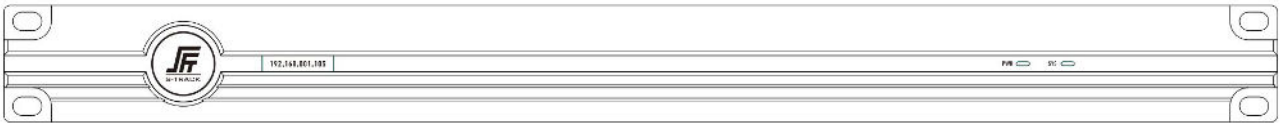
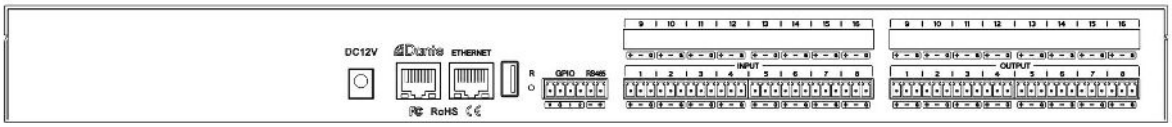
S-TRACK





SWIFT XD88S
Digital Signal Processor

User Manual

Preface

The purpose of this section is to ensure that the user is able to use the product correctly through this manual in order to avoid danger in operation or property damage. Before using this product, please read the product manual carefully and keep it for future reference.

Outlined

This manual applies to Digital Audio Processors.

This manual describes the functions and use of the various functional modules of the Digital Audio Processor, and guides you through the installation and commissioning of the Digital Audio Processor.

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

Danger

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.

TABLE OF CONTENTS

Chapter 1 Product Introduction

1.1 Introduction

The digital audio processor equipped with a high-performance 32-bit floating-point DSP processor and A/D ~ D/A converter, support for 24bit/48KHz sampling frequency, high quality 8-stage preamplifier circuit, DSP processing bus structure built-in feedback cancellation, echo cancellation, noise suppression, automatic mixing and other audio core algorithms, to restore high-quality sound, with a comprehensive matrix mixing function It supports multiple scene presets, scene saving and other functions, and user-friendly control software interface. Mainly used in a variety of large places, can meet the theatre, concert halls, remote video conferencing, stadiums, churches, conference center, 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;
- 8 Analog input channels and 8 Analog output channels, very small distortion and ultra-low background noise;
- Rich interface expansion;
- 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 100 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;
- Outputs per channel: delay, crossover, limiter, 31-band graphic EQ;
- Display shows the IP address;
- Chinese name can be set independently for each channel;
- Test signal generator, sine wave, pink noise, white noise, frequency and level magnitude selectable;
- Input phase switch, mute switch, phantom power switch;
- Output mute switch, phase switch per channel;
- Flexible switching between Chinese, Traditional and English languages;
- One-click display of all function modules;
- Storing Chinese help document and software with the machine;
- Central control code generated in the control software; power failure automatic protection memory function; one-key reset function;
- Channel copy, paste function;
- The same host allows 10 users to manage, the user name can be set to Chinese;
- Device name can be modified, Chinese name is allowed;
- Editable preset mode, new, delete, modify, one-key initialization, preset mode can be stored to computer and one-key recovery;
- With camera tracking function, can independently adjust the preset position of a camera, compatible with VISCA, PELCO-D, PELCO-P three control protocols, support for custom commands;
- Convenient and fast web control: Built-in web controller for fast operation on Windows, macOS, Linux, Android, iOS and other platforms;
- 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;

- ✧ Configuration of bi-directional RS232 interface, RS485 interface, standard Ethernet control interface, 4-channel programmable GPIO control interface (customisable inputs and outputs), level support for external inputs 3.3 ~ 24V;
- ✧ 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..

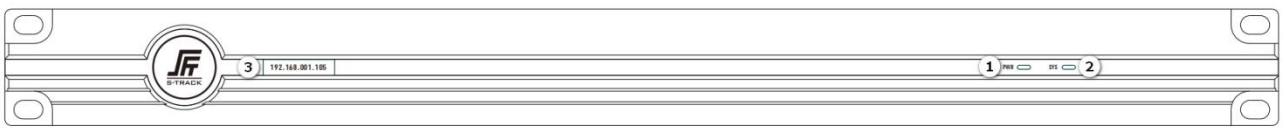
Chapter 2 Specification

Analog channels	8 balanced/line inputs 8 balanced/line outputs
Dante channels	4 input,4 output
Number of 485 serial interfaces	1
Number of GPIO interfaces	4, freely configurable inputs and outputs
Number of RJ45 interfaces	2
Sample Rate & Quantization Bits	48KHz@24bit
Preamplification	42dB
Phantom Power	48V
Frequency Response	20Hz～20KHz,±0.2dB
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
EIN (A-weight)	≤-125dBu
Channel Isolation	100dB@1KHz,4dBu
Common mode rejection	70dB@50Hz
Signal-to-Noise Ratio	108dB
Maximum Input Level	18dBu
Maximum Output Level	18dBu
Background Noise	-90dBu
Operating Power Supply	DC 12V/2A
Power Consumption	<15W
Operating Temperature	0-40℃
Operating Humidity	10%~90% No condensation
Product Weight	2.1KG
Product Size	482.4*210.5*44mm
Package Weight	2.5KG
Package Size	590×430×110mm

Chapter 3 Interface Description

3.1 Front Panel

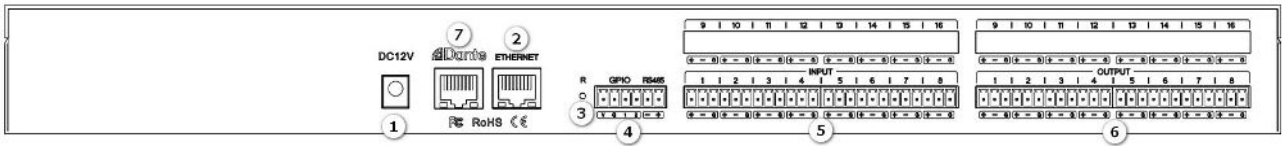


① PWR (red): the equipment power supply is normal, the power indicator is always on;

② SYS (green): system operation indicator, the system maintains a blinking state during normal operation;

③ Display: Display shows the IP address.

3.2 Rear Panel



① DC12V: Power connector to connect DC 12V/2A power adapter;

② ETHERNET: Ethernet interface, suitable for connecting to PC control software;

③ RESET: Reset button, long press to restore factory settings and reboot the processor;

④ RS485+GPIO: Connecting control terminals or centralized control devices;

⑤ INPUT: Analog input interface, can be connected to mixer, microphone, PC and other devices;

⑥ OUTPUT: Analog output interface, suitable for connecting amplifier equipment or active speaker equipment;

⑦ Dante: Dante network interface for transmitting Dante network audio.

