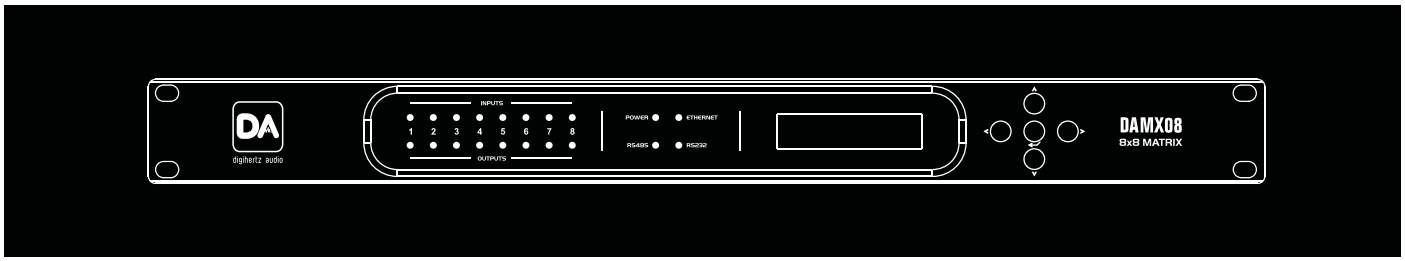
digihertz audio

Digital Matrix Processor

DAMX08



Owner's Manual

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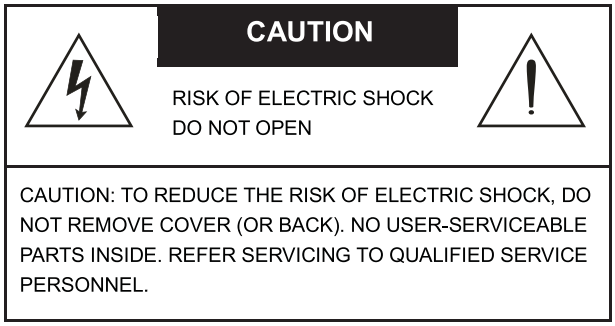
IMPORTANT SAFETY INSTRUCTIONS

Please read the basic protective measure as below before using.

1. Read these instructions before use.
2. This product must be earthed. If it should be malfuction or break down, grounding provides a path of least resistance for electric current to reduce risk of electric shock.
3. This product is equipped with a cord having an equipment-grounding conductor and a grounding plug. The plug must be plugged into an appropriate outlet that is properly installed and earthed in accordance with all local codes and ordinance.

DANGER- Improper connection of the Equipment-grounding conductor can result in a risk of electric shock. Check with aqualified electrician or serviceman if you are in doubt as to whether the product is properly grounded. Do not modify the plug provided with the product - if it will not fit the outlet, have a proper outlet installed by a qualified electrician.

4. To reduce the risk of injury, close supervision is necessary when the product is used near children.
5. Do not use this product near water-for example, near a bathtub, waxhbowl, kitchen sink, in wet basement or near a swimming pool or the lake.
6. This product may be capable of producing sound levels that colud cause permanent hearing loss. Do not operate for a long period of time at high volume level or at a level that is uncomfortable. If you experience any hearing loss or ringing in the ears, you should consult an audiologist.
7. This product should be located so that its location or position does not interfere with its proper ventilation.
8. This product should be located away from heat sources such as radiators, heat registers or other products that produce heat.
9. The product should be connected to a power supply only of the type described on the operation instructions or as marked on the product.
10. The product should be connected to a power supply only of the type described on the operation instructions or as marked on the product.
11. The product should be serviced by qualified service personnel when:
    A. The power-supply cord or the plug has been damaged; or
    B. Objects have been fallen, or liquid has been spilled into the product; or
    C. The product has been exposed to rain; or
    D. The product does not appear to operate normally or exhibits a marked change in ferformance; or
    E. The product has been dropped or the enclosure damaged.
12. Do not attempt to service the product beyond that described in the user-maintenance instructions. All other servicing should be referred to qualified service personnel.
13. **WARNING-** Do not place objects on the product's power cord or place it in a position where anyone could trip over, walk on or roll anything over it. Do not allow the product to rest on or to be installed over power cords of any type. Improper installations of this type create the possibility of fire hazard and/or personal injury.



