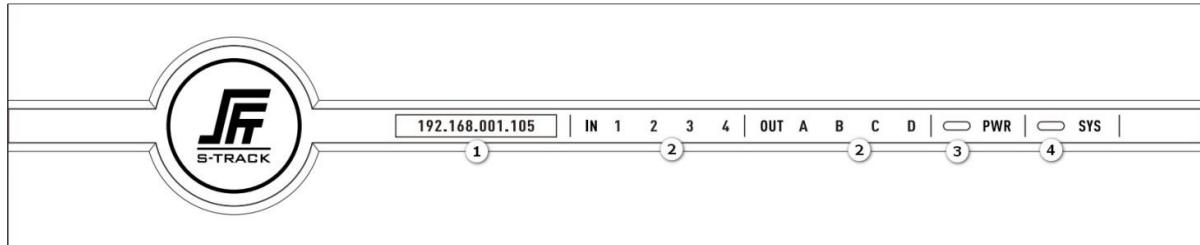
- Inputs per channel: Preamplifier, Generator, Expander, Compressor, Auto Gain, 5-band parametric EQ, Ducker;
- Outputs per channel: delay, crossover, limiter, 31-band graphic EQ;
- Display shows the IP address;
- Input phase switch, mute switch, phantom power switch;
- Output mute switch, phase switch per channel;
- Ethernet multi-purpose data transmission and control port, can support real-time management of single and multiple devices;
- Intuitive image, simple and easy to understand the graphical software control interface, for customers to bring fast, real-time operating experience;
- The device does not need a disc, comes with installation software, a device for a software version, to solve the troubles caused by the loss of the installation disc and the confusion of multiple software versions;
- Extendable USB-C interface, support USB Audio Card;
- Configuration of bi-directional RS232 interface, RS485 interface, standard Ethernet control interface;
- POE mode power supply, can be used with 802.3af/at standard POE switch;
- Support 8 groups of scene presets, scene increase, save, delete and other functions;
- Intuitive, graphical software control interface, works on Windows XP, 7, 8, 10, 11, etc..

Chapter 2 Specification

| | |
|--|---|
| Analog channels | 4 balanced/line inputs 4 balanced/line outputs |
| Dante channels | 4 input,4 output |
| Analog channels | 4 balanced/line inputs 4 balanced/line outputs |
| Dante channels | 4 input,4 output |
| Number of USB-C Audio Cards | 1 |
| Number of 232 serial interfaces | 1 |
| Number of 485 serial interfaces | 1 |
| Number of RJ45 interfaces | 2 |
| Sample Rate & Quantization Bits | 48KHz@24bit |
| Phantom Power | 48V |
| Frequency Response | 20Hz ~ 20KHz,±0.15dB |
| THD+N | ≤0.003%@1kHz,4dBu |
| Analog to Digital Dynamic Range (A-weight) | 120dB |
| Digital to Analog Dynamic Range (A-weight) | 114dB |
| Input Impedance (Balanced) | 20kΩ |
| Output Impedance (Balanced) | 100Ω |
| Channel Isolation | 100dB@1KHz,4dBu |
| Signal-to-Noise Ratio | 107dB |
| Maximum Input Level | 18dBu |
| Maximum Output Level | 18dBu |
| Background Noise | -89dBu |
| Operating Power Supply | DC 12V/PoE power supply |
| Power Consumption | <15W |
| Operating Temperature | -10°C-40°C |
| Operating Humidity | 10%~90% No condensation |

