Digital Audio Processor

User Manual

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1. Instructions

Please be sure to read all the contents of user manual before using this product. This manual relates to the safety of the device, against improper operation of device damage.

2. Safety Information

Please read the following notes carefully and install the product as required to avoid your loss.

⚠ **WARNING**: This device is for indoor installation or use in the cabinet, shall not be sprayed by liquid, and shall not place liquid objects on the device. Do not allow liquid to spill into any part of the device.

⚠ **WARNING**: Unplug the power cable of the device during lightning weather.

⚠ **WARNING :** When not using the device for a long time, should pay attention to moisture-proof, it is recommended that be powered up 3 hours a week.

Warning:

Power supply: 100V ~ 240V.

Power cord protection: Properly wiring, avoid trampling or heavy objects squeeze.

Maintenance: All repairs must be carried out by certified maintenance personnel. Do not try to open the device to avoid the danger of electric shock.

Vent: The devices have air vents or holes in their shells to prevent overheating of sensitive components. Don't block the vent with anything.

Power Related Contents:

Please make sure that the plug is tightly plugged and the cable is tightly connected, otherwise it may cause failure.

Do not use loose power socket or damaged power cord, otherwise it may cause electric shock or fire.

Do not touch the plug with wet hand under any circumstances, otherwise there is danger of electric shock.

Do not plug multiple devices into one socket, otherwise it may cause fire.

Do not press the heavy objects on the power cord to prevent bending, pulling or winding of the power cord.

Additional safety information:

Users must read and understand all safety and usage instructions before using the device.

Users should keep the user manual for future use.

3. Product Introduction

This digital audio processor is using the latest fourth-generation SHARC ADSP-21488 400Mhz floating-point DSP, with powerful DSP processing capabilities. Each input and output channel have 16-band parametric filter, gain control, noise gate, feedback suppression, RMS pressure limit, built-in pink/white noise generator and adjustable delay. The divider slope is optional from 6dB/Oct to 48dB/Oct. The delay step precision is 0.02ms, the level gain precision is 0.1dBu.

ADSP-21488 400Mhz floating-point DSP

AD-DA dynamic range 114dBu

System dynamic range 110dBu

Input 16-band PEQ，Output 16-band PEQ

Each input has noise gate

Each input has feedback suppressor

Each input has pressure limiter

100M Ethernet interface

PC software automatic discovery processor

32 Preset

Fast copy of channel parameters

Update ARM and DSP firmware via Ethernet

Security password protection, without permission shall not operate on it

4. Technical Specifications

Item	Specifications
Max Input Level	18dBu
Max Output Level	18dBu
Default Output Level	0dBu
THD+N	<0.003%; 1kHz@+4dBu <0.0035%; 1kHz@+10dBm <0.0035%; 20Hz~ 20kHz@+4dBu
Frequency Response	20Hz-20kHz, +/-0.2dB
In To Out dynamic range	110dB（Unrecorded right）
S/N	-110dB（Unrecorded right)
ADC Dynamic Range	CS5361 114dB
DAC Dynamic Range	CS4382A 114dB
DSP	400Mhzfloating-point SHARC ADSP-21488
Sampling Frequency	48K
QE	24Bit
Storage	32
Control Mode	100M Ethernet
Language	English
Noise Gate	Yes
Feedback	Yes
Signal Generator	Yes
Pressure Limiter	Independent 12 channel
Delay	Output 1-4 218ms Output 5-8 148ms
PEQ Low Shelf High Shelf	Independent 16-band
High Pass/Low Pass Bessel Butterworth Link-Riley	Independent 12 channel -6dB/oct -12dB/oct -18dB/oct -24dB/oct -36dB/oct -48dB/oct

5. Front Panel



5.1、 Input Level Indicator Light

Above is input signal indicator light. When the input signal exceeds -40dBu, the signal indicator light is illuminated, indicating that the audio signal is input from the corresponding channel. Below is auxiliary button and mute switch.

5.2、 LCD Screen

ARM version

Control IP address

Location description

Custom properties

Electric running time

5.3、 Audio Function

Gain, Gate, Xover, PEQ, Delay, Matrix, Limiter, All Mute, Setup, Copy, Save, Recall

5.4、 DataWheel

Data alignment

5.5、 Output Level Indicator Light

Above is output signal indicator light. When the output signal exceeds -40dBu, the signal indicator light is illuminated, indicating that the audio signal is output from the corresponding channel. Below is auxiliary button and mute switch.

6. Rear Panel



6.1、 Power Switch

6.2、 AC In

Support 100V~240V AC voltage, please use the standard power cable, use power outlet with grounding.

6.3、 RS-232 Interface

Use to connect the third-party central control system.

6.4、 Ethernet Interface

Connect to switch using standard 5 Ethernet networks, also can connect directly to laptop.

6.5、 Audio Input Interface: Channel 1 ~ 4

Standard XLRF input, balance audio input interface.

6.6、 Audio Output Interface: Channel 1 ~ 8

Standard XLRM output, balanced audio output interface.

7. Software Running Environment

Operating system request: windows XP、Windows 7 32Bit、windows 7 64Bit

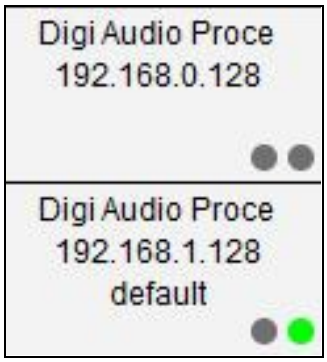
Storage space occupation: 50Mb

Network environment: 100m LAN or wireless router

8. Software Connection

The processor's network cable is connected to the same switch with the computer. Turn on the power of this processor.

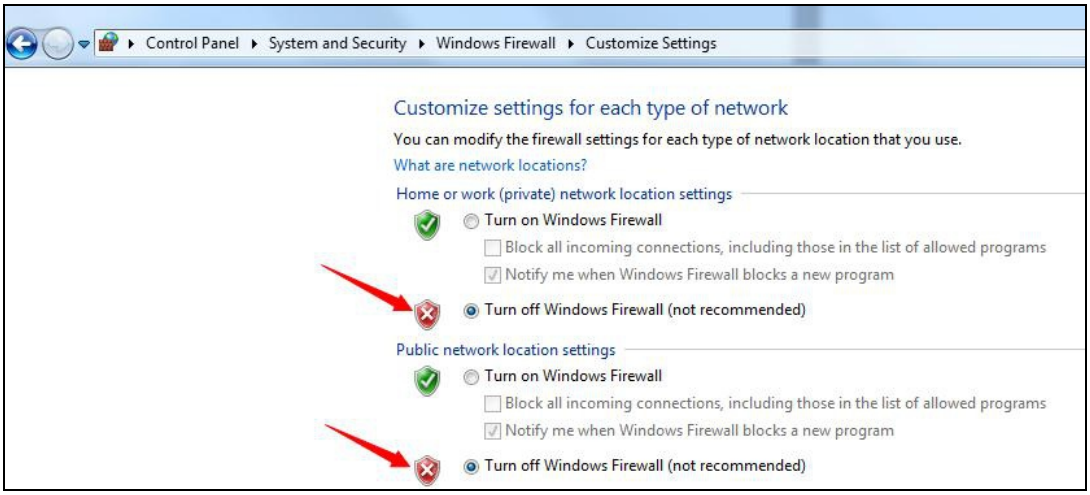
This digital audio processor uses auto-discovery protocol. When the software is turned on, it can detect all the processors within the LAN.



Close the windows firewall if the device List page cannot find the processor after opening the software.

The following screenshot is a Windows 7 / 32-bit system.