The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

Applies only to altitudes below 2000m area safety.

Applies only in Non-tropical area safety.

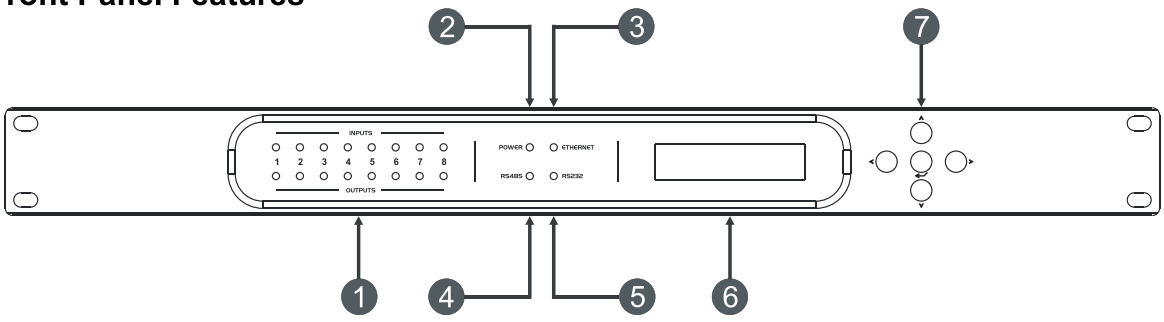
1. Product Introduction

Thanks for purchasing our digital matrix processor, it features small size, light weight, advanced functions and easy to control etc.

1-1 Characteristic:

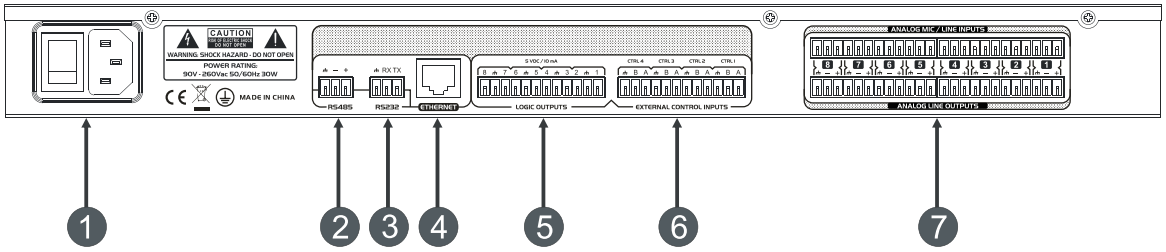
- Processor: 1x analog equipment SHARC 21489@400 MHZ SIMD
- Original processing ability: 400 MIPS, 1.6 GFLOPS
- Sampling rate: 48 kHz, ± 100 ppm
- Dual DSP multi core processing, High performance AD/DA, the highest 40bit data processing accuracy, 48kHz sampling rate
- Strong and reliable hardware, low distortion, high dynamic, pure tone
- Ethernet 10/100 (Network on line), efficient and simple operation interface software, real-time control of all functions and monitoring the state of the machine
- 8 Channels MIC/LINE input, 8 Channels balanced output
- Adjustable sensitivity (0dB~48dB) of each input, independent 48V phantom power control
- Each input channel with independent signal generator (sine wave, pink noise, white noise)
- The input signal processing includes: RMS level, AFC, noise gate, gain, phase, frequency divider, 5 segment equalizer, AGC, RMS compressor, expander, Ducker, Auto Mixer
- The output signal processing includes: matrix (10*8), gain, phase, frequency division, 8 segment equalizer, PEAK voltage limiter, delay device (2S, step:21us), RMS level
- Bypass functions for audio processing module, improving the system processing performance, and the system resources usage rate reminding function
- The divider types include: 6dB~48dB Butterworth, Linkwitz Riley, Bessel
- The equalizer types include: PEQ, High-Shelf (6/12dB), Low-Shelf (6/12dB), HP/LP Butterworth (6/12dB)
- RS485/RS232 interface: camera tracking function, central-controlled function
- 8–Channel GPIO input, 8 –Channel GPIO output, programmable configuration
- Panel 132*32 dot matrix LCD display, 5 navigation buttons, 20 LEDs, to achieve a friendly human-computer interaction
- User management function, rank management, rights can be configured flexibly
- Device manual reset function, conveniently and quickly to restore factory settings
- Program management function, 30 user programs could be stored, data automatically saved after power failure; programmed input and output functions for PC files to avoid duplication of debugging
- High efficiency power supply