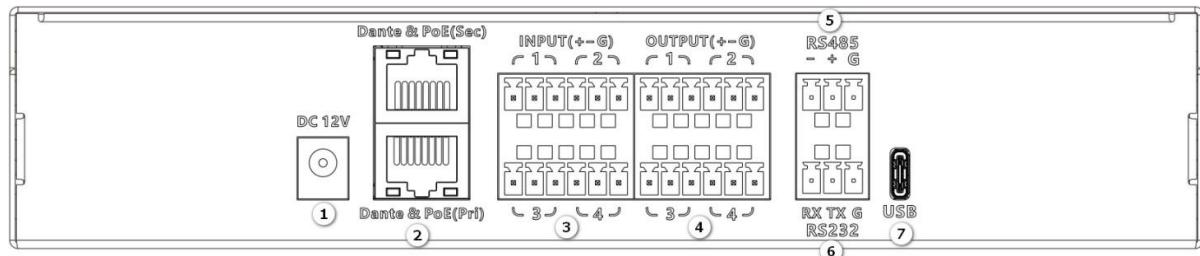
Chapter 3 Interface Description

3.1 Front Panel



- Display: Shows the IP address.
- Channel indicator: Off with minimal signal, red with high-level signal, and green under normal conditions.
- Power Indicator: Illuminated when the device is powered on.
- System Indicator: Flashes when the device is functioning normally.

1.4 Rear Panel



- DC12V: This power connector is used to attach a DC 12V/2A power adapter;
- Dante POE network power supply interface: This network interface facilitates Dante digital signal transmission, connection to PC interactive control software, and provides direct power to the device;
- INPUT signal input interface: This can be connected to microphones, PCs, and other devices;
- OUTPUT signal output interface: This can be connected to amplifiers, active speakers, and other devices;
- RS485: The RS485 serial interface allows for the connection of control terminals or centralized control devices;
- RS232: The RS232 serial interface enables the attachment of control terminals or centralized control devices;
- USB-C interface: This supports a USB-C audio card.

Chapter 4 Instructions for Use

1.5 Software Download

To download the installation software, source files are embedded within the digital audio processor device itself. Simply enter the device's factory default IP address (default IP: 192.168.1.200) into the URL bar of your browser. This action will direct you to the download interface. Follow the instructions on the web interface to initiate the software download.

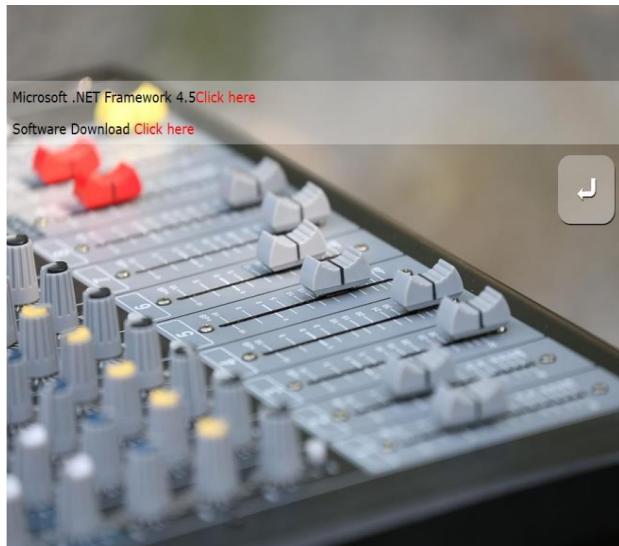
Before installing the software, please ensure that your PC meets the required specifications. Your PC must have the .NET Framework 3.5 or above installed for Windows systems.

Note: Ensure that your PC is on the same network segment as the device's IP address (default IP: 192.168.1.200, subnet mask: 255.255.255.0) when downloading the software; otherwise, access will be restricted.

Web page controls as well as downloads:

1.6 Main Interface

Software download screen:



1.7 Menu and status



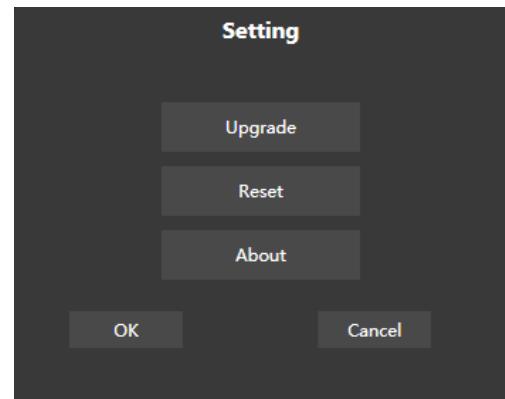
4.3.1 Sign In



- Click [Search] button, the device list will show the online device name and IP address information;
- Double-click the device name in the device list, Sign In pop-up window, enter the user name and password: (default user name: admin, password: 123456) Click [OK] button to enter; if you need to modify the device IP address information, right-click the device name, will pop-up window Setting, according to the needs of the environment to change.