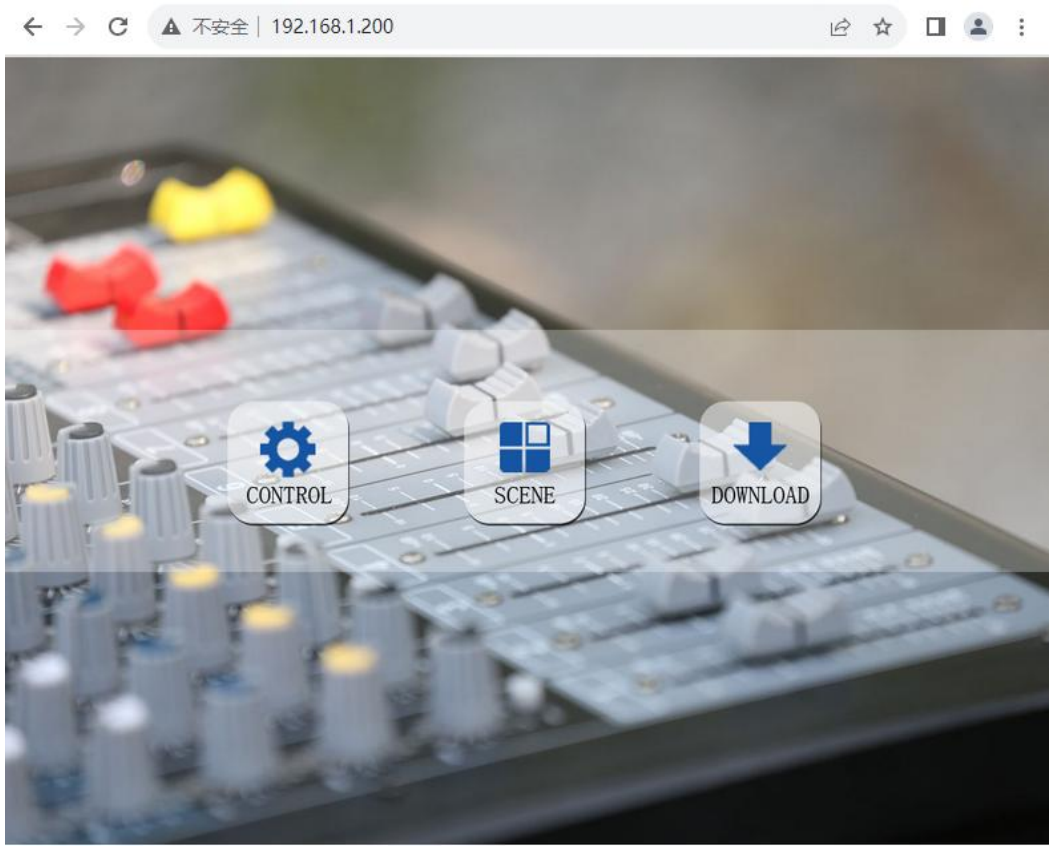
Chapter 4 Instructions for Use

4.1 Software Download

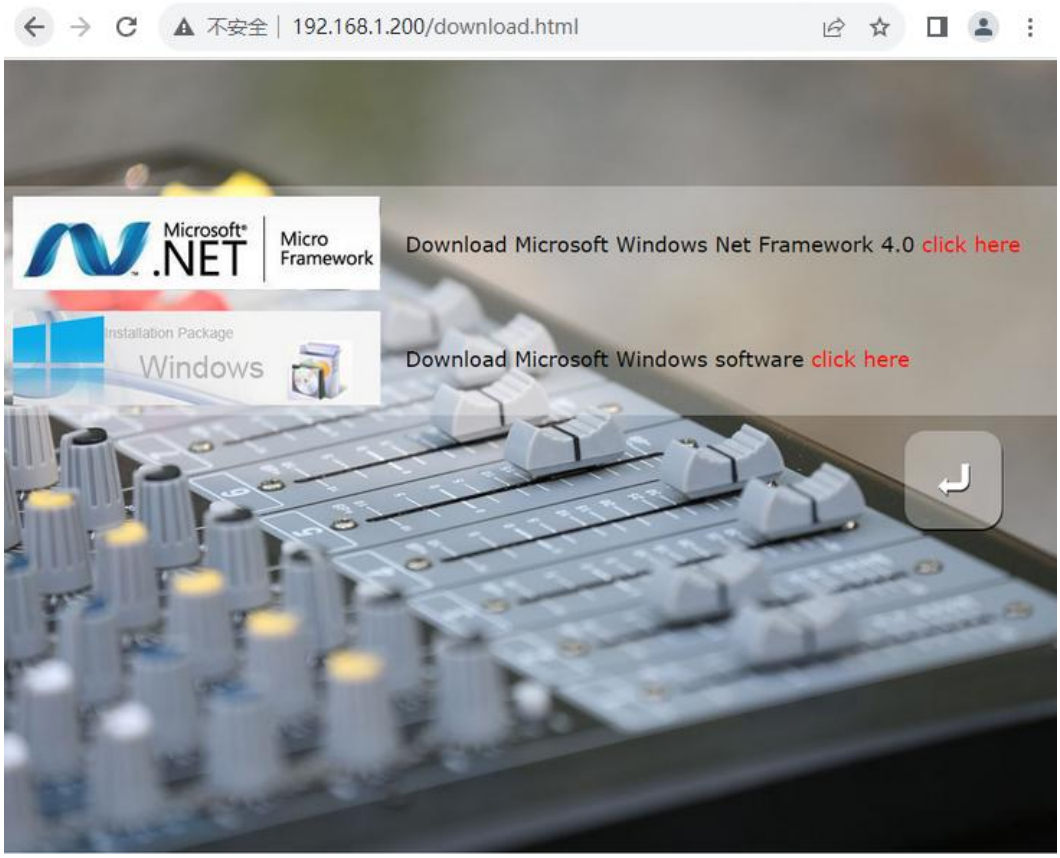
Installation software source files embedded in the digital audio processor device, download the software simply by entering the device's factory default IP address (default IP: 192.168.1.200) information in the URL address bar of the browser, enter will be able to navigate to the download interface, according to the content of the web interface information click on the download of the software can be, in addition to pay attention to the installation of software before the PC side of the PC, please make sure that PC clients have been Net Framework3.5 or above for Windows system.

Note: Make sure the PC client is in the same network segment as the device IP address (default IP: 192.168.1.200 subnet mask: 255.255.255.0) when you download the software, otherwise you will not be able to access it.

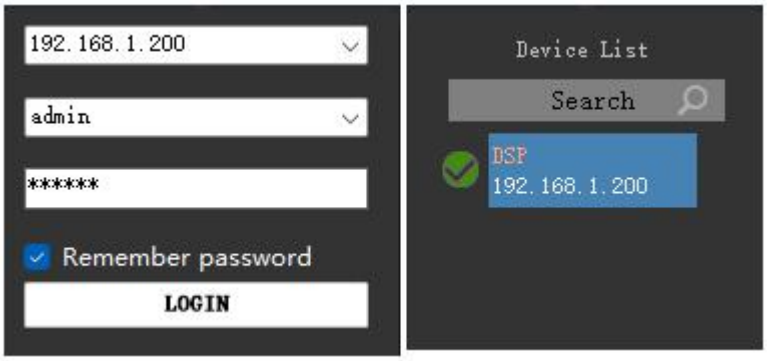
Web page controls as well as downloads:



Software download screen:



4.2 PC Software Login Connection



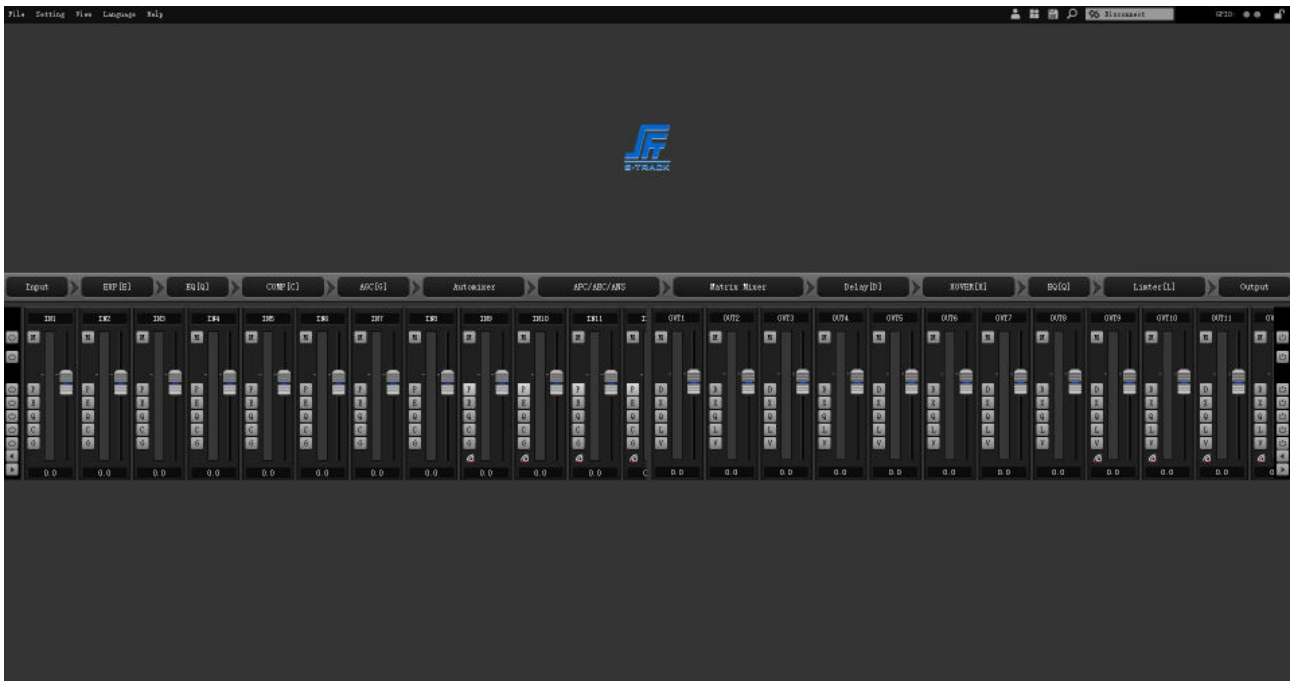
4.2.1 Login

Click the [Search] button, when the device list is refreshed, the online device [Model Name] will be displayed in the list column, double-click the corresponding device [Model Name] in the list column to bring up the 'left figure' login box, enter the user name/password input box (default user name: admin, password: 123456), click the [OK] button to complete the login connection to the device. OK] button, then you can complete the login to connect the device. After successful connection, the status bar of the software will display the user name and IP address of the connected device.

4.2.2 IP Address Modification

When the IP information of the device is not in the same network segment as the client, an 'exclamation mark' will appear in front of the model name of the device in the list of settings, at this time, you only need to double-click on the [model name] to bring up the IP information modification [dialogue box] and then you can modify the IP address.

4.3 Main Interface



4.3.1 Button Function Area

①  Button： Device Search Button: Click to search for connectable devices and display device IP;

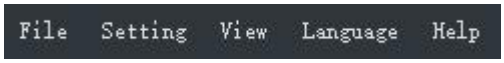
②  Button：Device Connection Button: The IP of the device is known, and you can connect directly by entering the IP address, user name and password in the pop-up box;

③  Button： Scene List Button: You can select and view the saved scenes through the list;

④  Button： Save Scene button: saves (overwrites) the parameter changes to the selected scene;

⑤  Button： Interface lock button: locks the current interface, which must be unlocked with the administrator password.

4.3.2 File



① New: Create a new scene, the parameters are factory configured and only available offline.

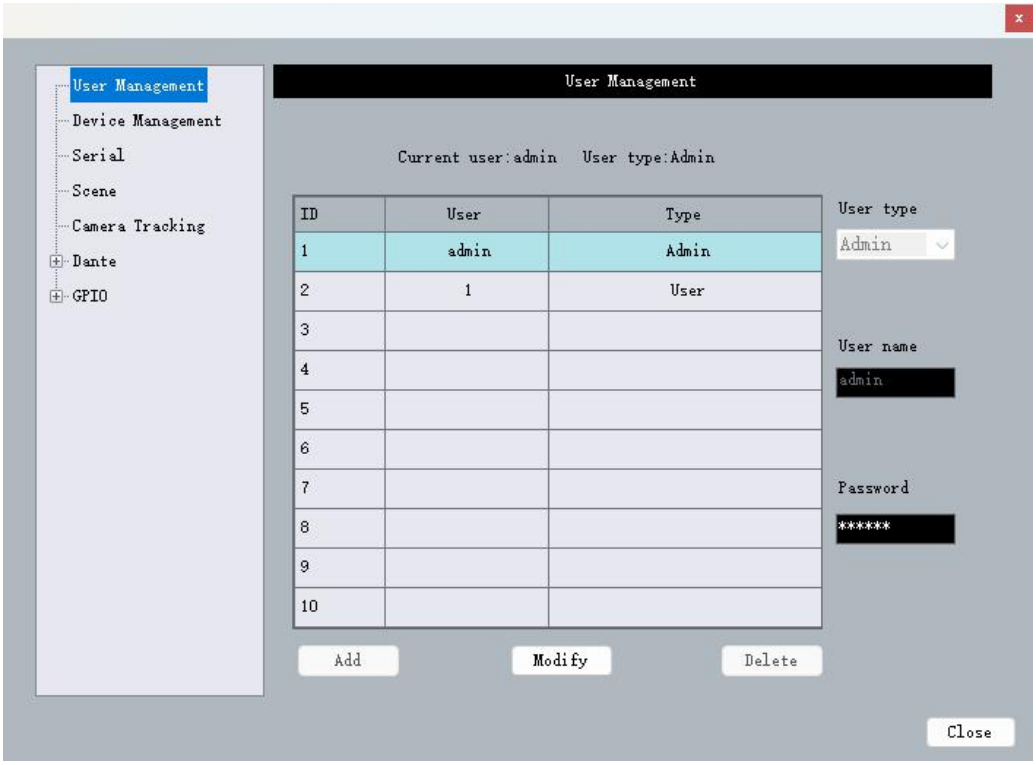
② Open: Open the locally saved scene.

③ Save as: Save the current configuration (i.e. scene) as a file locally.

④ Exit: Close the software.