1-2 Front Panel Features



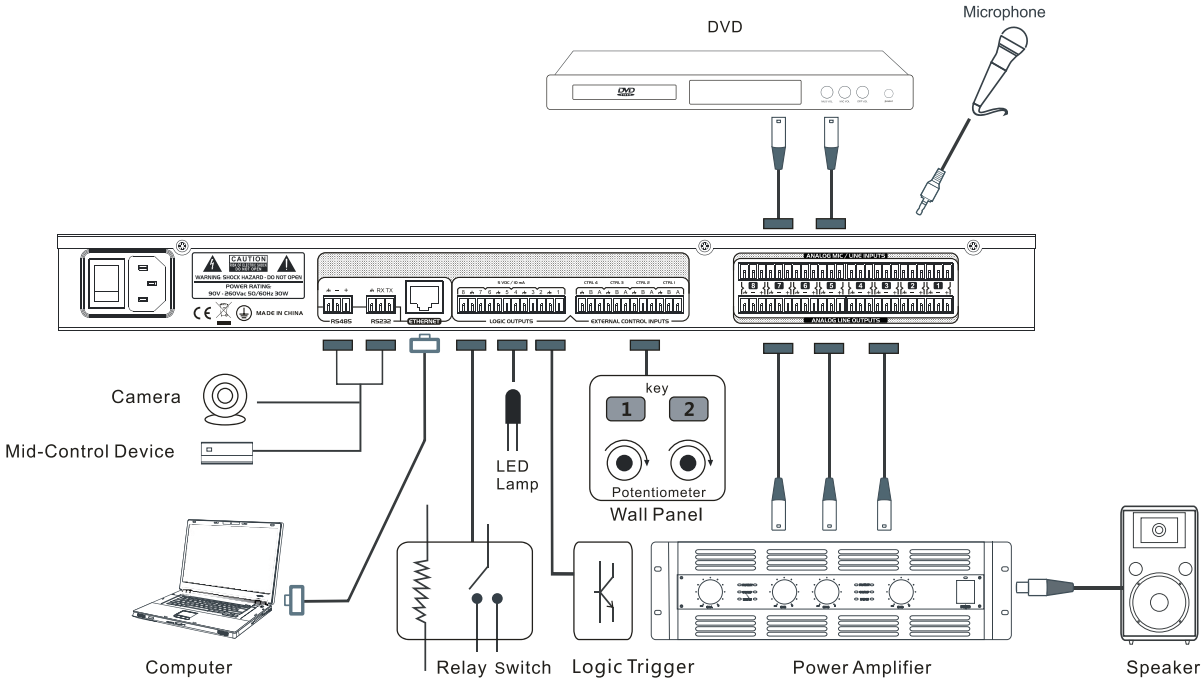
1. Channel level indicator: INPUTS corresponding to the input signal, OUTPUTS corresponding to the output signal, when the input/output reaches a certain range, the indicator led lights ON
2. Power indicator: after the normal light
3. Network communication status: machine access network access to IP, the indicator light flashes
4. RS485 communication interface indicator: when the indicator light flashes, 485 communication
5. RS232 communication interface indicator: when the indicator light flashes, 232 communication
6. LCD display: display the status of the machine configuration
7. Menu operation and edit button area: control the display menu to configure the machine