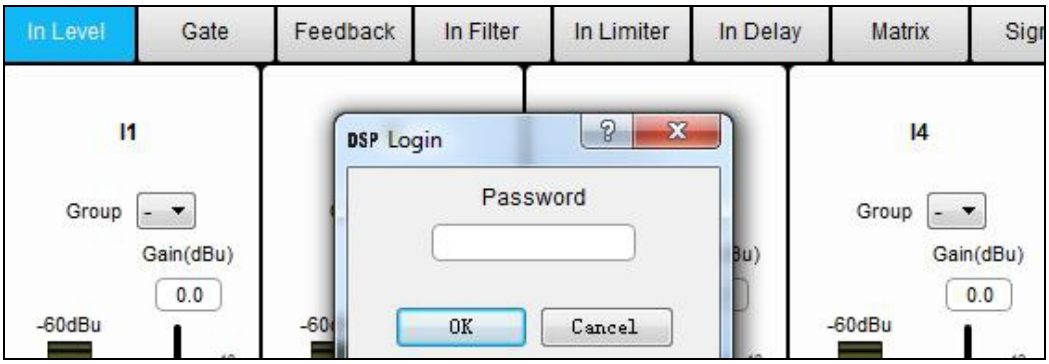
The functions of the control software may be partially disabled by the anti-virus software on your computer, resulting in the failure to work properly.

If the antivirus software directly deletes or isolates some files in this software, please release the isolated files.

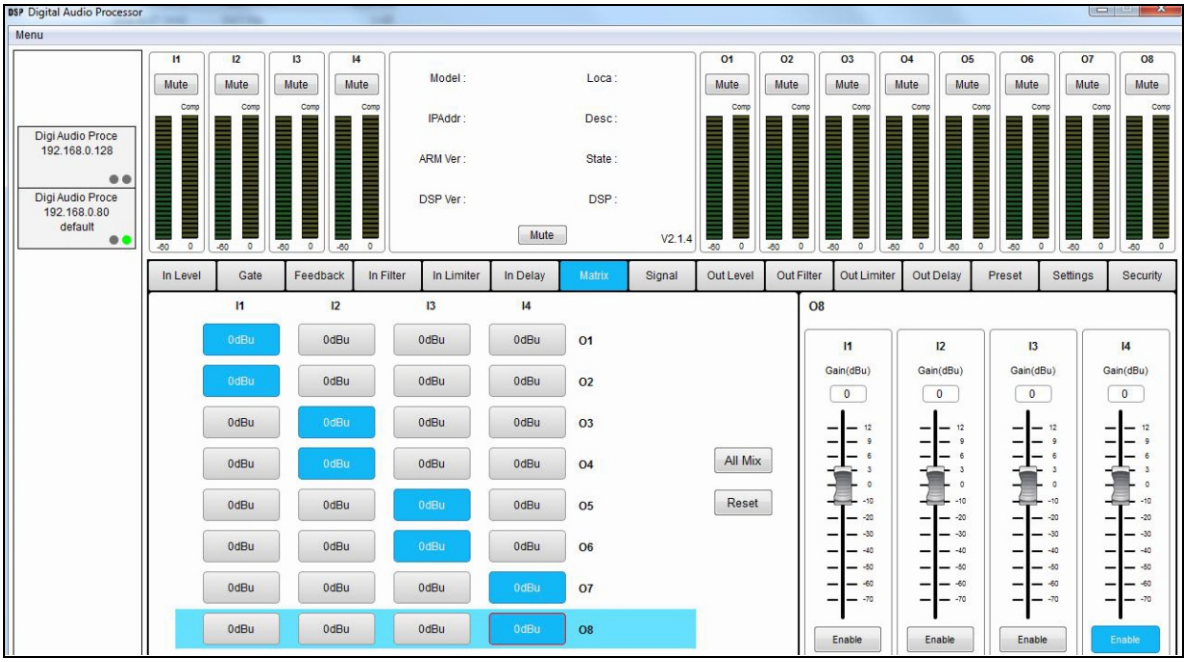
9. Password Login

Enter the password for operation when the processor is connected. Allow authorized personnel to control the processor parameters.

Factory default user password：admin



10. Home Screen



Device list	The left side of the home screen displays the online processor IP address on the current network and the history connection IP address. When there are multiple processors on the network, double-click the left IP address to control the switch.
Input level meter	Each input: volume, compression level, noise gate, mute
Output level meter	Each output: volume, compression level, noise gate, mute
Functional interface	Level、Gate、Limiter、Delay、MatrixMixer、PEQ、Signal、Preset、Setting、Security

11. Home Screen Menu

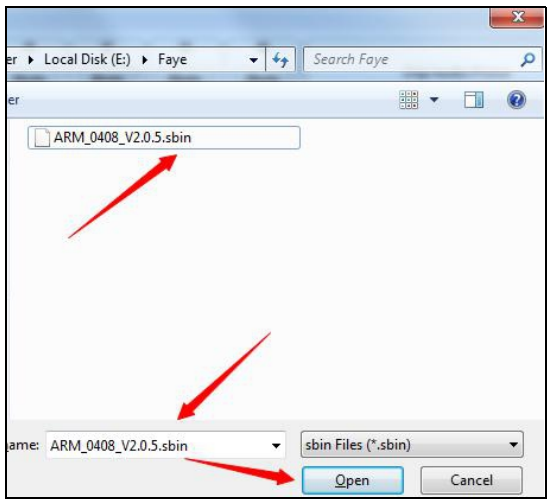
11.1 Updata ARM firmware

When the system function is upgraded, the ARM firmware needs to be upgraded.

As below:

Click the menu Updata ARM Firmware, it will pop up a dialog box, select the suffix for sbin firmware, click OK to upgrade progress bar, about 25 seconds to complete the upgrade, the device will restart automatically after the upgrade.







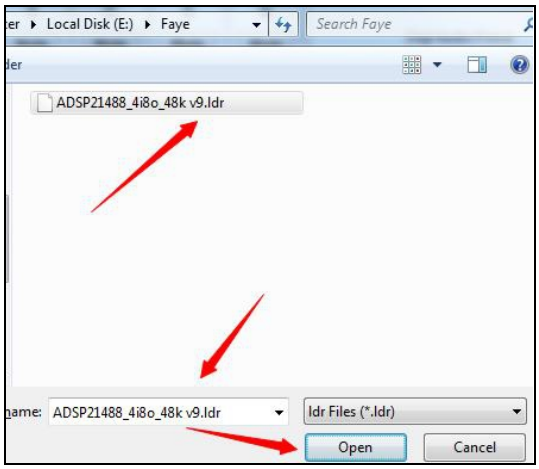
11.2 Updata DSP firmware

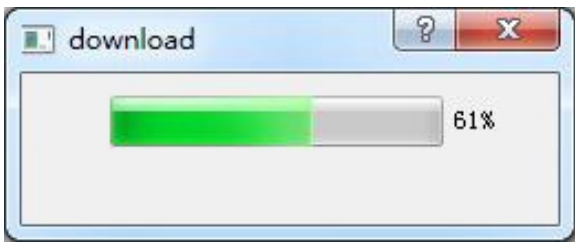
When the DSP function is upgraded, the DSP firmware needs to be upgraded.

As below:

Click the menu Updata DSP Firmware, it will pop up a dialog box, select the suffix for ldr firmware, click OK to upgrade progress bar, about 10 seconds to complete the upgrade, the device will restart automatically after the upgrade.







11.3 Modify Login Password

Enter the new password twice and click OK.



11.4 Modify Lock Password

The default lock password: ad123

Enter the old lock password, then enter the new password twice, then click OK.

When the user needs to protect their debugging data, they can use the lock password to hide, encrypt and lock the debugging data.