4.3.3 Setting - Device Setting

I. User Management



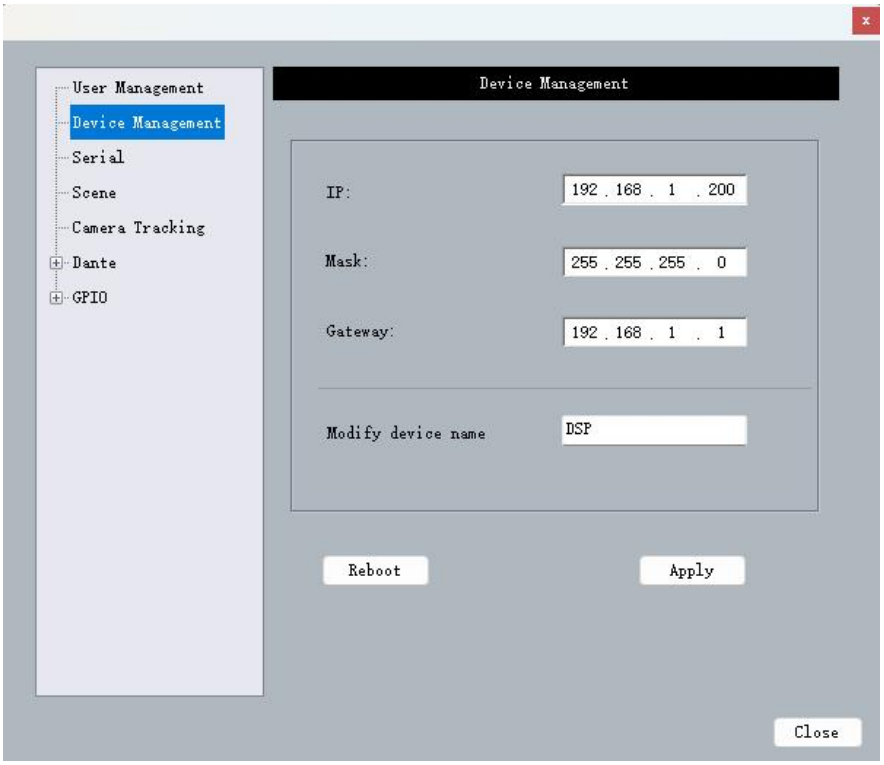
① Initial user name of the device: admin, password: 123456, administrator can add, delete, modify all user information, ordinary users can only modify personal information.

② Add a user: Select an empty line in the left list, and enter the new user's information in the right user name and password edit box (should be empty), click "Add" button to add a new user.

③ Modify user: first select the user you want to modify in the user list, the user name and password edit box will display the information of the currently selected user, enter the new information and click the "Modify" button.

④ Delete User: Select the line in the user list to be deleted, click "Delete" button to delete the user.

II. Device Management

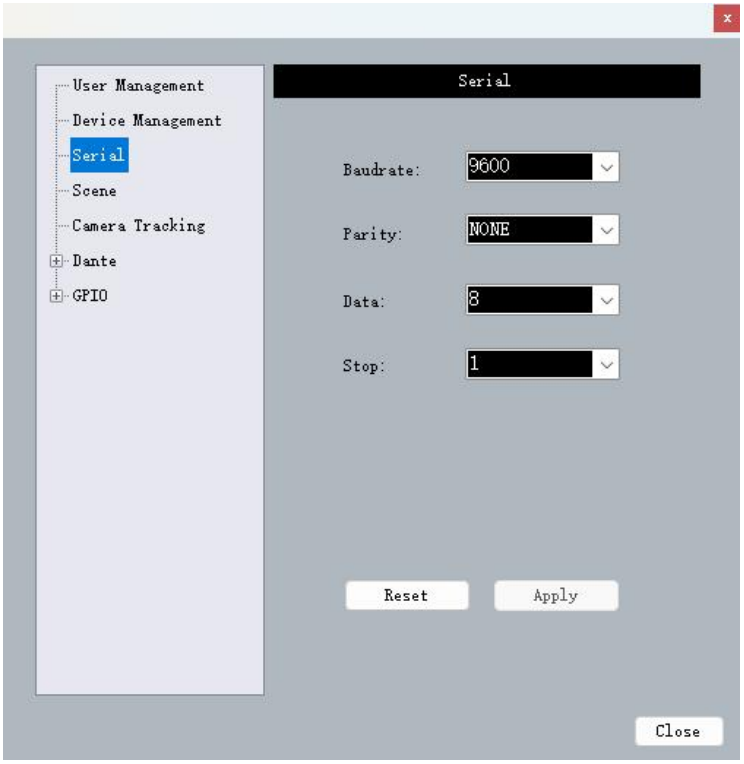


① View and modify the network address information of the device, enter the IP address, subnet mask and gateway in the corresponding position, and click the [Apply] button to complete the modification;

② View and modify the name of the device, enter the name of the device in the corresponding position, click [Apply] button to complete the modification;

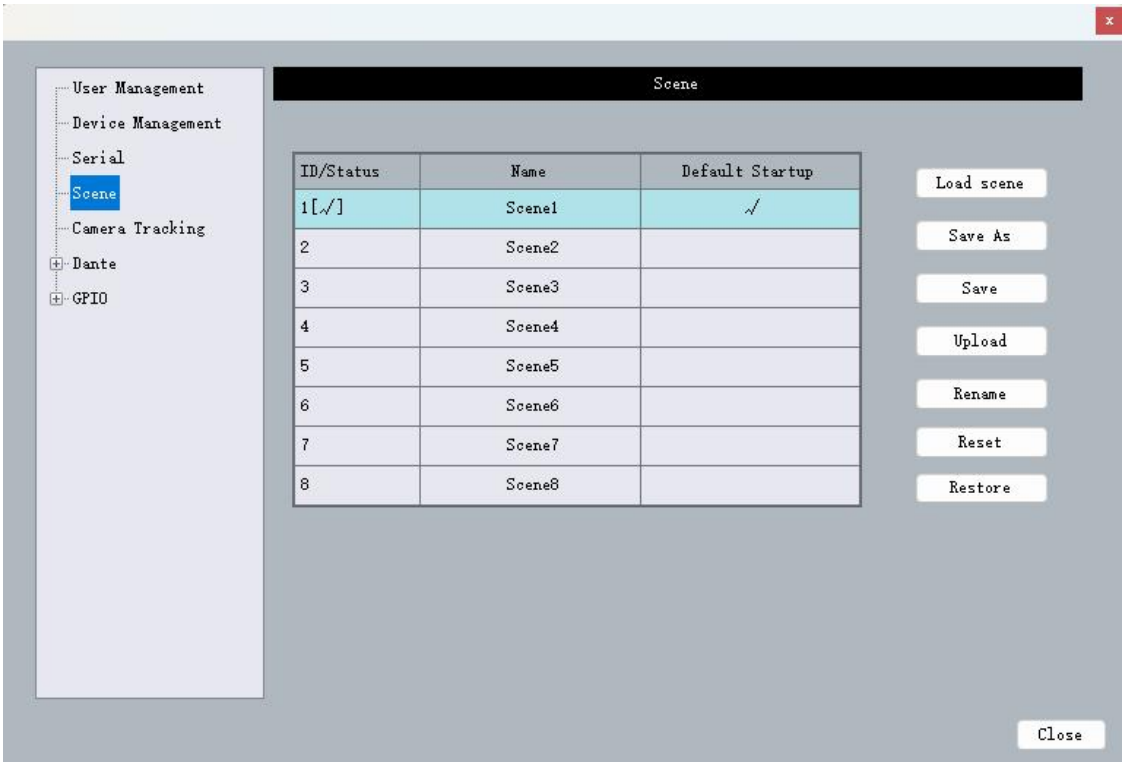
③ [Reboot] can control the soft reboot of the device in the window.

III. Serial



Serial window can view or modify the RS232/RS485 serial port number baud rate, check bit, data bit, stop bit settings are complete, click on the [Apply] button to modify the current device's serial port information, such as the need to restore to the initial default value, click on the [Reset] button, you can restore the settings of the parameter can not be empty.

IV. Scene



① Load Scene: Enable the currently selected scene, usually used for scene replacement;

② Save As: Save the selected scene locally;

③ Save: Save the currently running parameters to the selected scene;

④ Upload: Upload the scene from PC and overwrite the selected scene;

⑤ Rename: Modify the name of the selected scene;

⑥ New: Create a new scene file, you can customize the new scene, support up to 100 groups of scenes;

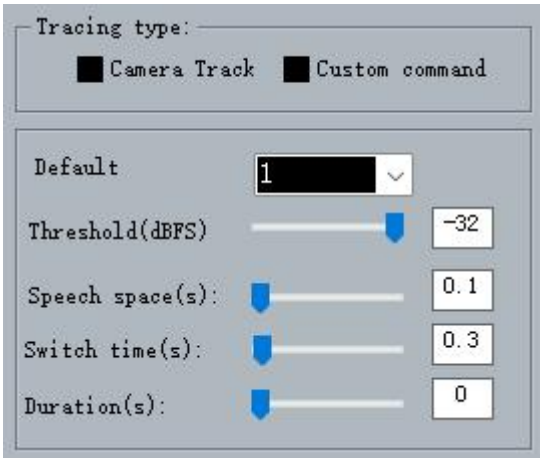
⑦ Delete: Select any scene in the list and delete it;

⑧ Reset: Restore the currently selected scene to the factory default state;

⑨ Restore: Restore all scene configurations to the default configuration and clear all new scenes, only retain the factory default 8 groups of scene files, please use with caution.

V. Camera Tracking

Camera tracking parameter saving: Each scene can save different camera tracking parameters, firstly, click "Apply" after setting in the camera tracking interface; then click "Save" in the "Scene Control" interface. Then click "Save" in the "Scene Control" interface, the camera tracking parameters will be saved to the corresponding scene automatically.



① Tracking type: There are camera tracking and custom commands. Camera tracking is used to control camera rotation by channel input signal; custom command sending is used to send corresponding custom commands to the corresponding port by channel input signal.

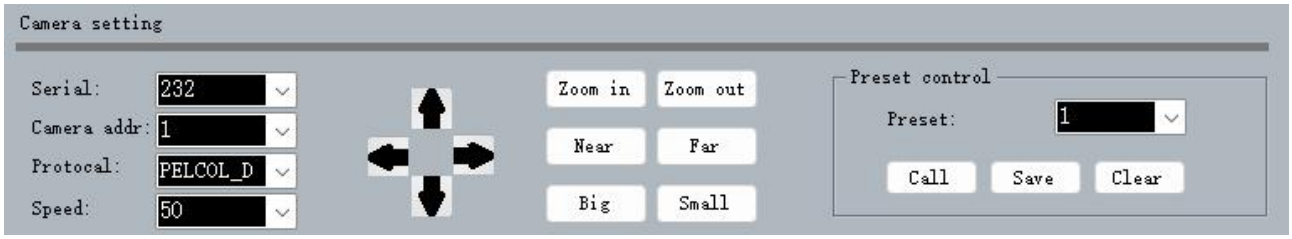
② Default: When there is no input from all microphones, rotate the camera to the position set by the default Mic or send the associated command defined by the default Mic. The one with # sign indicates the virtual number, which can only be used to set the default microphone.

③ Threshold: Means the detected input signal must be greater than or equal to the Tracking Threshold, and the system automatically enables the tracking parameter.

④ Speech space: Maximum intermittent time for a valid signal. If you use the microphone to speak, set the response time to 3 seconds, the signal is still regarded as continuously valid within 3S pause in the middle of the speech, and the signal is regarded as invalid if it exceeds 3S.