1-3 Rear Panel Features



1. Power input socket and power switch: three phase socket, 90~260V AC input,50/60HZ
2. RS485 interface: 485 remote communication interface, a variety of bit rate configuration optional
3. RS232 interface: 232 communication interface, a variety of bit rate configuration optional
4. Networking interfaces can be configured via the PC to the machine
5. Output GPIO: logic level output control, 8 channels
6. Input GPIO: logic level and continuous level input control, 8 channels
7. Input / output audio channel: support for balanced or unbalanced input, balanced output

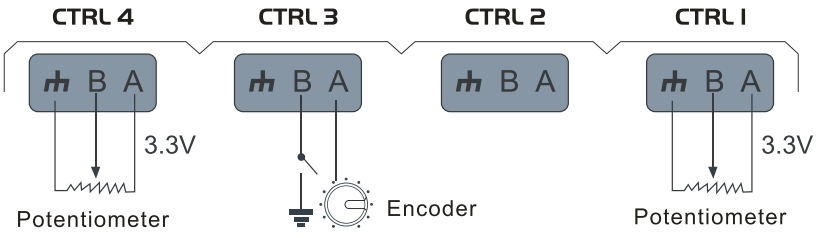
1-4 System Connection Diagram



External control input, support up to 8 independent channels binary level detection, such as key, encoder trigger; support up to 4 (Ctrl1 ~ Ctrl4) potentiometer analog adjustable input.

Logic control output, 8-channel 5V 10mA logic output to control the external Relay, Led and other switching signals.

1-5 External Control Input Diagram



2. Functions Description

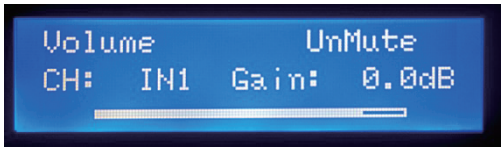
2-1 Normal Start-up

1. Connect the power cord, press the power switch, display the brand and model. The front panel LED lights up.
2. The device initializes.
3. Initialization finishes, enter the boot home page, the main page display system status information.
   The first line shows the current firmware version information, the current program number called;
   The second line shows the current IP address of the device when IP is not obtained. The value is 0.0.0.0;
   The third line the first icon indicates the online status (indicates not online, indicates online), and the second icon indicates the user login status (indicates that the user has logged in).

2-2 Menu Operation

1. Menu operation must first login, press【<】、【>】 to switch to user login menu (refer to "User Login Menu").
2. After the user login, press the【<】、【>】keys continuously to switch to the main menu function: **Channel volume adjustment menu, Network parameter menu, User login menu and Program loading menu.**
3. Press【↵】key on the corresponding menu page to enter the corresponding menu setting or check the corresponding parameter.
4. Press【▲】、【▼】、【<】、【>】to set the corresponding parameter. After setting, press【↵】key to exit or long press【↵】key to exit the setting state.
5. Press【↵】key to enter "Advanced Parameter Setting Menu".

2-2-1 Volume Adjustment Menu



1. Press the [<], [>] key continuously to switch to the channel volume adjustment menu, as shown above.
2. Press【↵】key to enter the setting state, the cursor appears in the channel number position.
3. Press【<】、【>】to switch the channel, press【▲】、【▼】to set the volume, press【↵】to mute or unmute.
4. Press【↵】key to exit the setting state, the cursor disappears.