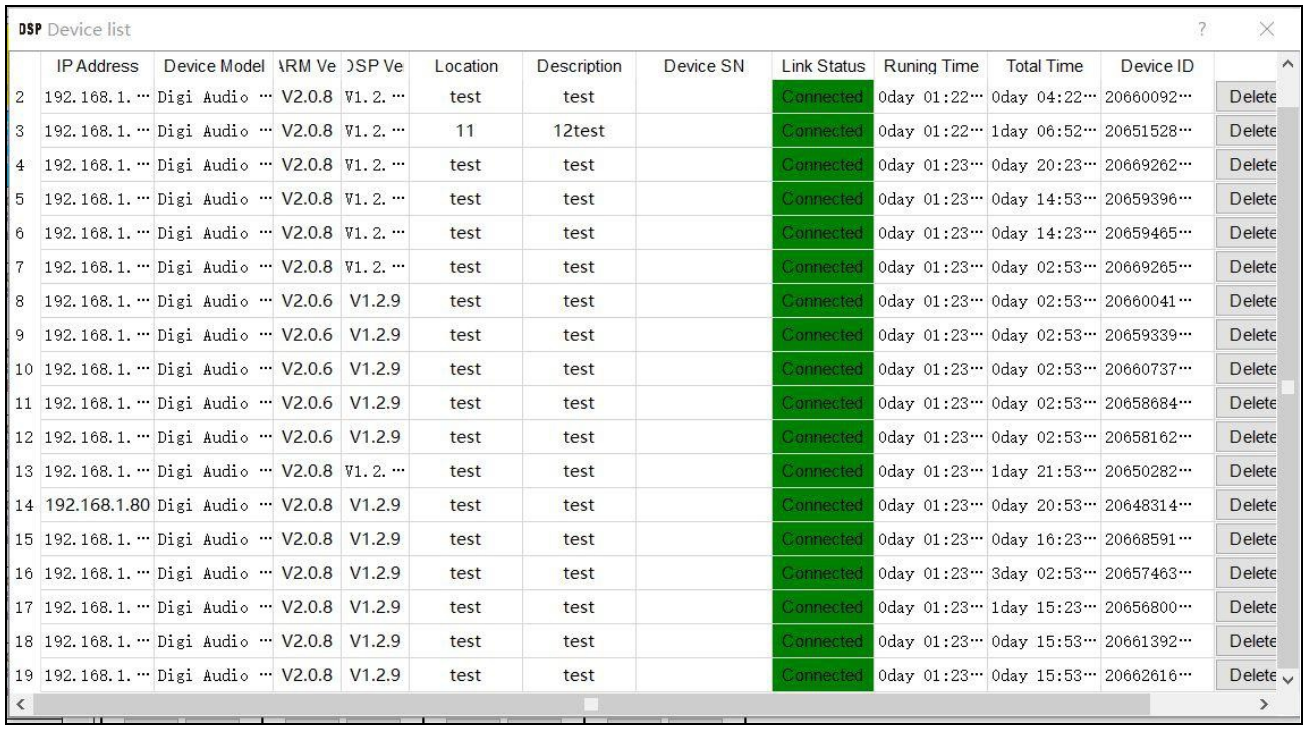
11.5 Reset

If you want to restore the factory default settings, click OK, it will delete all user data.



11.6 Device list

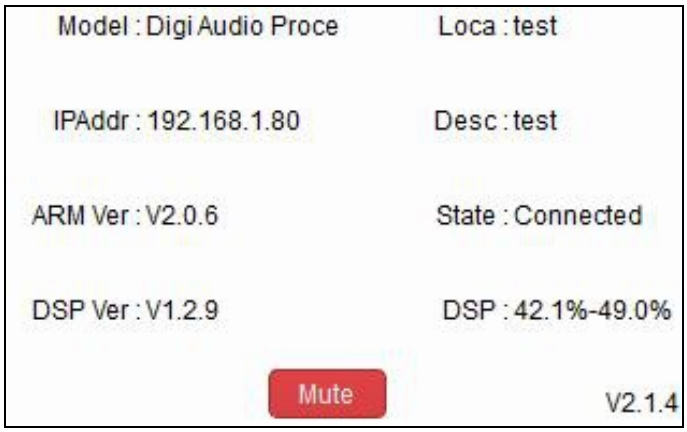
The device list displays online processor IP address on the current network and history connection IP address (history IP address can be cleared). When there are multiple processors on the network, each processor must be on same network segment with different IP address. Each processor must enter the password individually. Click the IP address on the left side of the software interface to switch the processor.



	IP Address	Device Model	ARM Ve	DSP Ve	Location	Description	Device SN	Link Status	Runing Time	Total Time	Device ID	
2	192.168.1.···	Digi Audio ···	V2.0.8	V1.2.···	test	test		Connected	0day 01:22···	0day 04:22···	20660092···	Delete
3	192.168.1.···	Digi Audio ···	V2.0.8	V1.2.···	11	12test		Connected	0day 01:22···	1day 06:52···	20651528···	Delete
4	192.168.1.···	Digi Audio ···	V2.0.8	V1.2.···	test	test		Connected	0day 01:23···	0day 20:23···	20669262···	Delete
5	192.168.1.···	Digi Audio ···	V2.0.8	V1.2.···	test	test		Connected	0day 01:23···	0day 14:53···	20659396···	Delete
6	192.168.1.···	Digi Audio ···	V2.0.8	V1.2.···	test	test		Connected	0day 01:23···	0day 14:23···	20659465···	Delete
7	192.168.1.···	Digi Audio ···	V2.0.8	V1.2.···	test	test		Connected	0day 01:23···	0day 02:53···	20669265···	Delete
8	192.168.1.···	Digi Audio ···	V2.0.6	V1.2.9	test	test		Connected	0day 01:23···	0day 02:53···	20660041···	Delete
9	192.168.1.···	Digi Audio ···	V2.0.6	V1.2.9	test	test		Connected	0day 01:23···	0day 02:53···	20659339···	Delete
10	192.168.1.···	Digi Audio ···	V2.0.6	V1.2.9	test	test		Connected	0day 01:23···	0day 02:53···	20660737···	Delete
11	192.168.1.···	Digi Audio ···	V2.0.6	V1.2.9	test	test		Connected	0day 01:23···	0day 02:53···	20658684···	Delete
12	192.168.1.···	Digi Audio ···	V2.0.6	V1.2.9	test	test		Connected	0day 01:23···	0day 02:53···	20658162···	Delete
13	192.168.1.···	Digi Audio ···	V2.0.8	V1.2.···	test	test		Connected	0day 01:23···	1day 21:53···	20650282···	Delete
14	192.168.1.80	Digi Audio ···	V2.0.8	V1.2.9	test	test		Connected	0day 01:23···	0day 20:53···	20648314···	Delete
15	192.168.1.···	Digi Audio ···	V2.0.8	V1.2.9	test	test		Connected	0day 01:23···	0day 16:23···	20668591···	Delete
16	192.168.1.···	Digi Audio ···	V2.0.8	V1.2.9	test	test		Connected	0day 01:23···	3day 02:53···	20657463···	Delete
17	192.168.1.···	Digi Audio ···	V2.0.8	V1.2.9	test	test		Connected	0day 01:23···	1day 15:23···	20656800···	Delete
18	192.168.1.···	Digi Audio ···	V2.0.8	V1.2.9	test	test		Connected	0day 01:23···	0day 15:53···	20661392···	Delete
19	192.168.1.···	Digi Audio ···	V2.0.8	V1.2.9	test	test		Connected	0day 01:23···	0day 15:53···	20662616···	Delete

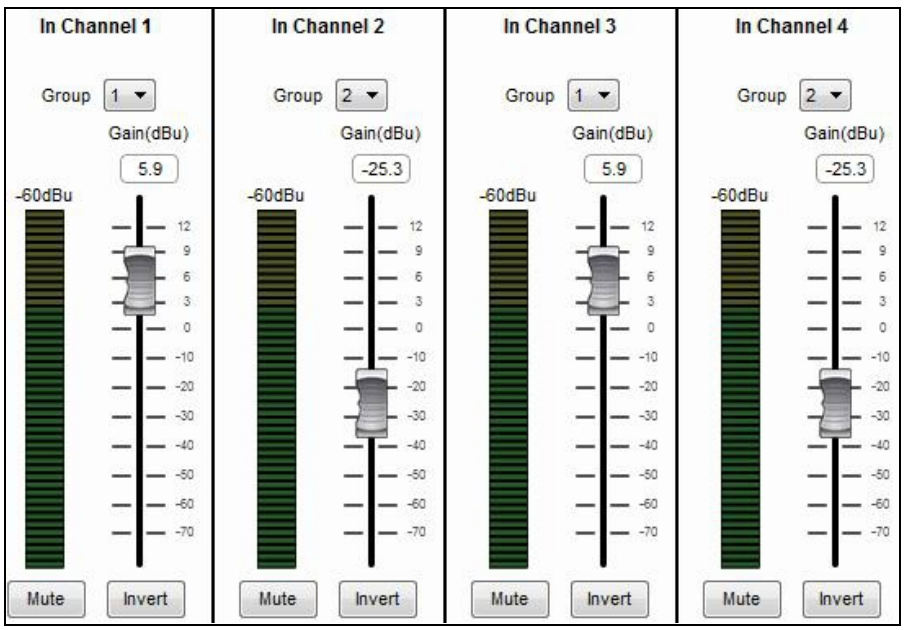
12. System Mute

In the home screen there is a Mute button, click this button, the system will mute. System mute through the "Ctr+M" shortcut key for quick operation.