⑤ Switch time: The shortest speaking time required for the camera to switch to a valid position. If you use the microphone to speak, the length of speech must be greater than the "switching time", the channel signal is considered valid, and then the camera will automatically turn to the set position. Usually the "switching time" is greater than the "reaction time".

⑥ Duration: The interval time between sending camera switching commands or custom commands, such as 0 means special treatment, only triggered once.



⑦ The microphone number generally corresponds to the input channel of the device, i.e. it is the channel number to which the microphone is connected. The microphone number with # is a virtual number, which can only be used to set the default microphone.

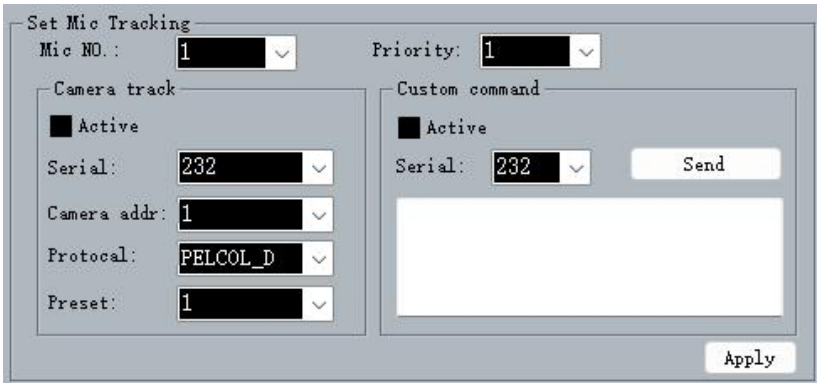
⑧ The smaller the priority number is, the higher the priority level is. When the priority level is the same, it will be processed in accordance with the triggering priority order; for example, if two microphones are speaking at the same time, the camera will automatically rotate to the preset bit corresponding to the microphone with the small priority number (i.e., the high priority level) or send the command corresponding to the microphone with the small priority number (i.e., the high priority level); however, if the two microphones are with the same priority level, the signal that is checked first will prevail.

⑨ Enable this Mic setting: you can set all the microphone parameters in full in advance, but when you use it, only some of them will be enabled according to the actual situation.

⑩ Preset points, serial port numbers, camera addresses, protocols and camera-related, must correspond to the actual connection of the camera.

⑪ Custom Command means that when the microphone of the matrix checks the input signal (usually when someone speaks), it will automatically send the corresponding command to the defined serial port, and secondly, you can also pre-set the command, but do not check "Enable Custom Command", the device will not send it automatically, but you can still click the "Send" button, and the command in the input box will be sent to the specified serial port at any time.

⑫ Click on "Save" to save the parameters to the device, so that the microphone for the channel is now associated with the corresponding camera address. Then use the "Enable Microphone Settings" option to determine whether the microphone settings are valid when tracking is enabled.



⑬ Camera Setting is a camera debugging interface, generally debug the camera position before tracking starts, and finally the parameters of this part will be saved on the camera.

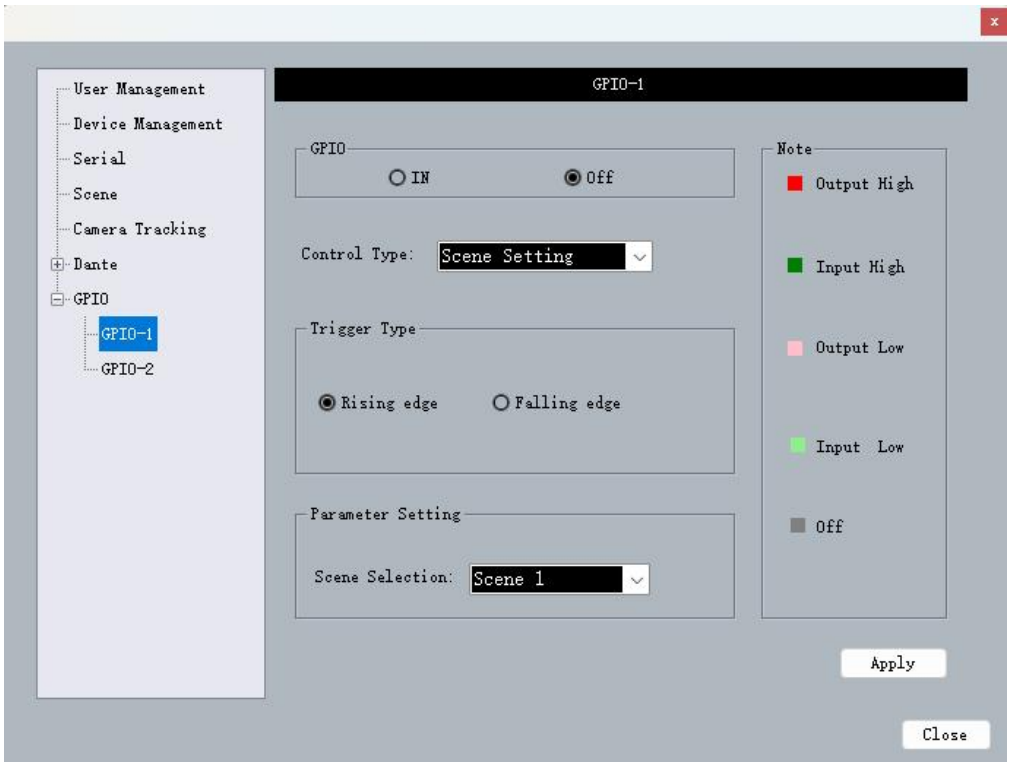
⑭ Firstly, serial port setting, there are 2 serial ports (232, 485), which correspond to the back panel port that the PTZ is connected to;

⑮ Next is the camera address and protocol type, please refer to the actual address of the camera for the camera address, and the protocol is related to the camera model;

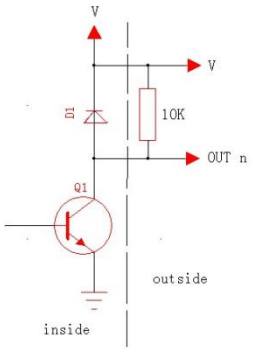
⑯ Lastly the preset point number is the user-defined identification for the camera, and then the adjustment of the up, down, left, right, and focal length, aperture, and other parameters will define the camera's position and settings;

⑰ Finally, click "Save" to save the parameters to the camera, "Clear" is to delete the information of the current preset point, "Recall" is used to view the camera saved by the current preset point. "Clear" is to delete the information of the current preset point, and "Recall" is used to view the camera position saved by the current preset point.

VI. GPIO



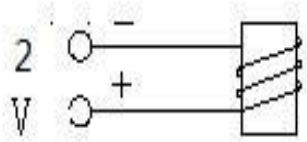
Output Connection 1:



Firstly, connect a 10K/0.25W resistor between a GPIO pin (e.g. port 2) and "V" on the device (as shown in the figure), the pin will output a low level 0 or a high level 1 according to the change of matrix state, and the level can be used to trigger another GPIO or other devices.

Output Connection 2:

Driver relays (control devices, etc., with



type): Relays can be used to control alarm built-in current-continuing diodes.

Trigger Type:

① Rising edge input: The IO port is held high when there is no input;

② Falling edge input: the IO port stays low when there is no input.

Control Type:

① Inputs: Scene, Mix, Volume, Channel Mute, System Mute, Serial Command Settings;

② Outputs: Scene, Level, Channel Mute, System Mute display.

GPIO Input Example 1

Scene Setting

The PC enters the GPIO-1 control window, selects the [Input] direction, the control type [Scene Setting], the trigger type [Rising Edge], the parameter settings are loaded to [Scene 2], and clicks the [Apply] button at the bottom of the window.

When the device hardware GPIO-1 pin level is pulled high from low, the trigger condition is established and the digital audio processor scene preset will automatically switch to scene 2.

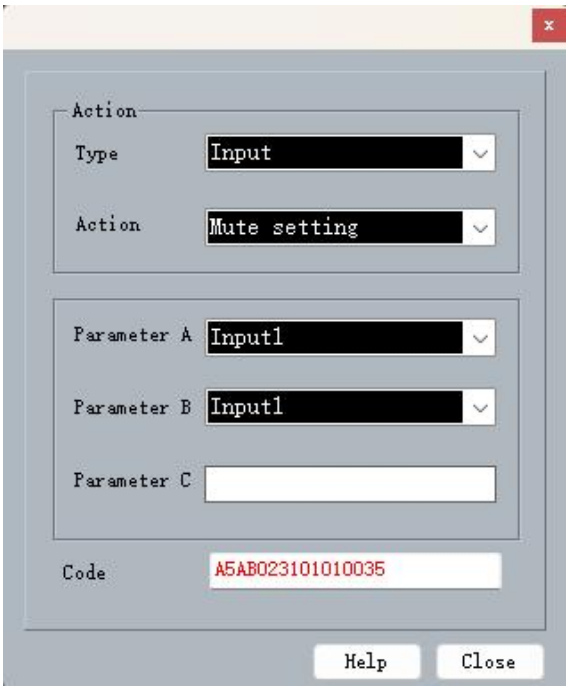
GPIO Output Example 2

Channel mute display

The PC enters the GPIO-2 control window, selects [Output] mode, display type [Channel Mute Display], trigger type [Output Low, No Output High], parameter setting [Inputs] channel selection [Input 2], and clicks the [Apply] button at the bottom of the window.

When the device input IN2 channel is muted, the corresponding GPIO-2 pin output is '1', and when the IN2 channel is unmuted the output is '0'.

VII. Center Control



The Central Command Generator is able to convert frequently used operations into a 16-character command code for easy invocation by external devices.

Control command types: Scene, Input, Output, Mix, Parametric EQ, Graphic EQ, Expander, Compressor, Auto Gain, Delay, Crossover, Limiter.

4.3.4 Viewing

① Open All: open all function module interfaces to display them;

② Open Input: open all the input function module interfaces and display them;

③ Open Output: open all the output function module interfaces and display them.

4.3.5 Language

Language switching supports Simplified Chinese, Traditional Chinese and English.

4.3.6 Help

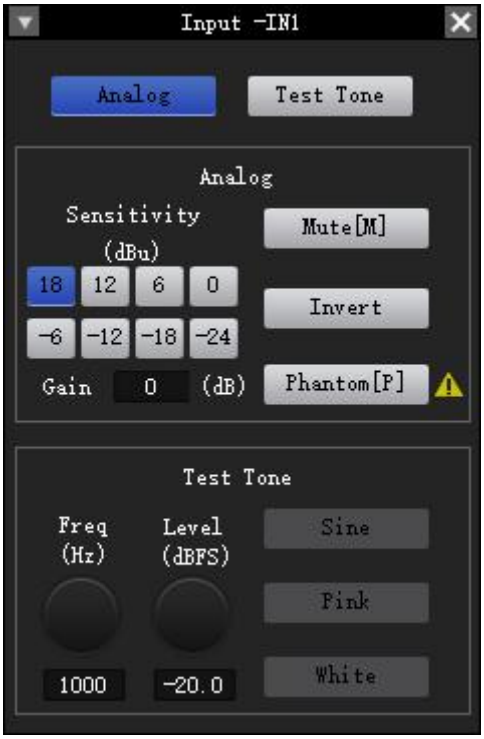
① Help: View the embedded user documentation of the device;

② Upgrade: for updating the system software version;

③ About: display software version information.