2-2-2 Network Status Menu

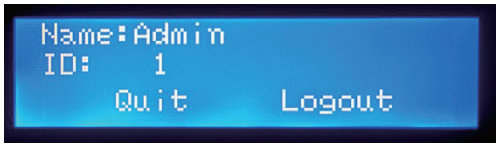
1. On the home page, press the【<】,【>】key continuously to switch to the network status menu, as shown above.
2. Press【↵】key to enter the setting state, the cursor will display "Local IP".
3. Press [▲], [▼] to switch the parameter items (Local IP, Subnet Mask, Gateway IP, MAC Address, TCP Server Port, UDP Server Port, Network state parameters etc.) to be viewed. The third line of the LCD displays the corresponding parameter values.
4. Press【↵】key to exit the setting state, the cursor disappears.

Note: The factory setting defaults to get IP automatically. Please do not change the network parameters. Please refer to "Advanced Parameter Setting Menu" if you want to change the parameters.

2-2-3 User Login Menu

1. Press the [<], [>] key to switch to the user login menu, as shown above.
2. Press【▲】、【▼】to switch the user.
3. Press【↵】key to enter the next step to set the password, the cursor appears in the first password character position. Press【▲】、【▼】to change the password, press【<】,【>】to switch the cursor position.
4. Press【↵】to enter the next step, press【<】,【>】key to select login or exit.
5. Press【↵】 key to log in or exit. If you select Login, the password is correct, login is successful, return to the boot home page, visible login icon; password error shows the password error, return to the login menu. If you choose to exit, then exit to the boot home page.

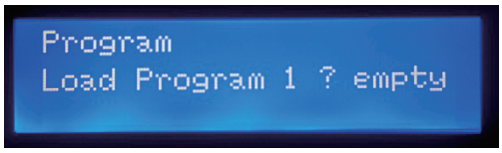
2-2-4 Exit the Login Operation



1. After the user login, press the【<】,【>】key on the home page to switch to exit the login.

2. Press【↵】key to enter the setting state, the cursor appears in "Cancel".
3. Press the【<】,【>】key to switch to "Exit".
4. Press【↵】to exit the login, return to the boot page, login icon disappears.

2-2-5 Program Loading Menu



1. On the home page, press the【<】,【>】 key to switch to the program loading menu, as shown above.
2. Press【↵】key to enter the setting state, the cursor appears in the program number position.
3. Press【▲】、【▼】key to set the number to load program number. "empty" means the programs does not exist, "there" means the program exists.
4. Press【↵】key to enter the next step to confirm the loading. Press【<】,【>】to select "Yes or no".
5. Press【↵】key to confirm. Select "Yes" to complete the load operation, select "No" to exit.

2-2-6 Advanced Parameter Setting Menu

1. In the boot page long press【↵】key to switch to the advanced parameter settings menu, as shown above.
2. Press【▲】、【▼】to select the functions you want to operate: "Exit", "Set Network", "Set Language", "Restore Factory Settings" and "Restart Device".
3. The specific functions are as follows:

2-2-6-1 Setup the Network

Press【↵】to enter into the setup network menu. Press【▲】、【▼】to select the network parameters, then press【↵】to enter the setting state, the corresponding parameter will blink, then press【▲】、【▼】key to select the setting item, and all the network parameters will be set.

Press【▲】、【▼】key to confirm the setting. After setting, press【↵】key to return to the advanced parameter setting main page.

Note: non-professionals do not change the default network configuration.

2-2-6-2 Set Language

Press【↵】key to enter the setup language menu, press【↵】again to enter the setting state, the cursor appears, press【<】,【>】to move the cursor to select language, press【↵】to confirm, then the cursor disappears. Long press【↵】key to return to the previous menu.

2-2-6-3 Restore Factory Settings

Press【↵】to enter the confirmation page, press【<】,【>】to move the cursor to select "Yes" or "No", then press【↵】key to execute the factory reset function and return to the previous menu. (Restore the factory will clear the user data, please exercise caution).

2-2-6-4 Reboot the Device

Press【↵】key to trigger restart, there is no secondary confirmation, restart the device will not change the parameters of the device. This function is applicable to the environment where the power switch on the back of the device can not be operated.