13. Input Level

The input volume is 0.1dBu step, and the marshalling can be made into 2 volume groups, push any one of the volume faders after marshalling and the grouped volume fader is pushed at the same time.



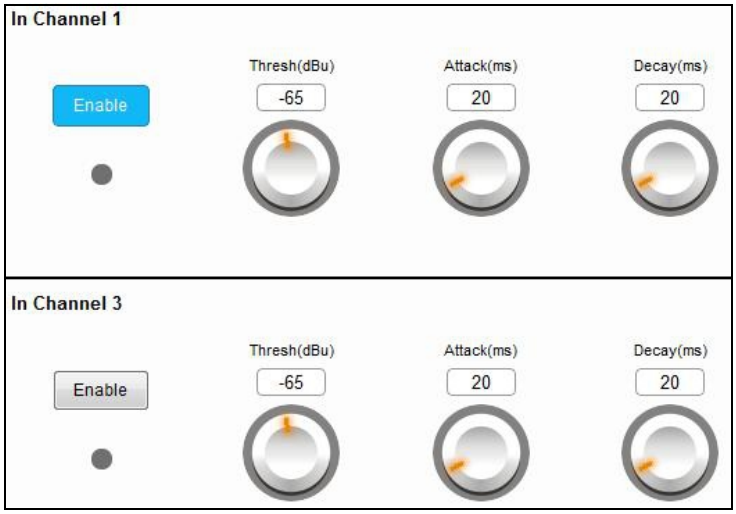
14. Noise Gate

Enable: Valid / invalid switch

Thresh: Start level control

Attack: Turn on time

Decay: Turn off time

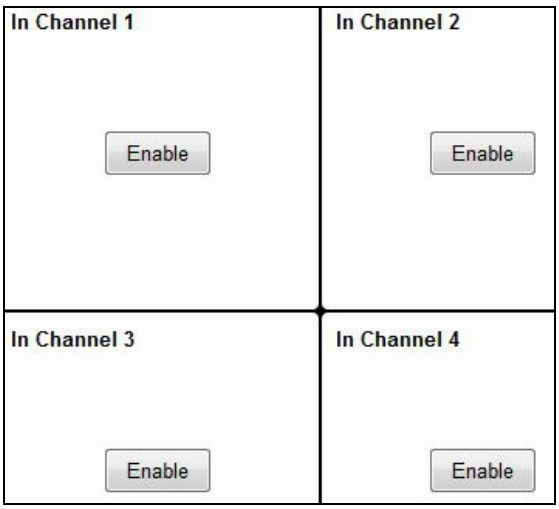


15. Feedback Suppressor

4 channel feedback suppression is used separately, press the button to increase

4 ~ 5dB sound transmission gain.

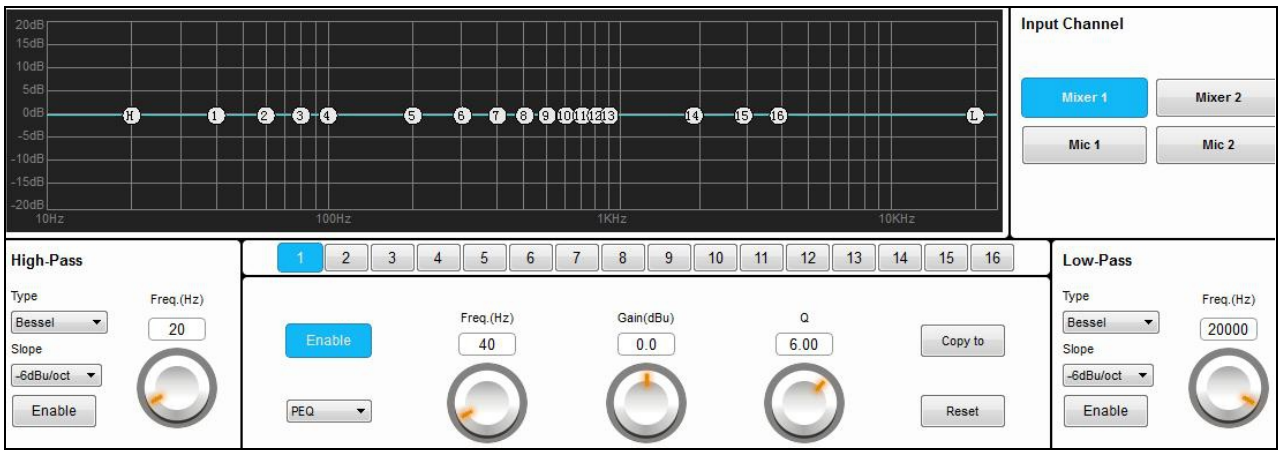
When no feedback suppressor is required, it can be turned off manually.



16. Input Filter

This processor supports independent filter and 16-band PEQ for each channel. The input filter includes a variety of professional audio filtering modules: high pass, low pass, PEQ, LowShelf and HighShelf.

The filter parameters can be copied and pasted quickly, which greatly improves the operation efficiency.

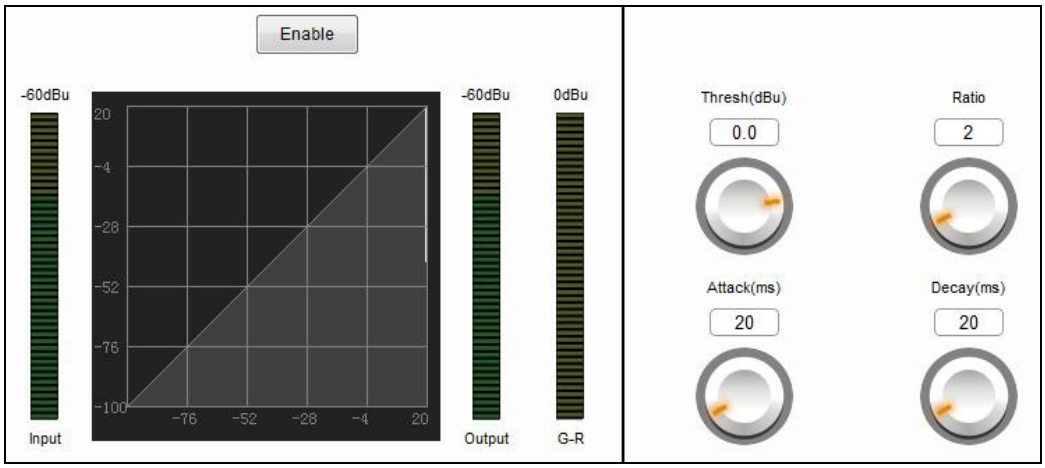


HPF/LPF support the following specifications:

Bessel	-6dB/oct、-12dB/oct、-18dB/oct、-24dB/oct、-36dB/oct、-48dB/oct
Butterworth	-6dB/oct、-12dB/oct、-18dB/oct、-24dB/oct、-36dB/oct、-48dB/oct
Link-Riley	-6dB/oct、-12dB/oct、-18dB/oct、-24dB/oct、-36dB/oct、-48dB/oct