4.4 Pre-processing

4.4.1 Input Setting



① Model type: Analog input or test signal;

② Sensitivity: Analog signals can be adjusted by adjusting the sensitivity of the input can be selected, from 24 ~ -27dBu, step 3dBu a grade;

③ Mute: mute mode is enabled for the currently selected channel;

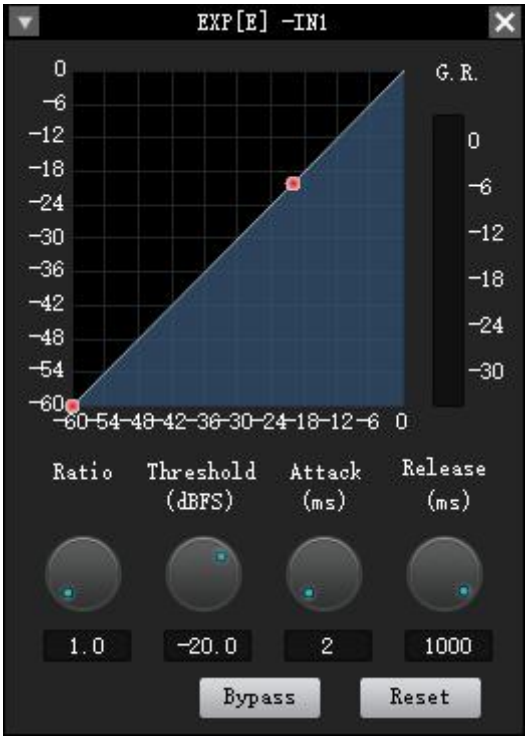
④ Invert: Inverts the input signal by 180°;

⑤ Phantom power supply: used for condenser microphone power supply, please do not turn on the line input or non-condenser microphone to prevent burning;

⑥ Test signal: including sine wave, pink noise, white noise, the system will automatically block the Analog input signal when the test signal is enabled.

4.4.2 Expander

The Expander is to increase the dynamic range of the input according to the user's needs: when the input signal is less than the "threshold", the Expander will compress the input signal according to the set "ratio", the output level = Threshold - (Threshold - Input Level)/Ratio; when the input signal is greater than the "threshold", it will be output at 1:1, the output level = Input Level. When the input signal is greater than the "Threshold", the output is 1:1 and the output level = input level.



① Enable/Pass-through: enable or disable the Expander for the current channel;

② Ratio: the decibel number of the dynamic change of the input signal of the Expander/the decibel number of the dynamic change of the output signal of the Expander;

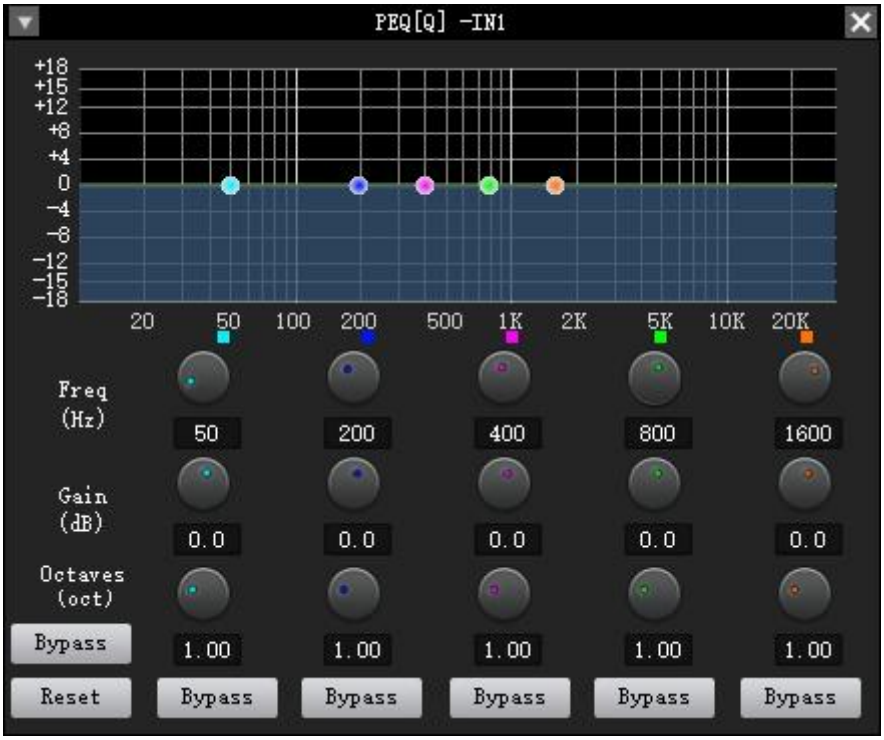
③ Start-up time: the time required for the input signal less than the Expander's "threshold value" to enter the expansion state and output according to the set expansion ratio;

④ Recovery time: the time required for the input signal to return from the extended state to the original non-extended state.

⑤ Reset: restores the parameter to the default value.

4.4.3 Parametric Equalizer

Equalizers are mainly used to modify over-emphasised or missing frequency ranges. Whether the frequency range is narrowed or widened, equalizers can help to repair the narrowed frequencies or widen the frequency range to achieve the ideal signal tone.



① Reset: all band filter parameters are restored to the default state;

② Enable/Pass-through: enable or disable all band filters;

③ Band Pass-Through/Enable: whether the band equalizer is valid or not;

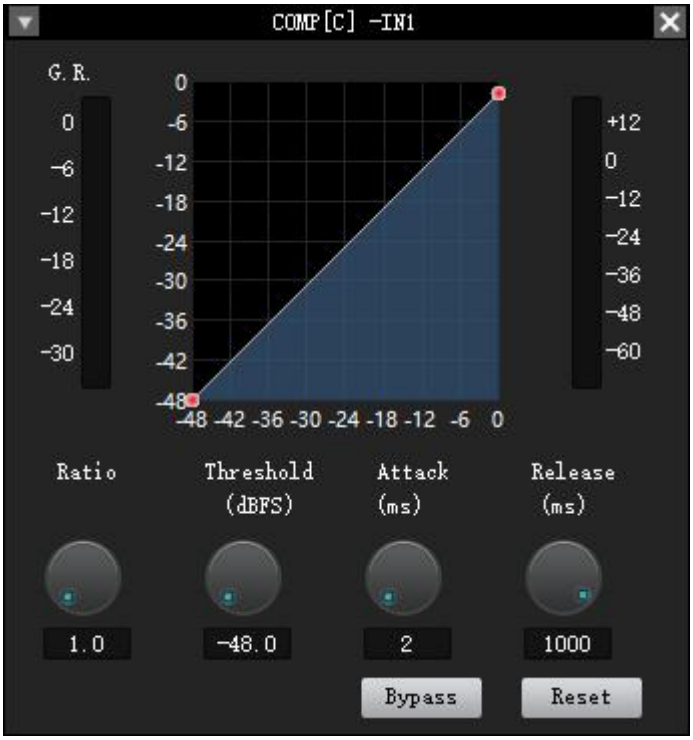
④ Centre Frequency: the centre frequency that needs to be equalized;

⑤ Gain: the gain/attenuation value at the centre point of the frequency;

⑥ Bandwidth: i.e. the influence range of the band around the centre frequency, the larger the value, the larger the bandwidth and the larger the influence range.

4.4.4 Compressor

The compressor is used to reduce the dynamic range of the signal above a user-determined threshold, with the signal level below the threshold remaining unchanged.



① Valve: The signal level above this valve starts to reduce the gain. This point is at the inflection point in the input/output curve. For Peak Stop, the threshold to be stopped is set just below the peak level;

② Ratio: the compression ratio of the input and output;

③ Start Time: the speed of gain reduction processing with which this compressor starts. The shorter the start-up time, the greater the instantaneous change of the signal, the short time gain reduction makes the hearing uncomfortable.

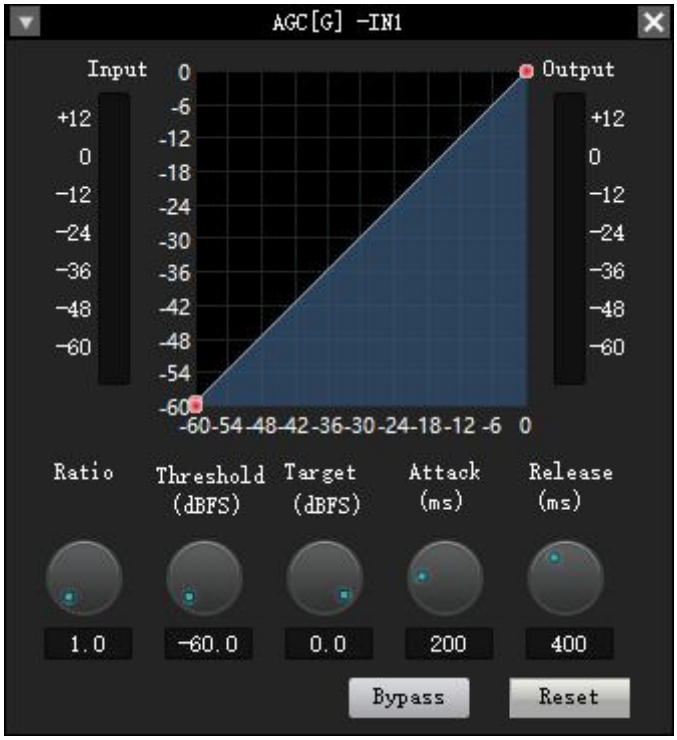
④ Release time: the release time determines the moment-to-moment gain change of the compressor. A fast release time raises the subjective level, while a slow release time is more useful for keeping the level under control;

⑤ Enable/Thru: Enables or disables the compressor for the current channel;

⑥ Reset: restores the parameter to its default state.

4.4.5 Auto Gain

The purpose of Auto Gain control is to bring a signal of uncertain level up to the target level while maintaining the dynamic range of the volume. Typical use: For example, when the user speaks in front of the microphone, the distance between the mouth and the microphone will be far away and close to each other, which will cause the output volume to go up and down, or even feel that the speech is intermittent. Auto Gain is to set the threshold value for the input signal below the threshold in accordance with the ratio of 1:1 output, for the level above the threshold is in accordance with the ratio of direct enhancement, set the target level, the sound signal can be stable output.