3. PC Software Installation

3.1 Insert the accessory CD-ROM, open the CD-ROM select Setup.exe for installation.

3.2 Click Next to proceed with the installation.

3.3 The software will tell you the installation path.

3.4 Follow the software steps until the installation complete.

4. Computer Interface Software Communication Control Function

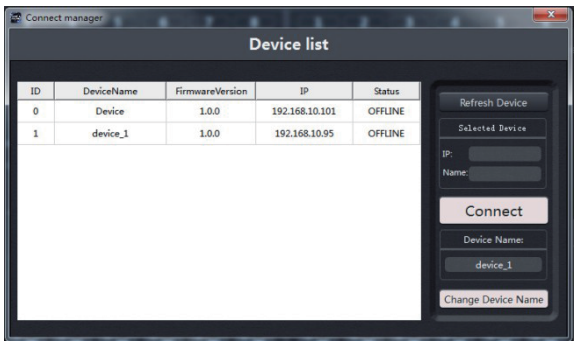
4.1 GUI Operation Interface

Installed PC software, startup interface as shown above:

- Communication features include system parameter settings and read, audio parameter adjustment, program management and other functions.
- Parameter settings and read include: read level, GPIO, device settings, and other audio parameter adjustment including the audio processing adjustment parameters of each channel.
- Program management to 30 user program data read, write, call, save, delete and other operations.
- Please refer to the "Help" button in the reference software for detailed operation instructions.

4.2 Basic Online Operations

Click on the Connect button to search the list of currently active devices:

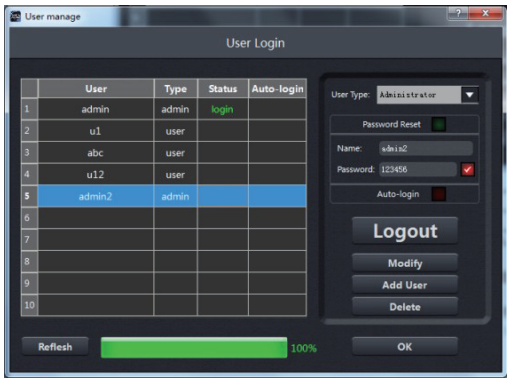


1) Click "Reflesh Device" button, query the current LAN in the online device, search the results are shown above.

2) The device with status "ONLINE" indicates that the existing PC and the device are online.
A device with status of OFFLINE indicates that it is waiting for an online connection.

3) Click the mouse to select the device, and then click "Connect" button to connect the selected device until the button changes to "Dis-Connect".
Click the "Dis-Connect" button disconnect the current software and device connection.

4) During the connection, the device will automatically determine whether the user has logged on, if no user login recorded, then automatically enter the login screen, as described below. You must successfully login to any user continue online, or leave the online state;
The other hand, if a user has already logged on, then skip to enter the login interface of this step. Click on the selected device, you can enter the box "Device Name ", input the new device name. Complete inputting, click " Change Device Name " button to change the name of the selected device.



5. Necessary Access Control Prompt

Before the online control operation, the user must read the following precautions carefully; otherwise, it will increase the risk of abnormal situations such as self-offline and computer crashes in online control:

5.1 To ensure that the device is in the normal operating range, please check if AC power (AC) meets the allowable range.

5.2 AC power receptacles shall be ground-connected if conditions allow. The set power supply is connected to the computer and the device.

5.3 The same version of the computer, the same type of control procedures do not repeat the installation.

5.4 All control programs in the computer should not be installed in the same file directory.

5.5 Online control operations should be avoided in environments with strong signal interference.

5.6 In the event of the following behavior may lead to online control failure, or even damage the machine or computer:

1) Network router failure (Please ensure that the interface operation PC and equipment in the same network and can get IP).

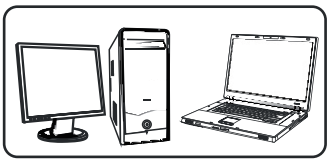
2) PC-side network is anti-virus software or firewall ban (please turn off the firewall or Authorized access to the network).