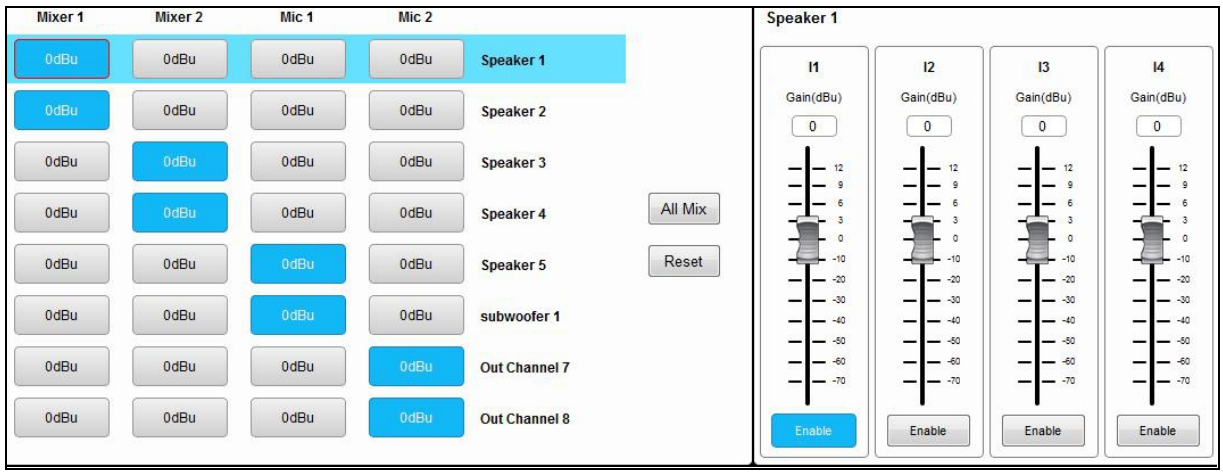
17. Input Limiter

This processor supports independent input pressure limiter for each channel, starting threshold, compression ratio, startup time and recovery time can be adjusted. The parameters of the limiter can be copied and pasted quickly, which greatly improves the operation efficiency.



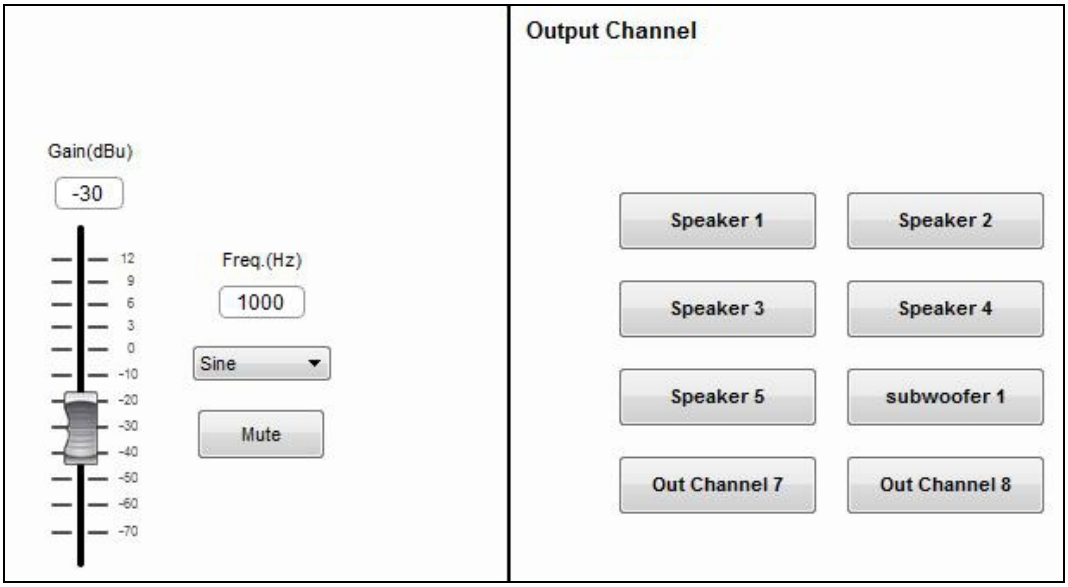
18. Matrix Mixer

Matrix mixing supports arbitrary crossover remix, and can also be used for parametric remixes by remix values.



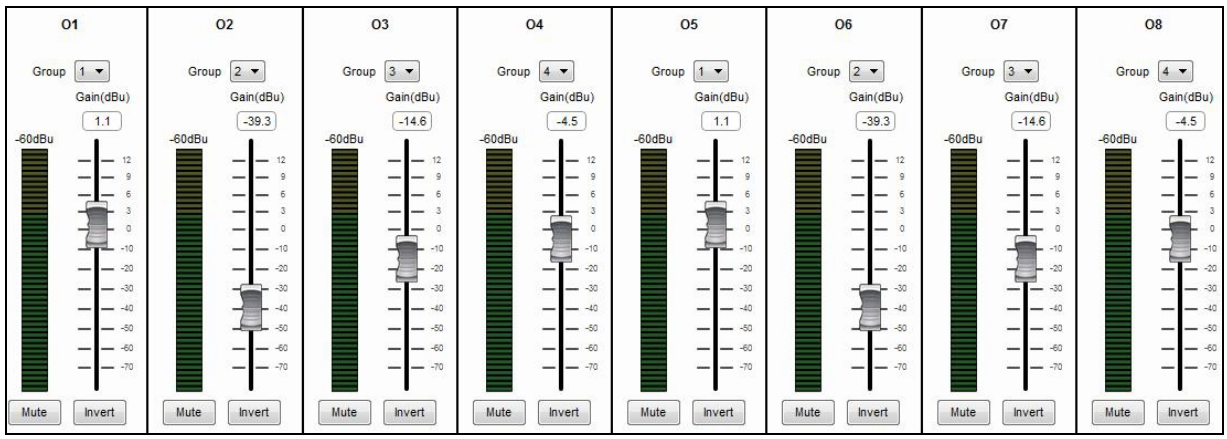
19. Signal Generator

Test signal support three signal generators: sine wave, pink noise, white noise, can be allocated to any output channel.



20. Output Level

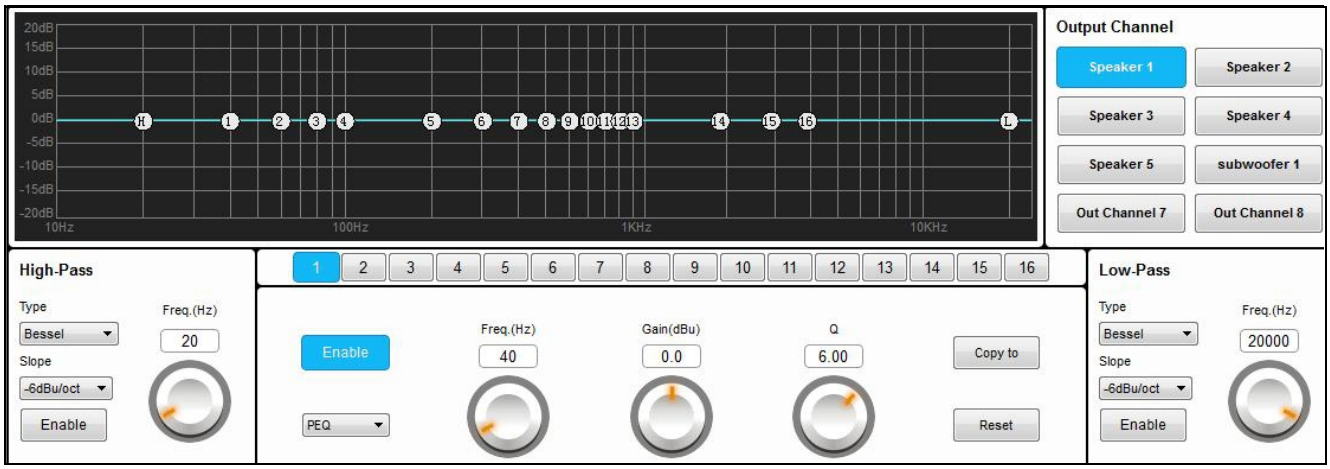
The output volume is 0.1dBu step, and the marshalling can be made into 4 volume groups, push any one of the volume faders after marshalling and the grouped volume fader is pushed at the same time.