① Valve: when the signal level is below the threshold, the input/output ratio is 1:1. when the signal level is above the threshold, input/output = ratio. Set this threshold level slightly above the noise ratio of your input signal;

② Target Level: the desired output signal level; Auto Gain Control is to automatically control the magnitude of the gain by changing the input/output compression ratio. When a weak signal is input the signal is amplified to ensure the strength of the output sound signal; when the strength of the input signal reaches a certain level, the signal is compressed to reduce the amplitude of the sound output.

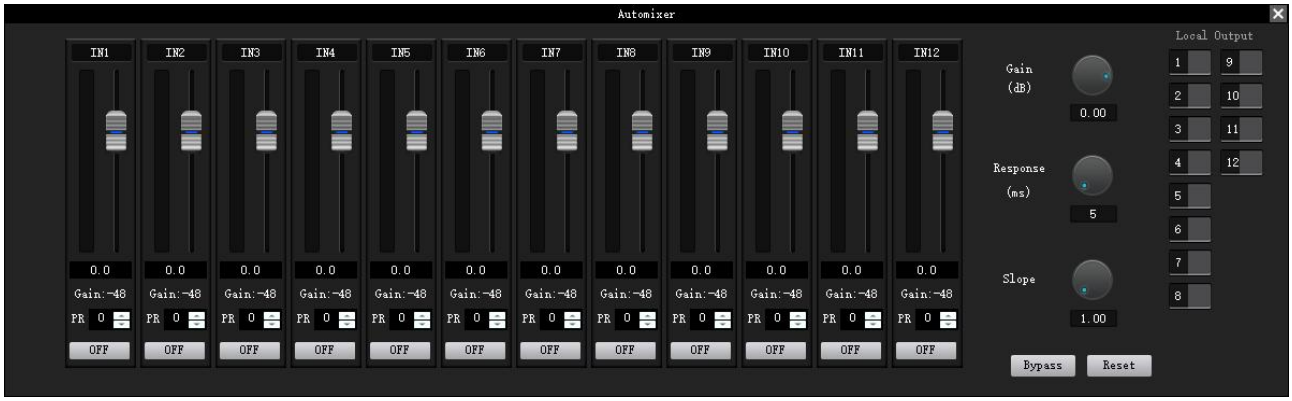
③ Enable/Pass-through: Enable or disable auto gain for the current channel;

④ Reset: restores the parameter to the default state.

4.4.6 Automixer

Automixer are primarily used to automatically operate and control how a traditional mixer with a large number of speech inputs outputs the desired results. Consider a typical conference room scene with ten participants, each with a microphone, if ten microphones are switched on at the same time and only one person is speaking as a result, then the output will definitely not be ideal as the other nine microphones pick up room acoustics, reverberation, etc., which will reduce the output of the entire system.

Each channel of the Automixer has an input, gain level meter and an auto gain, channel fader, priority, and channel mute. Channel Controls Each channel has an "Auto" button that is pressed to add the channel to the Automixer. Channel Mute and Fader are both Auto Gain types. To mute a signal and prevent it from going into the Automixer, turn Mute on and off. The channel fader controls the mix level and direct output level of the channel.



① Priority control PR: The higher the value the more gain acquisition capability and the higher the priority, able to reduce the ability of channels with a low priority level to acquire transmission gain. This control defines the priority level with a value between 0 (lowest priority) and 10 (highest priority), and the default value is 5 (standard priority). If all channels have equal priority, set the priority of all channels to 5;

② Gain: the overall output gain of the Automixer;

③ Slope: similar to the expansion ratio of an extender, the larger the slope value, the more the speaking microphone acquires the transmission gain, the more the non-speaking microphone attenuates the transmission gain; the smaller the slope value, the less the speaking microphone acquires the transmission gain, and the less other non-speaking microphone attenuates.

④ Response Time: The time for a microphone to acquire all the transmission gain when it is speaking or the time for other non-speaking microphones to attenuate the transmission gain. The longer the setting, the longer it takes for the speaking microphone to acquire the full transmission gain and the longer it takes for the other non-speaking microphones to attenuate the transmission gain. The shorter the setting, the opposite is true.

⑤ Local Output: Select the channel for local output;

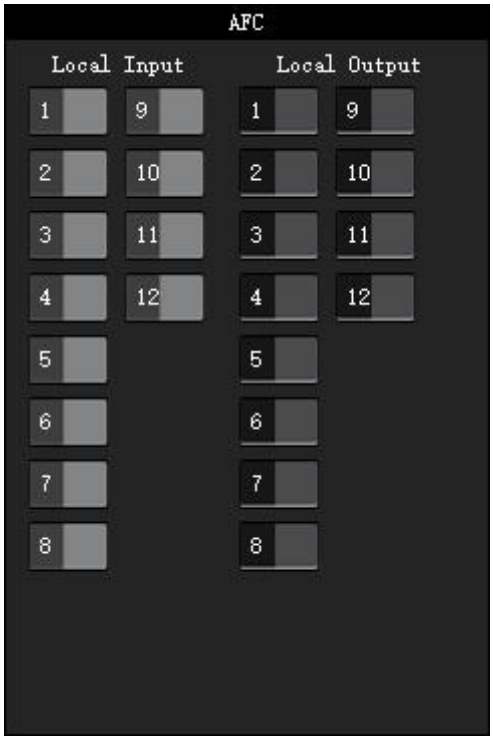
⑥ Enable/Pass-through: enable or disable the auto gainer for the current channel;

⑦ Reset: restores the parameter to its default state.

4.5 AFC, AEC, ANS

4.5.1 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.

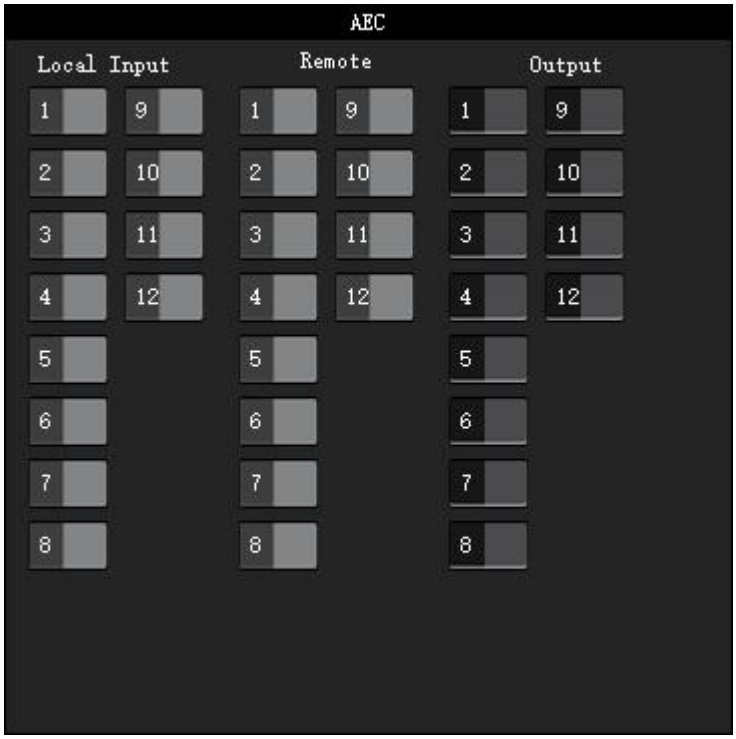


Feedback: Select the signal that needs to be processed by the feedback cancellation, and the processed signal selects the output channel in the mixer;

① Local Input: the channel for local Mic output, i.e. the signal that needs to be processed by the feedback cancellation;

② Local Output: the signal processed by the feedback cancellation, output to the local output channel.

4.5.2 AEC



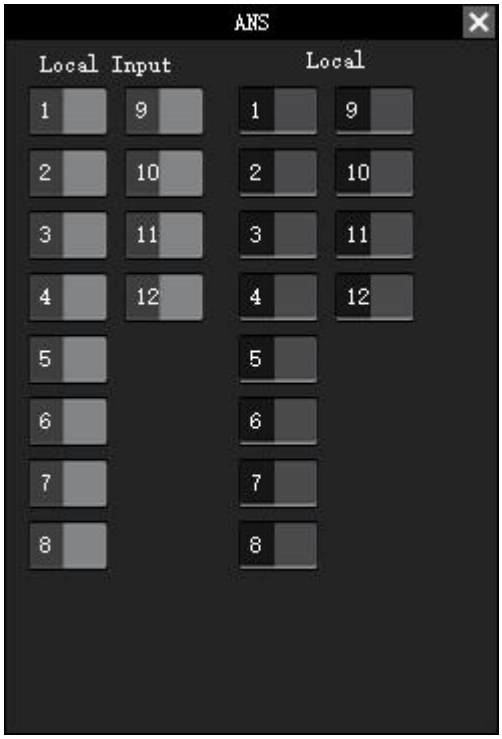
Acoustic Echo Cancellation: Set the signal that needs to be processed by the Echo cancellation, and the processed signal selects the output channel in the Mixer;

① Local Input: local Mic output channel, i.e. the signal that needs to be processed for echo;

② Remote Input: the echo remote input, i.e. the reference signal;

③ Local Output: the signal after echo processing, output to the local output or output to the remote end;

4.5.3 ANS



Adaptive Noise Suppression: Select the signal that needs noise suppression processing, and the processed signal is output in the mixer by selecting the corresponding channel;

① Local Input: local Mic output channel, i.e. the signal that needs noise suppression processing;

② Local Output: The signal after noise suppression processing is output to the local output channel;

Example 1 AFC with Matrix Mixer association operation

The signals from input channels IN1 and IN2 will be feedback processed and output in output channel OUT1, configured as above:

① AFC algorithm Window [Local Input] list selects the input channels IN1 and IN2, indicating that the signals of input channels IN1 and IN2 will be sent to the AFC for processing;

② The [Local Input] list selects the point corresponding to the output channel OUT1, indicating that the input signal is routed to the OUT1 channel for output after being processed by the AFC algorithm. After the AFC algorithm is enabled, the corresponding channel of the Matrix Mixer Window list is displayed in cyan.