3) The user does not have Windows privileges to run the software (please run as administrator, or provide administrator authorization).

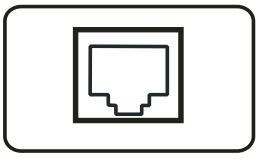
5.7 Make sure that IP operating system acquires or sets is the same as the PC device get at the same network segment, such as: IP: 192.168.1.123, the PC should be in the IP 192.168.1.xxx this network, otherwise IP conflict will lead to a problem can not be normal online.

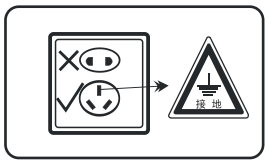
5.8 When the computer software is installed for the first time, can not be online, the computer may be hung from the state, please restart the computer again and try online.

5.9 Please refer to the machine "instructions" in the "important safety issues".



1. The computer can realize on-line control





2. Computer interface can realize on-line control

3. AC power grounding schematic

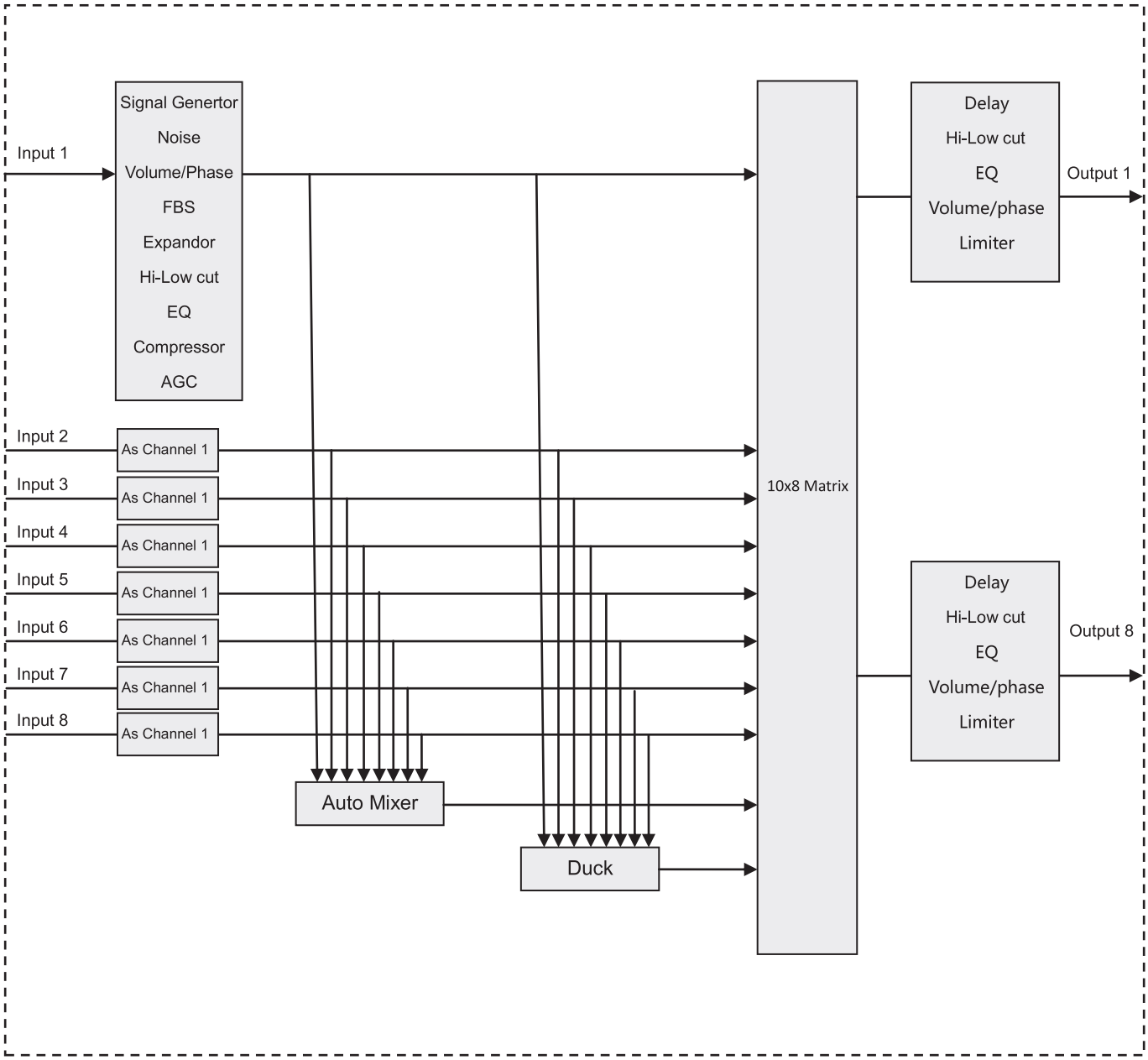
6. Included Accessories

Accessories Name	Quantity
Product software CD	1pcs
Phoenix terminal	1bag
Guide for product use	1pcs

7. Troubleshooting Guidelines

Faults phenomenon	Elimination methods
No screen display, LED light can not indicate	1. Check the power cord is connected or not. 2. Power switch is open or not. 3. Fuse works or not.
Internet can not be connected the machine	1. Check that the network cable is properly connected.
Machines and computers can not be on-line connected	1. Check that the network cable is properly connected. 2. Check whether the interface software and the machine version match. 3. Check whether the IP address is at the same network segment as the PC. 4. Close the interface software, re-connect the communication line, and then open the interface software online.