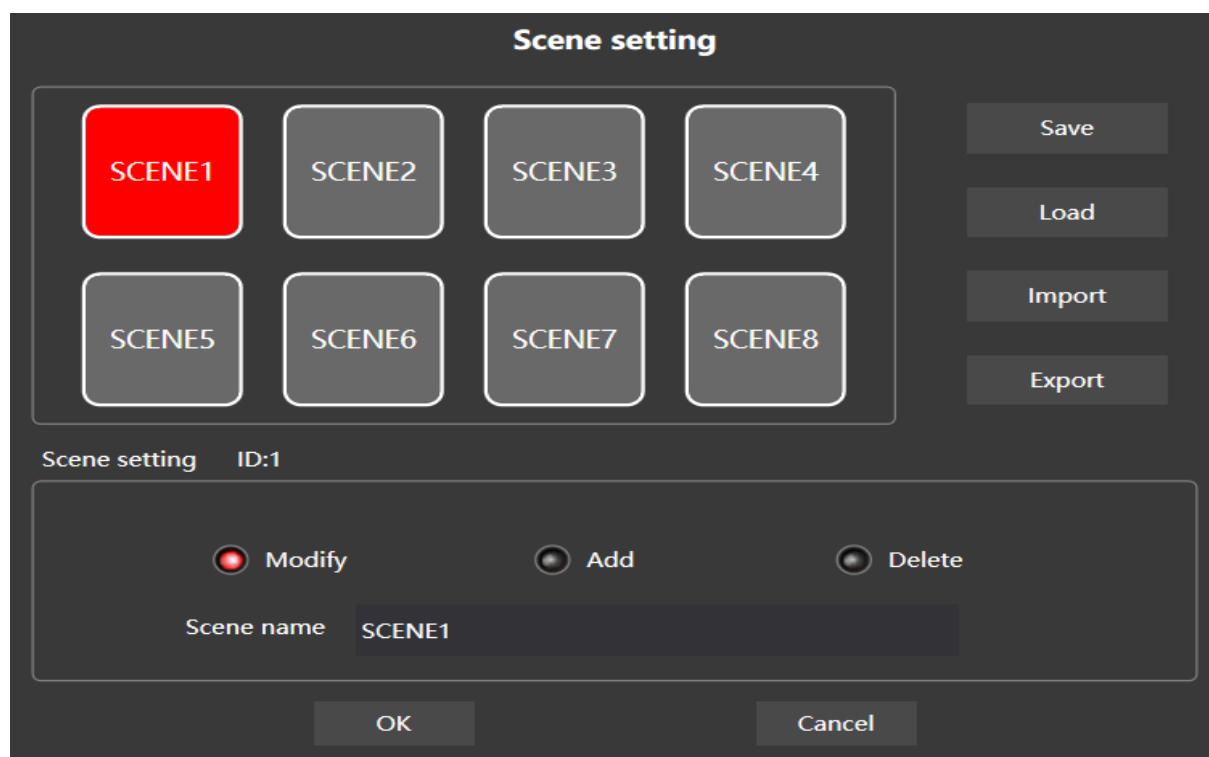
4.3.2 Setting

- Upgrade: device firmware upgrade;
- Reset: restore factory default status;
- About: view device serial number information.



4.3.3 Scene setting

- Save: saves the current parameters to the selected scene;
- Load: loads the selected scene;
- Import: import the saved scene file;
- Export: export the scene locally;
- Modify: modify the scene name;
- Add: add new scene, maximum 8 scenes can be added;
- Delete: delete the scene.



1.8 Pre-processing

4.4.1 Input

- Indicator light: the indicator light changes color to reflect the signal level in the input channel: it is gray when no signal is present, turns green with a small signal, and red with a large signal;
- 48V: Use the 48V phantom power supply switch judiciously. Turning it on for non-condenser microphones may cause damage;
- Mute: mute button;
- Channel fader: channel gain value range (0~72dBFS), can be controlled by the fader.