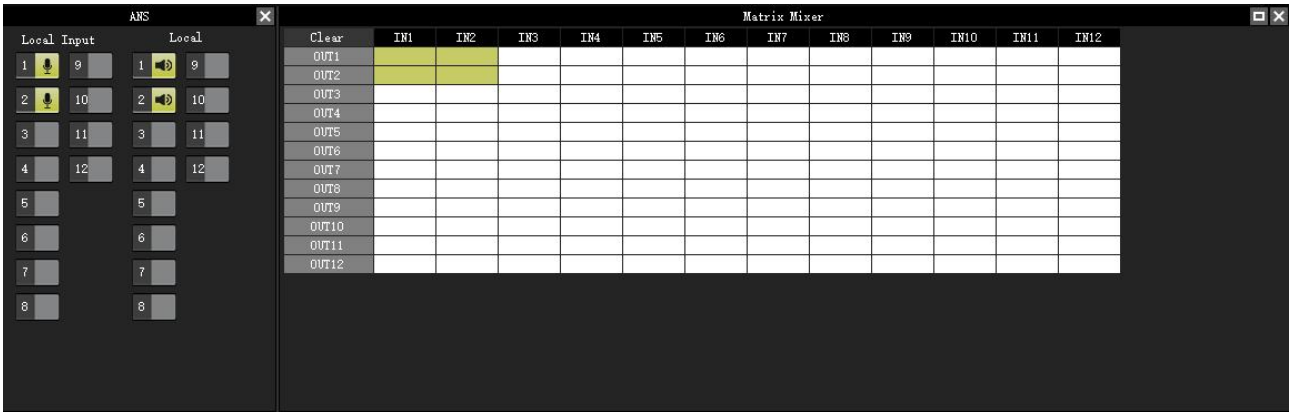
Example 2 AEC with Matrix Mixer association operation

The local input signal is IN1 channel and the remote input signal is IN2 channel, at this time, the local input and the corresponding channel of the remote input will be grayed out to prevent the algorithm from being activated abnormally due to the checking, and the local input signal will be outputted from OUT1 channel to the remote place, and the configuration will be as described in the above figure:

① AEC algorithm window to select the local input IN1 channel and then select the remote input IN2 channel, that is, the remote input IN1 channel and the remote input IN2 reference signal will be sent to the AEC for processing;

② The local input IN1 signal is then output to the remote end through the OUT1 channel, and the remote input IN2 reference signal is then routed through the matrix to the OUT2 channel for output to the local loudspeaker.

Example 3 ANS with Matrix Mixer association operation



The local input IN1 and IN2 channel signals are processed for ANS and output on OUT1 and OUT2 channels, configured as above:

① Input IN1 and IN2 channels are selected in the ANS Algorithm window, indicating that the input signals of input IN1 and IN2 channels are sent to the ANS for processing;

② Check OUT1 and OUT2 in the local output list, which means that the result of the ANS processing will be sent to the output OUT1 and OUT2 channels for output. After enabling the ANS algorithm, the corresponding channels in the Matrix Mixer window list are shown in tea color.

4.6 Matrix Mixer

Matrix both signal routing and mixing double multiplexing function, the control logic is horizontal for the input channel, vertical for the output channel, the matrix initialization state is (as shown in the figure above: one-to-one) input and output.

4.7 Post-processing

4.7.1 Delay

The time interval between the input of a signal to this processor and the output of this processor is generally used to produce other effects such as reverberation or echo, and can equally be used to act as a treatment for auxiliary loudspeakers in larger rendition situations.

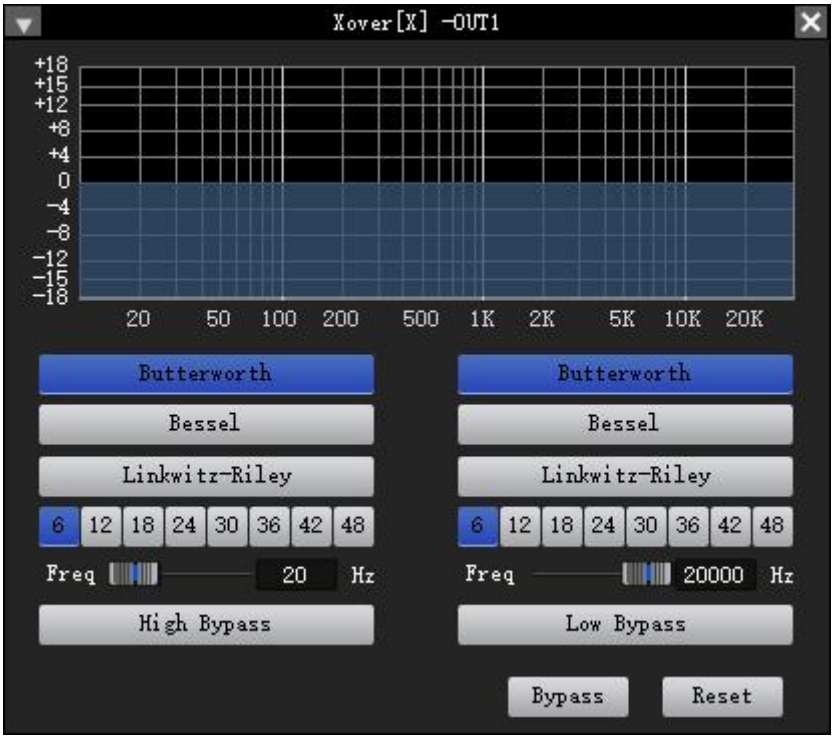
① Delay time: delay time range (0~2000ms);

② Delay distance: delay distance range (0~680m);

③ Enable/Pass-through: enable or disable the delayer for the current channel;

④ Reset: restore the parameter to the default value.

4.7.2 XOVER



① Filter Type: Butterworth/Bessel/Linkwitz-Riley;

② Slope: 6/12/18/24/30/36/42/48;

③ High-pass frequency: Cut-off frequency of high-pass filtering;

④ Low-pass frequency: cut-off frequency point of low-pass filtering;

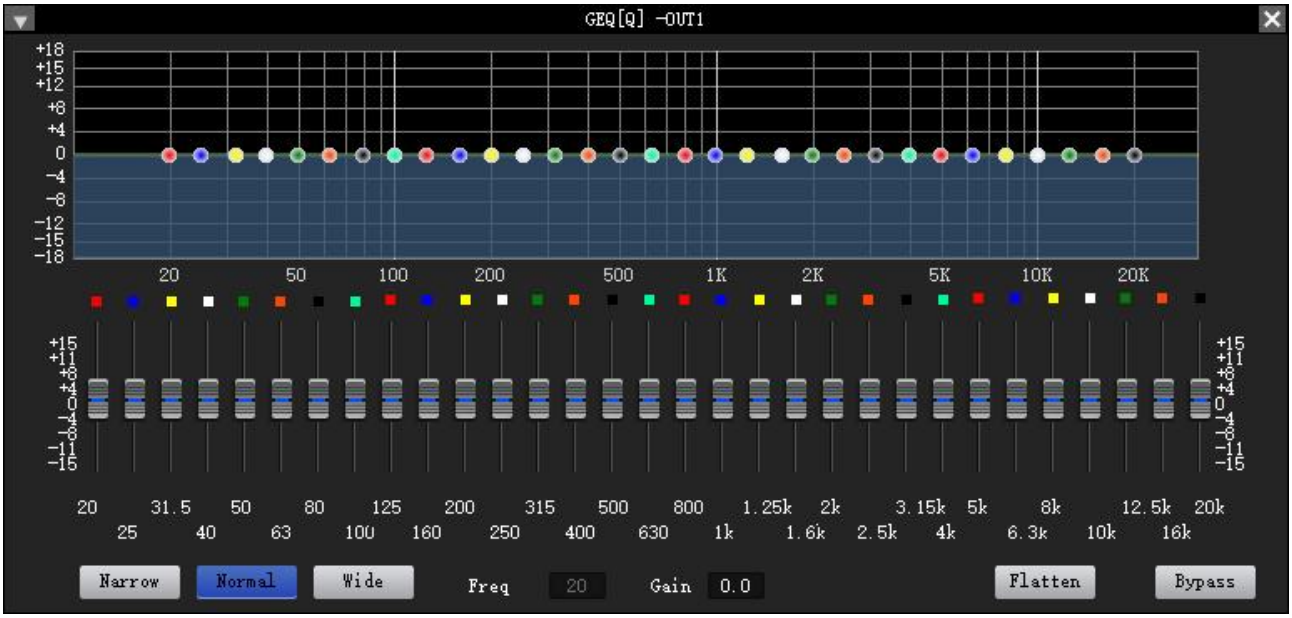
⑤ High frequency pass-through/enable: enable and disable the high pass filter;

⑥ Low frequency pass-through/enable: enable and disable the low-pass filter;

⑦ Enable/Straight-through: enable or disable the crossover for the current channel;

⑧ Reset: Restores the parameters to the default values.

4.7.3 Graphic Equalizer



① Narrowband: narrowband equalization filter; Normal: regular equalization filter; Wideband: wideband equalization filter;

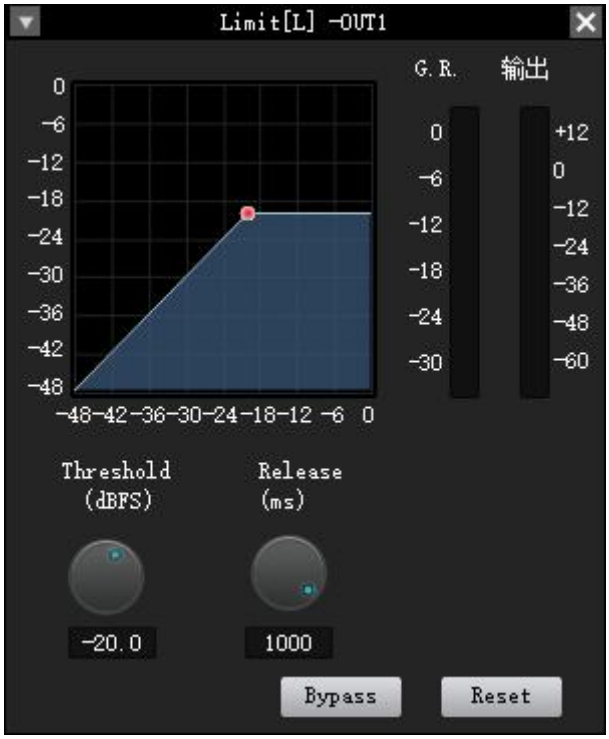
② Centre frequency: centre frequency indication of the current equalization filter;

③ Gain: Gain indication or control of the current equalization filter;

④ Straighten: Restore all the band gains to the default state;

⑤ Enable/Pass-through: enable or disable the graphic equalizer for the current channel.

4.7.4 Limiter



① Enable/Pass-through: enable or disable the limiter for the current channel;

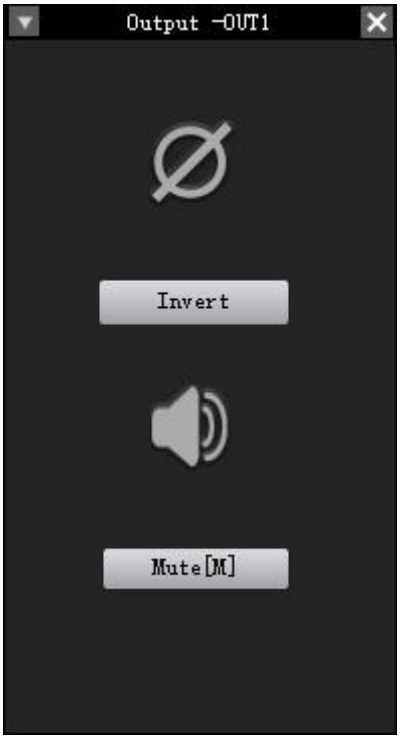
② Threshold: the starting level of the limiter, when the signal is higher than this limit value, the limiter processing module will be activated;

③ Recovery time: when the input signal is lower than this setting value, the sound channel will not be turned off immediately, but will be delayed based on this setting value. During this time, as long as there is a signal higher than the "Threshold" limit value, the sound channel will continue to be turned on.