21. Output Filter

This processor supports independent filter and 16-band PEQ for each channel. The output filter includes a variety of professional audio filtering modules: high pass, low pass, PEQ, LowShelf and HighShelf.

The filter parameters can be copied and pasted quickly, which greatly improves the operation efficiency.

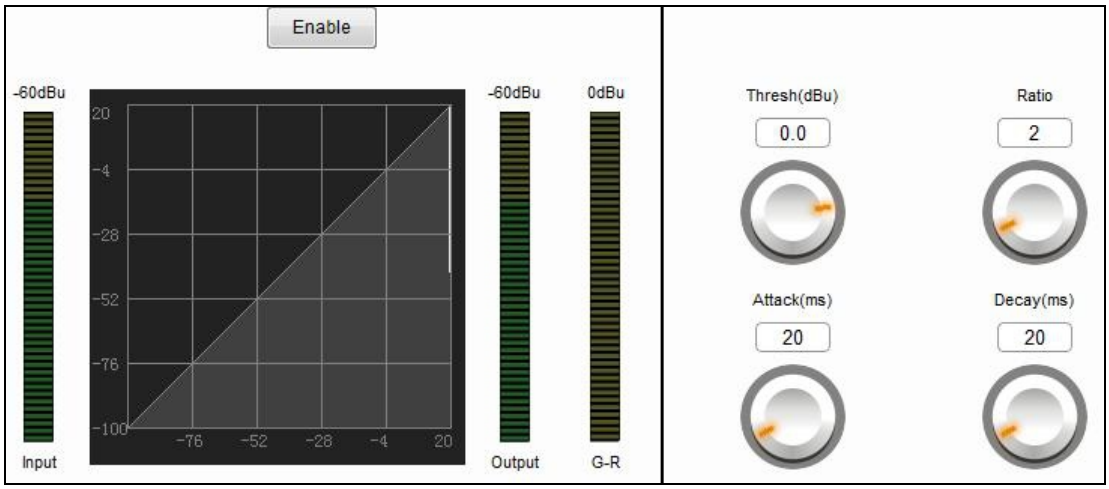


HPF/LPF support the following specifications:

Bessel	-6dB/oct、-12dB/oct、-18dB/oct、-24dB/oct、-36dB/oct、-48dB/oct
Butterworth	-6dB/oct、-12dB/oct、-18dB/oct、-24dB/oct、-36dB/oct、-48dB/oct
Link-Riley	-6dB/oct、-12dB/oct、-18dB/oct、-24dB/oct、-36dB/oct、-48dB/oct

22. Output Limiter

This processor supports independent output pressure limiter for each channel, starting threshold, compression ratio, startup time and recovery time can be adjusted. The parameters of the limiter can be copied and pasted quickly, which greatly improves the operation efficiency.



23. Output Delay



For example: There are two speakers in a square that are far away. To delay for a while, the sound of two speakers will be transmitted to the same point at the same time.

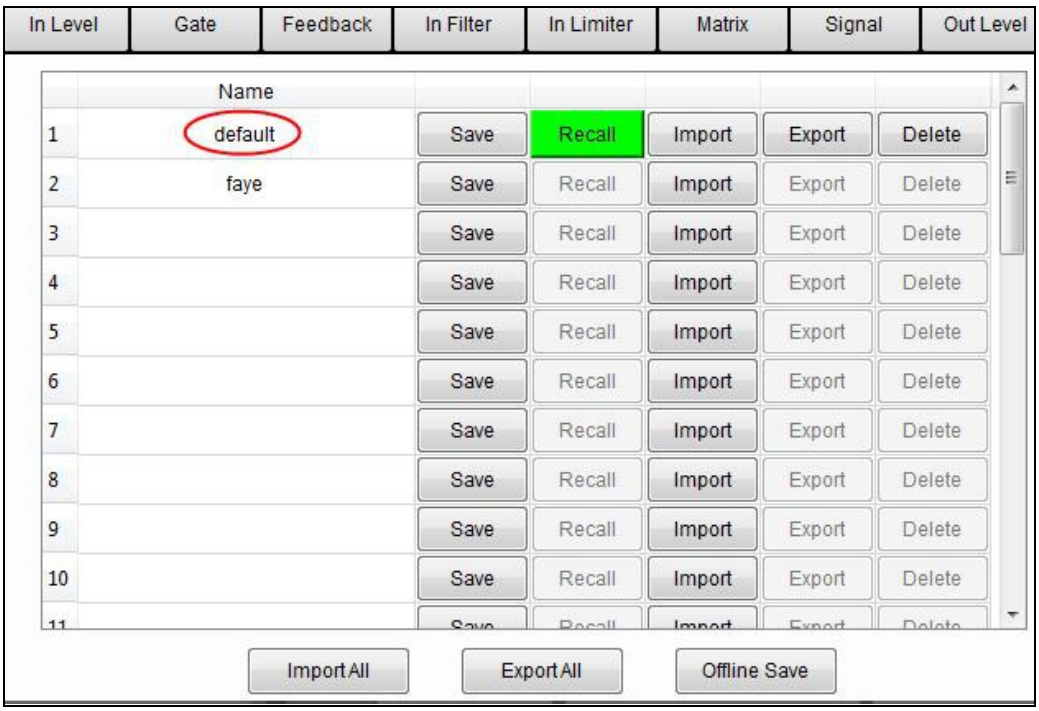
24. Preset

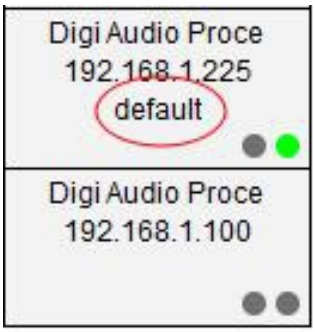
This processor can preset 32 modes, each mode can customize the English name.

The preset name can be displayed under each IP address.

The processor automatically uses the preset before shutdown.

Preset parameters support data import and export function.



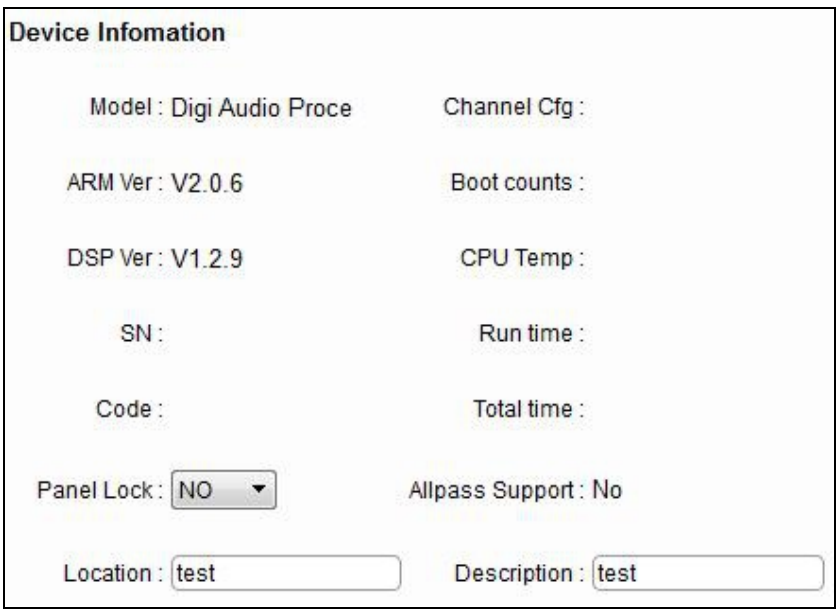


25. Settings

In the setting page, the input and output channel can be labeled management.



You can view device firmware version and other information in the setting page.