4.4.2 Parametric Equalizer

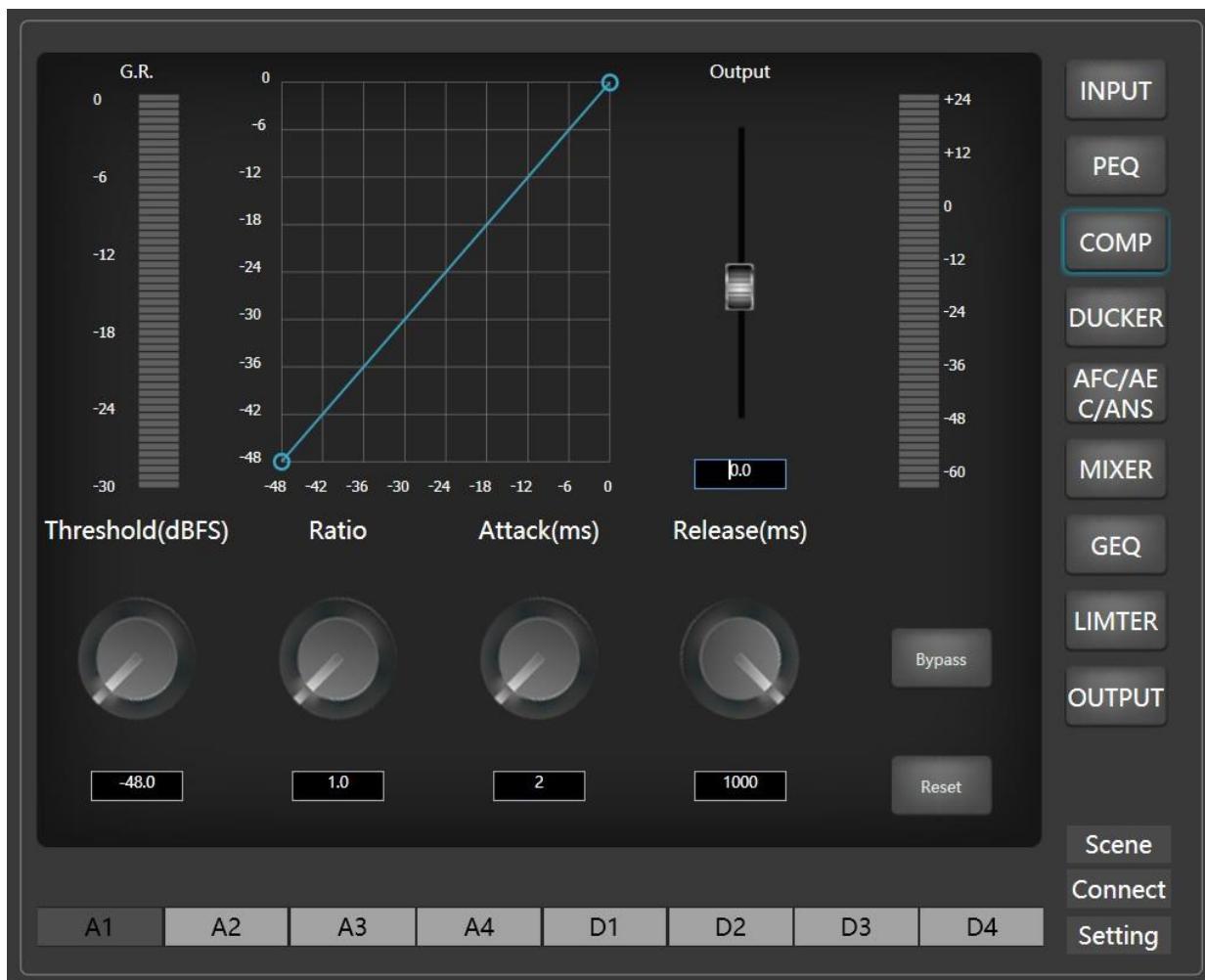
- ① Bypass/Active: enable/disable the equalizer;
- ② Freq Bypass/Active: enable/disable the current band equalizer;
- ③ Reset: restores the current parameters to the default state;
- ④ Freq: the center frequency to be equalized;
- ⑤ Gain: the gain/attenuation value at the center of the frequency;
- ⑥ Bindwidth: the influence range of the band around the center frequency, the larger the value, the larger the bandwidth, the larger the influence range.