④ Compression: The difference between the signal processed by the limiter and the input signal.

⑤ Reset: Resets the parameter to its default value.

4.7.5 Output Setting



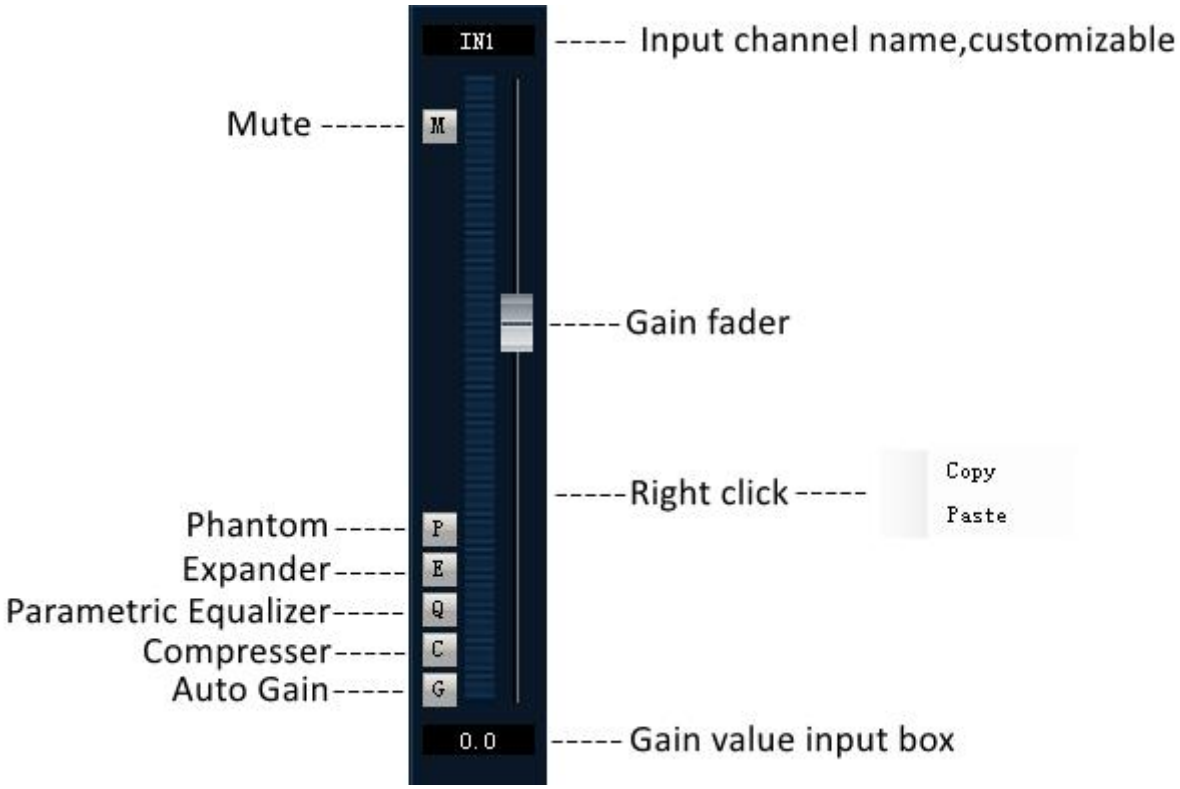
① Mute: Control the output channel mute;

② Invert: set the output channel signal 180° inverted.

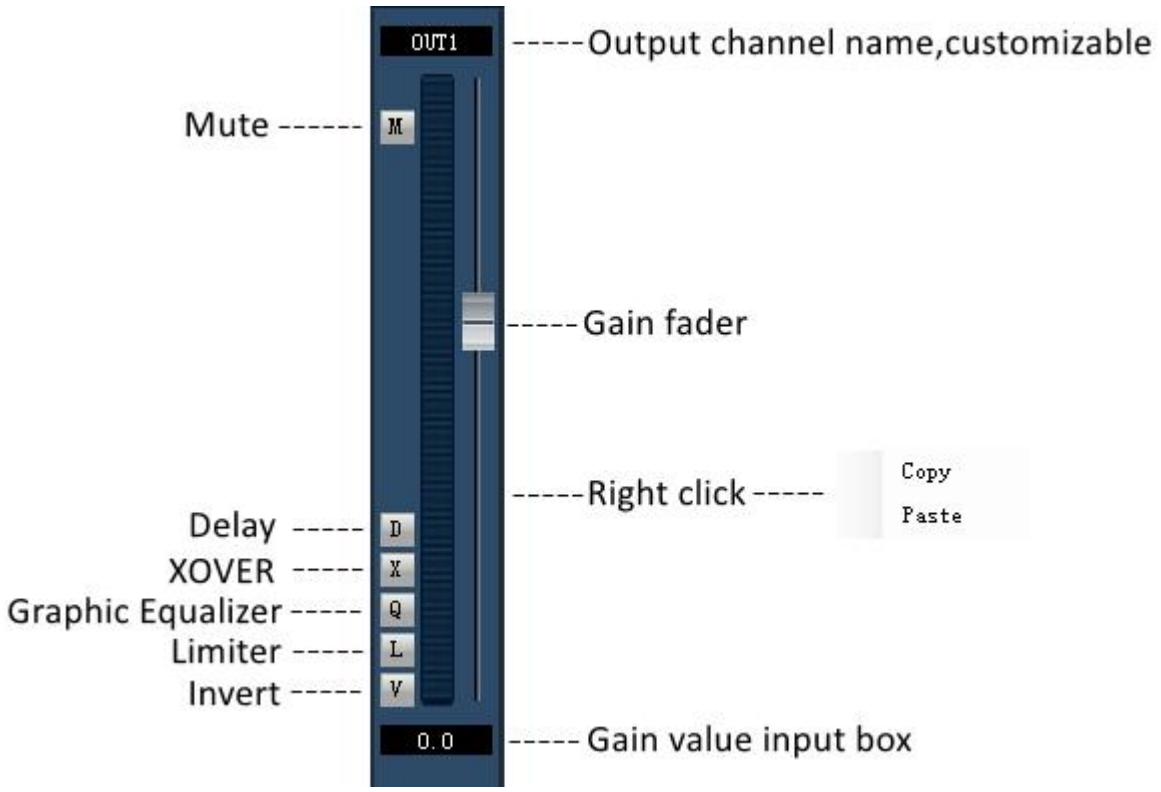
4.8 Other Functions

4.8.1 Channel Control

I. Input Channel Control and Shortcut



II. Output Channel Control and Shortcut



4.9 Dante Network Audio Routing

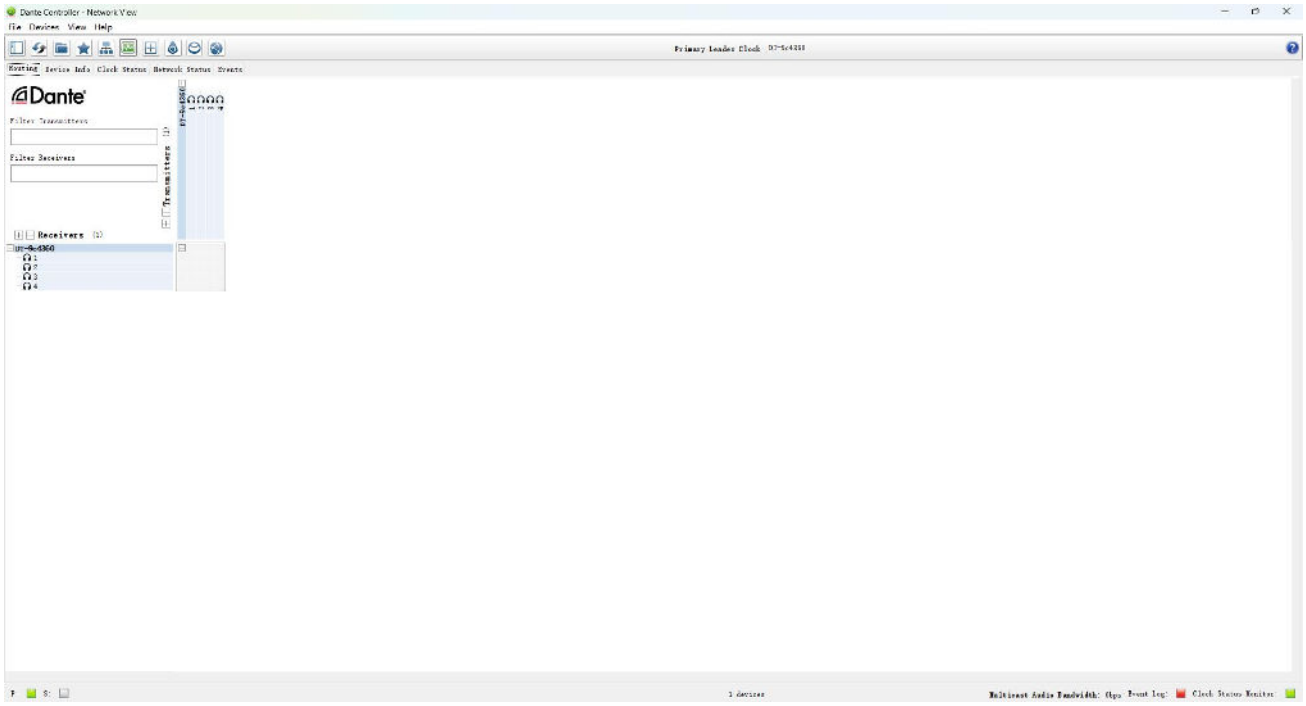
In a Dante audio network, the Dante Controller software is required to set up the routing of the various signals accessing the processor. It can realize 1-to-1, 1-to-N mapping operation from input to output within Dante network.

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)



Chapter 5 Packing List

Device	DC12V/2A Power Adapter	Quick Guide	12pin Phoenix Connector	4pin Phoenix Connector	Small Screwdriver
1PCS	1PCS	1PCS	4PCS	1PCS	1PCS

Warranty Regulations

The warranty period of this product is 1 year.

In the warranty period of non-man-made damage caused by the product performance failure can enjoy three packages of service.

Warranty card by the sales unit stamped after the effective. The alteration is invalid!

The following conditions (including, but not limited to, this) are not covered by the three-package service:

1. No warranty card or missing valid invoice or the date has exceeded the validity period of the three packages of services;
2. Not in accordance with the requirements of the product instructions for use, maintenance, management and damage caused;
3. The product model or code on the warranty voucher does not match the physical goods;
4. Damage caused by the dismantling and repair of non-authorised service providers;
5. Normal discolouration, wear and tear and consumption during the use of the product are not covered by the warranty;
6. The product cannot be used due to the user's own network reasons, please consult customer service staff.

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