No output on output channel	1. To ensure that the input is normal. 2. To ensure that the output to the power amplifier, speaker circuit is normal. 3. Restart the machine. 4. Restart still can not be resolved, please contact the dealer.
Screen displayed: "DSP1 ERR" "DSP2 ERR" "CTRL1/2 ERR" " CTRL3/4 ERR "	1. Restart the machine. 2. Reset machine. 3. Restart still can not be resolved, please contact the dealer.
Screen displayed: "error: storage rw"	1. Restart the machine. 2. Reset machine. 3. Restart still can not be resolved, please contact the dealer.

8. Signal Flow Diagram



9. Technical Specifications

Audio features	Sampling rate	48KHZ
	SNR	94DB@re +4dBu, 22kHz BW, A weighting, 0DB Preamplifier Gain
		91DB@re +4dBu,22kHz BW,A weighting, 36DB Preamplifier Gain
	THD	0.003%@re +4dBu, 22kHz BW, 1kH, Unit Gain
	Channel Isolation	91DB @20Hz-20kHz, re+4dBu
	Frequency response	±0.03DB 20Hz-20kHz
	Max input level	20DBU@1kHz, THD+N≤1%, 22kHz BW
	Max output level	20DBU@1kHz, THD+N≤1%, 22kHz BW
	Dynamic range	110DB@re max output level, 22kHz BW, Unit Gain, A weighting
	Gain	0 \ 12 \ 24 \ 36 \ 48DB
	CMRR	≥85DB @1kHz, re+4dBu
	Phantom Power	48V, 10MA, Ripple≤10MV
	Input Impedance	Balance 20kΩ, unbalance 10kΩ
	Output Impedance	Balance 300Ω, unbalance 150Ω
	ON/OFF MUTE	Quiet no impact noise
	ETHERNET	100M communication speed, standard network communication distance is more than 100 meters
	RS485	RX\TX\ three line communication interface, the communication distance is more than 100 meters, A variety of optional baud rate.
	RS232	The standard 232 level interface, A variety of optional baud rate.
	External input control	8 channels, each channel 0~3.3VDC analog input and logic level input, can be connected logic trigger or potentiometer
	Output logic control	8 channel, 5VDC logic level per channel, 10mA
Power		90~260VAC, 50-60Hz, 30W
Size		482*231*45mm
Net weight		2.8kg

Above Technical Specifications Changes without Notice