4.4.3 Compressor

The compressor is used to reduce the dynamic range of a signal above a user-determined threshold. Signal levels below the threshold remain unchanged.

- Threshold: the threshold value of the compressor;
- Ratio: the input/output compression ratio of the compressor;
- Attack: startup time of the compressor;
- Release: the recovery time of the compressor;
- Reset: reset to default parameters;
- Bypass/Active: enable/disable the compressor.



4. 4. 4 Ducker

- Paging Input: control signal input channel;
- Background Input: controlled signal input channel;
- Threshold: when the control signal level is higher than the threshold value, the controlled signal will be blocked;
- Depth: attenuation value of controlled signal;
- Attack Time: the effective time of Ducker algorithm;
- Hold Time: when there is no signal input from the control signal input channel, the algorithm will hold time;
- Release Time: release time of Ducker algorithm;
- Output Selection: output channel;
- Reset: reset as default parameter;
- Bypass/Active: enable/disable the Ducker.



4.4.5 AFC/AEC/ANS

- AFC: Acoustic Feedback Cancellation, used to cancel the whistling generated between the microphone and speakers in the sound reinforcement system, thus capturing the frequency that causes the whistling for attenuation to ensure the quality of the sound as well as to prevent burning out of the amplifier or speakers. Selects the signal that needs to be processed through the feedback cancellation, and the processed signal selects the output channel in the mixer;
- AEC: Acoustic Echo Cancellation, sets the signal that needs to be processed through the echo cancellation, and the processed signal selects the output channel in the mixer;
- Input: Local MIC input, i.e. the signal that needs to be processed by echo canceler; Remote: reference signal.
- ANS: Adaptive Noise Suppression, selects the signal that needs noise suppression processing, and the processed signal selects the corresponding channel output in the mixer.



1.9 Mixer

- Columns: Input channels;
- Rows: Output channels.