Device Model	The device model is consistent with the display of the LCD screen.
ARM Ver.	ARM version firmware number, firmware may be upgraded when ARM functionality is upgraded.
DSP Ver.	DSP version firmware number, firmware may be upgraded when DSP functionality is upgraded.
Device SN	Factory serial number or production batch code.
Panel lock	Choose Yes, panel unable to debug, enter password: admin to unlock
Channel Cfg.	Audio input and output channel configuration parameters
Boot Counts	Recording of device start-up times If the device starts for a long time, we can use the recording to judge whether there is abnormal boot and restart phenomenon.
CPU Temp	The value of ARM CPU temperature sensor in the host, this temperature parameter is normal below 70 degrees and abnormal above 70 degrees.
Runtime	Running time of device after power up, the time from 0 again after power off.
Total Time	The total service time of the device is accumulated every half hour.
Location	Can setting the device location
Description	Can setting the device description

26. Security

The default lock password: ad123.

Enter the password to lock the function settings for each channel.



27. Common Troubleshooting

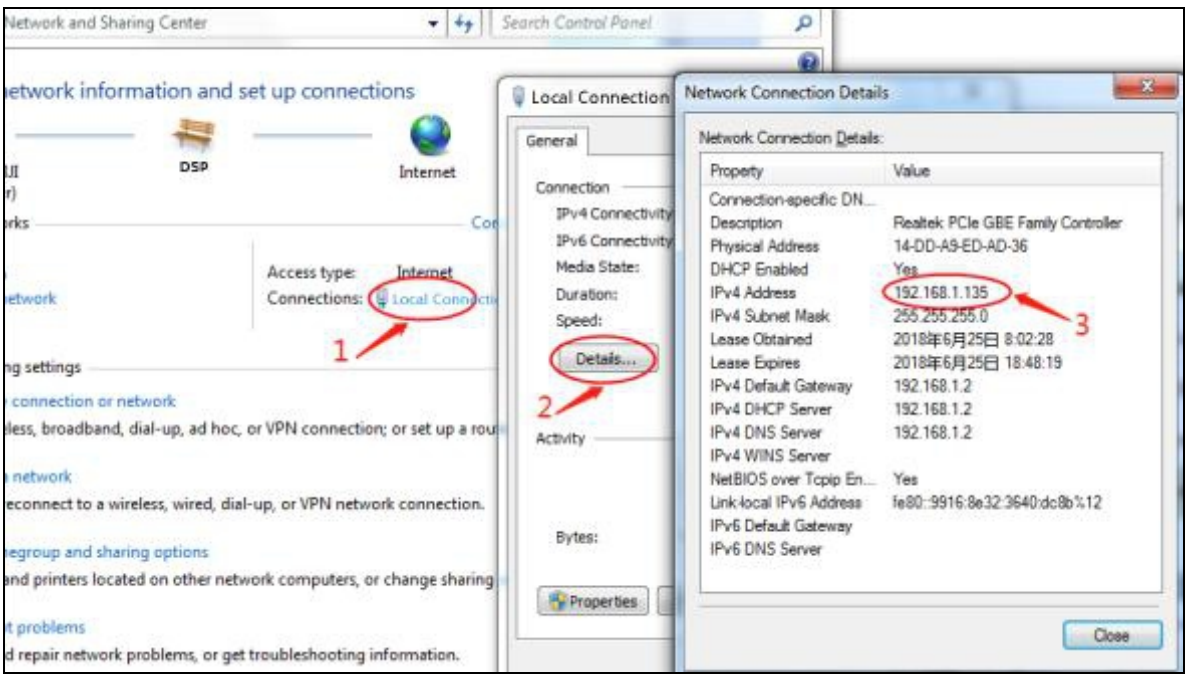
27.1 Unable to find the processor

Connect the device to the computer via a network cable on the same switch.

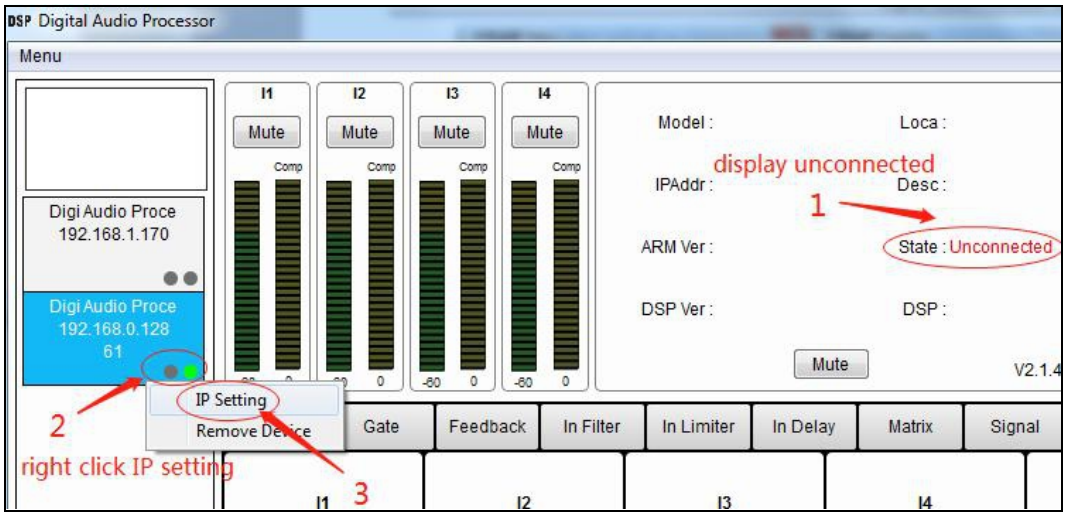
The default IP address: 192.168.1.128.

1. Wired connection:

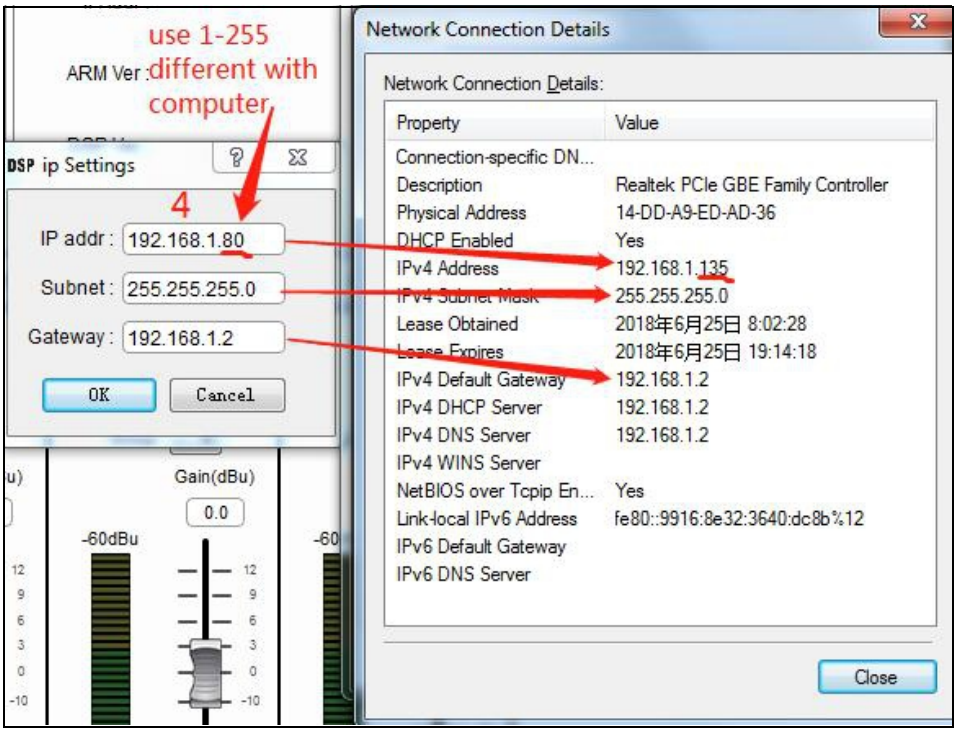
1) Check your computer's local connection network segment. As below:



2) Then run the processor software, right-click the green dot on the left side of the home screen, and set the IP address. As below:

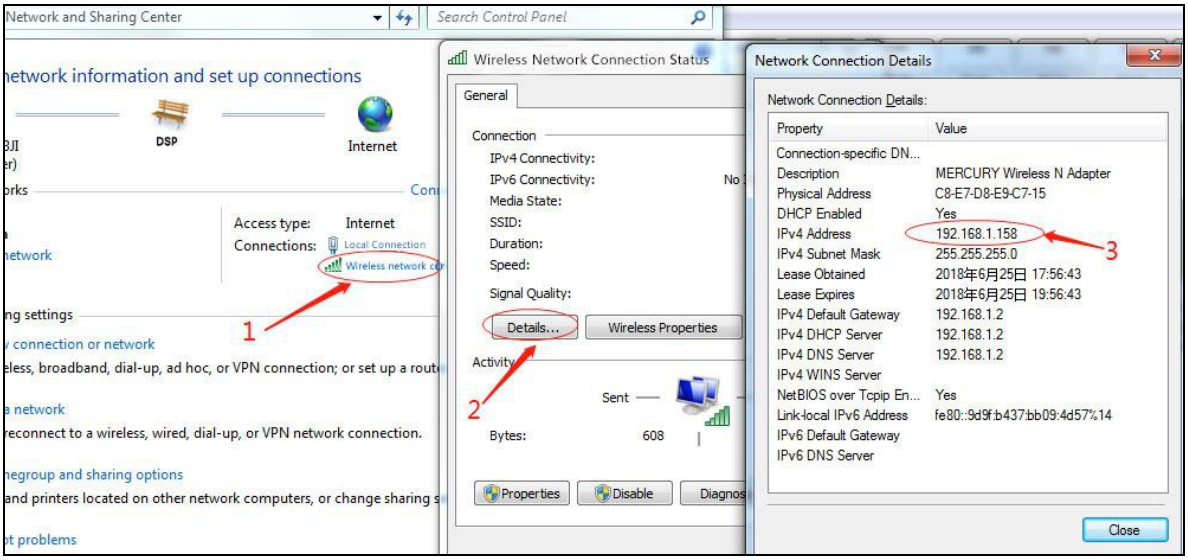


3) The first three numbers of the IP address of the device must be the same as the computer local IP address. The last number is changed to 1-255, but it is different from the computer local IP address.

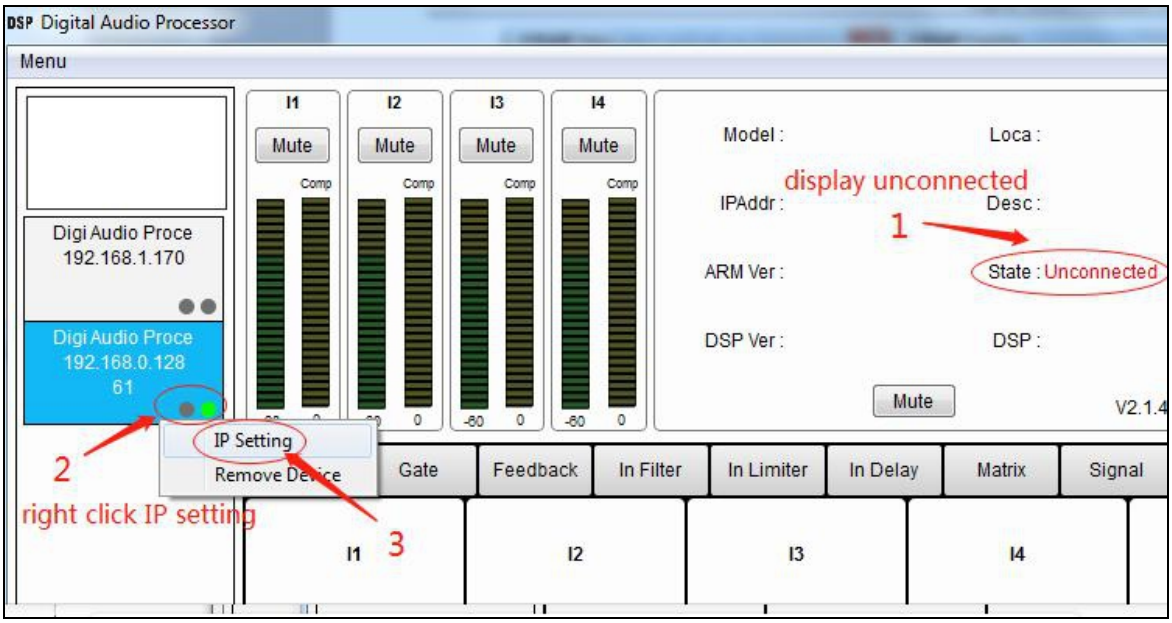


2. Wireless connection:

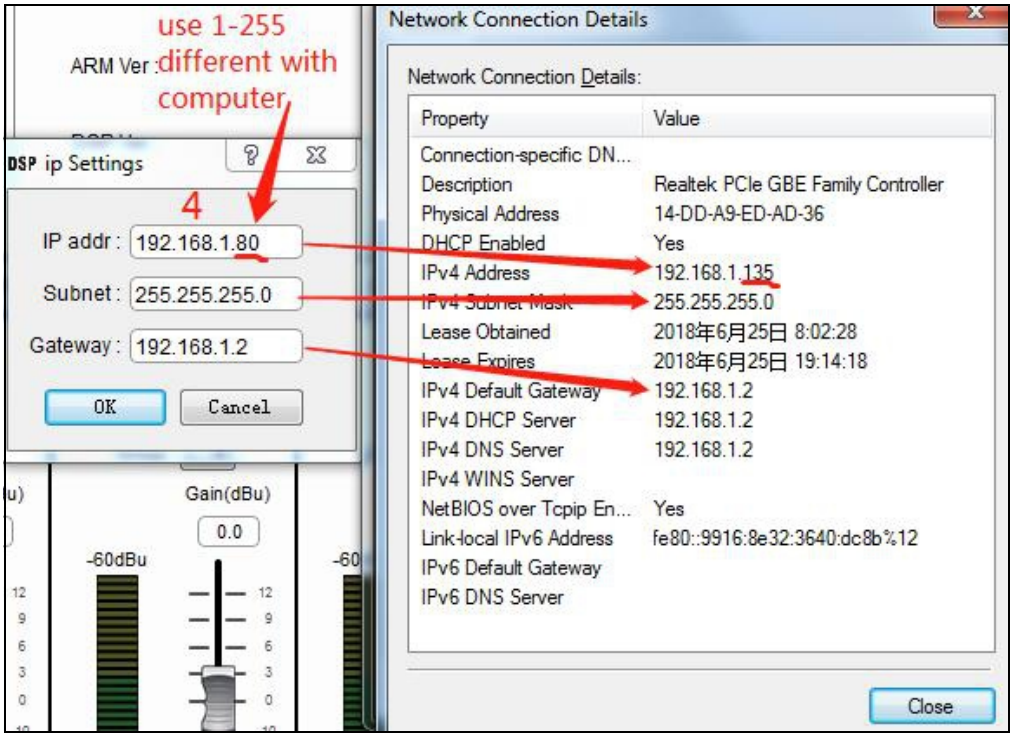
1) A wireless router is required to connect the device to the wireless router using a network cable. It should be connected to any port at the LAN branch port. Then connect to Wi-Fi. Check your computer's segment of wireless network connection.



2) Then run the processor software, right-click the green dot on the left side of the home screen, and set the IP address. As below:



3) The first three numbers of the IP address of the device must be the same as the computer local IP address. The last number is changed to 1-255, but it is different from the computer local IP address.



27.2 Failed to make connection

The IP address on the left side of the home screen has a green dot. Click it without password dialog. In most cases, there is a conflict in the IP address. You must modify the IP address to resolve the problem.

28. Login failure

When any of the login password or lock password is lost, please contact the supplier. The supplier assists in the host reset, all data will be cleaned up, you need to reset the system.