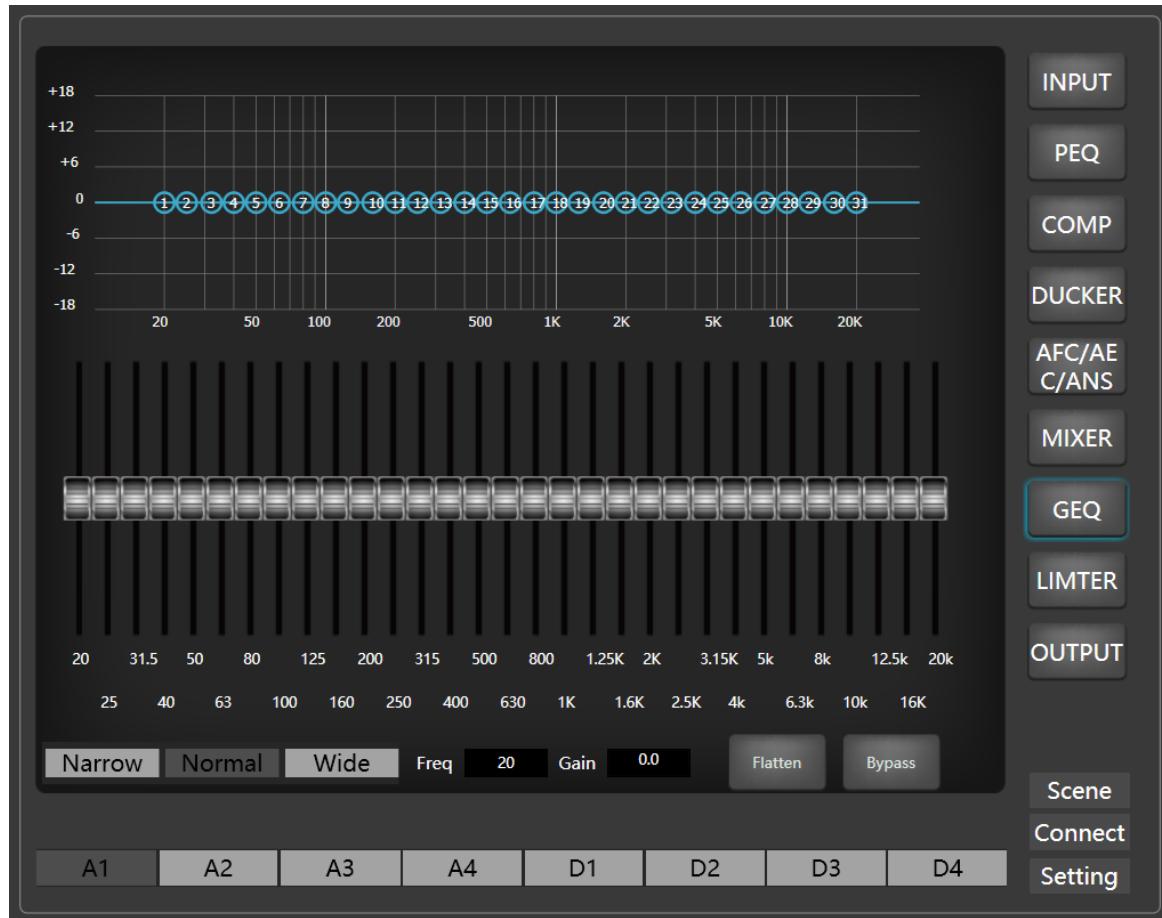


1.10 Post-processing

4. 6. 1 Graphic Equalizer

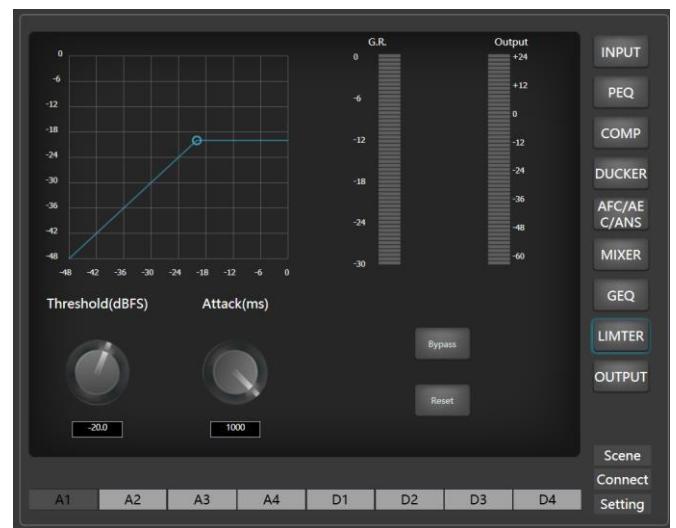
31 bands of frequency points can be individually adjusted gain, so as to achieve the purpose of strengthening, weakening certain frequency points, to achieve different effects.

- Bypass/Active: enable/disable the equalizer;
- Gain: the gain/attenuation of the frequency center point;
- Flatten: restores all frequency bands to 0dB gain;
- Narrow: a kind of bandwidth, the bandwidth is lower than the normal bandwidth;
- Normal: the common normal bandwidth;
- Wide: the largest bandwidth.



4.6.2 Limiter

- Bypass/Active: enable/disable the limiter;
- Reset: reset to default parameter;
- Threshold: the starting level of the limiter, when the signal is higher than this limit value, the limiter processing module will be activated;
- Attack: when the input signal is lower than this value, the sound channel will not be shut down immediately, but will delay the shutdown time according to this value. During this time, as long as there is a signal above the "Threshold" limit value, the sound channel can be turned on continuously;
- G.R.: The difference between the signal processed by the limiter and the input signal.



4.6.3 Output

Muting and inverting the outputs as well as the output audio gain can be set.

- Indicator light: When there is no signal into the output channel, the indicator light is gray; when there is a small signal into the output channel, the indicator light is green; when there is a large signal into the output channel, the indicator light is red;
- INVERT: Invert button;
- Mute: Mute button;
- Channel fader: Channel gain value range (0~72dBFS), can be controlled by fader.



1.11 Dante Network Audio Routing

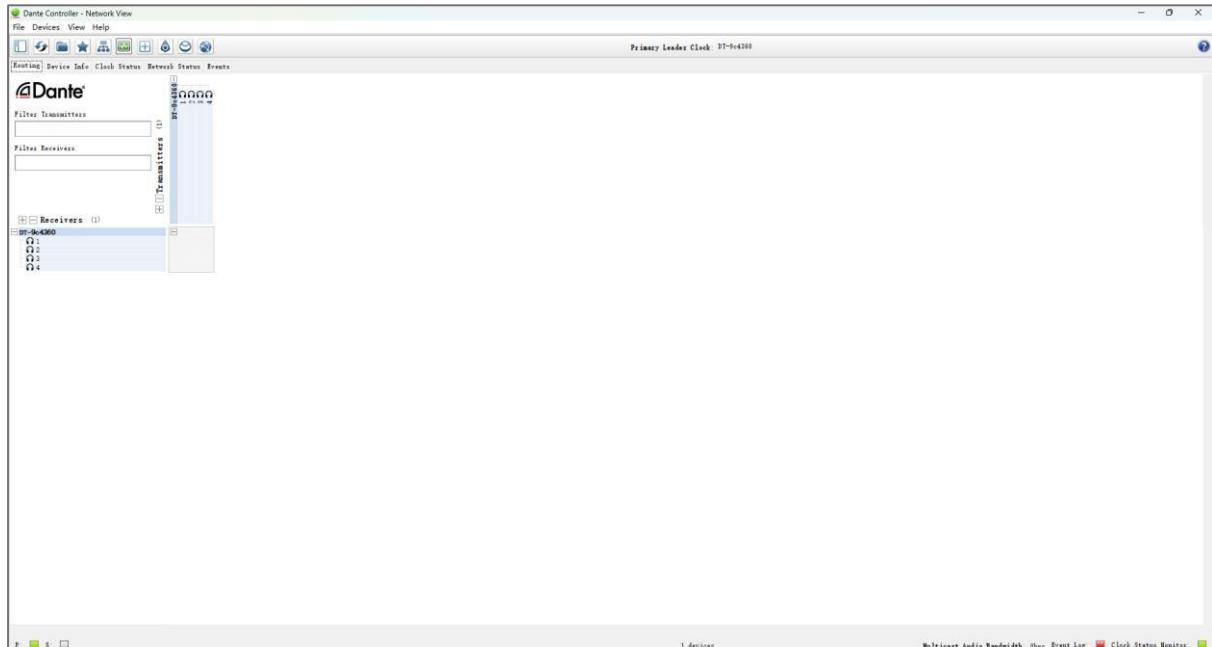
In a Dante audio network, the Dante Controller software is required to set up the routing of the various signals accessing the processor. It can realize 1-to-1, 1-to-N mapping operation from input to output within Dante network.

Note: 1, Dante can not run in the Wi-Fi wireless connection environment, is dependent on a reliable and secure wired network environment to transmit perfect audio;

2, Dante Controller software corresponds to the platform of Windows 7, Windows 10, Windows 11, macOS, please select the appropriate software version according to your system platform.

[Click to download the official Dante Controller software Dante Controller](https://www.audinate.com/products/software/dante-controller)

(<https://www.audinate.com/products/software/dante-controller>)



Chapter 5 Packing List

| | | | | | | |
|--------|------------------------|-------------|------------------------|------------------------|-------------------|----------------------|
| Device | DC12V/2A Power Adapter | Quick Guide | 6pin Phoenix Connector | 3pin Phoenix Connector | Small Screwdriver | Hanging ear brackets |
| 1PCS | 1PCS | 1PCS | 4PCS | 1PCS | 1PCS | 2PCS |

Warranty Regulations

The warranty period for this product is 1 year.

During the warranty period, non-man-made damage or performance failures can enjoy a Three Guarantees Service (Repair, Replacement, and Refund Service).

The warranty card is effective only after being stamped by the sales unit. Alterations will invalidate it!

The following conditions (including, but not limited to) are not covered by the Three Guarantees Service :

- No warranty card or valid invoice missing, or if the date has exceeded the validity period of the three guarantees services.
- Damage caused by not following the product instructions for use, maintenance, storage, and management.
- Mismatch between the product model or code on the warranty voucher and the physical goods.
- Damage from dismantling or repair by unauthorized service providers.
- Normal discoloration, wear and tear, and consumption during use of the product are not covered.
- If the product cannot be used due to the user's network issues, please consult customer service staff.