



ACTIVE SUBWOOFER WITH DIGITAL SOUND PROCESSOR



DSP-8.4HD

Owner's Manual

Precautions

Wiring : To prevent unit be short circuit , please do not put it in the wet or damping places.

If unit catch water and any liquid that please turn off power immediately and do not open cover by yourself. Please contact with professional engineer for checking to avoid accident happen.



Packing List

For every package including below items, Please noticed retailer and Factory if shortage.

DSP-8.4HD unit	1PC	
User Manual	1PC	
Warranty Card	1PC	
2m USB2.0 Cable	1PC	
Head Unit Cable	1PC	(Option)
DSP Amplifier Cable	1PC	

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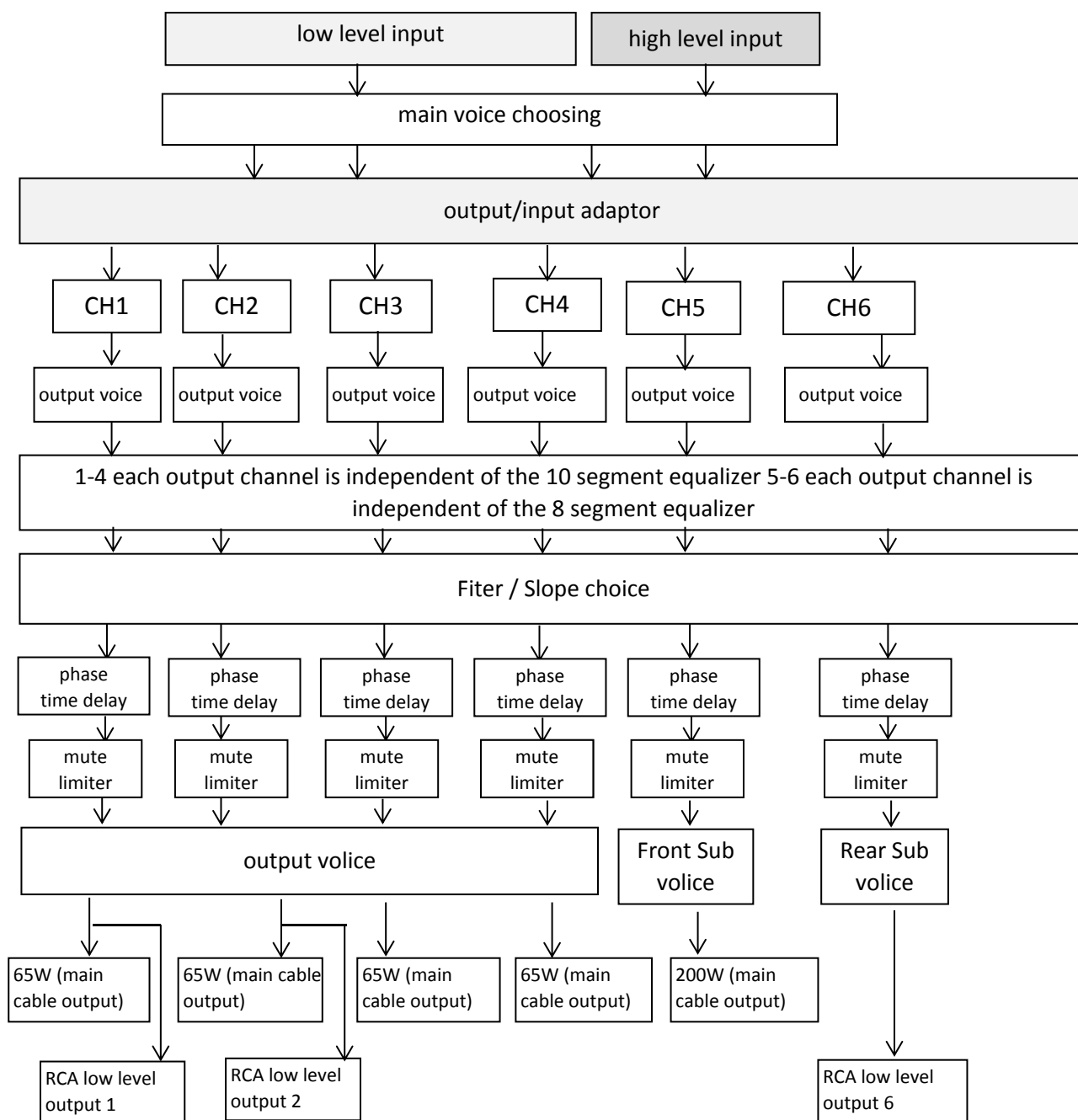
Appendix: Product Warranty Card

1. Feature

1.1 Audio specification 、 main audio signal process diagram

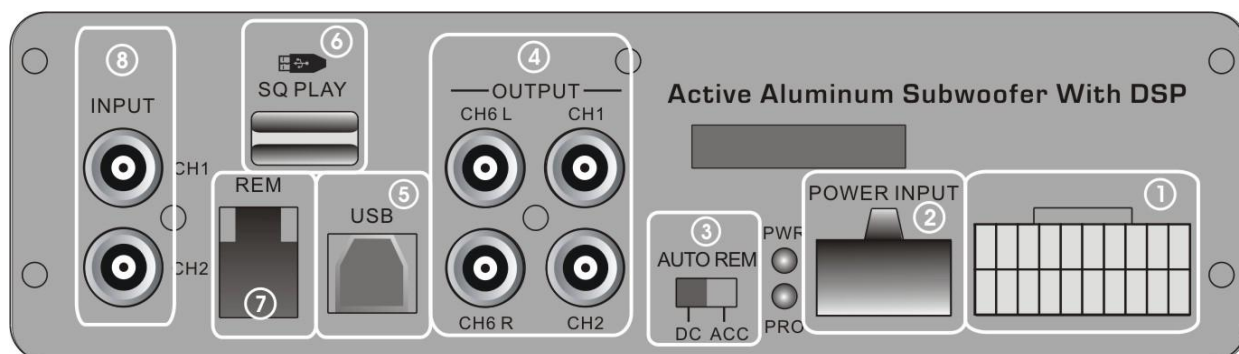
This device uses 96KHz high sampling rate audio extraction mode, 32-bit resolution industry good Delta-Sigma a/d and d/a conversion, the core processor is the high resolution, 48-bit double precision floating point and 160 MHz digital signal processor (DSP). Digital audio processing, including gain control, signal phase, CH1-CH4 10 section /CH5-CH6 8 parametric equalizer or graphic equalizer, delay and frequency device (low shear and high cut filter,the types of specialized division include: Ning g / Bessel / Butterworth, CH1-CH4 2 slope 6 dB and 12 dB can be selected CH5-CH6 four slope 6dB and 12dB 18db 24dB optional) etc..

Main audio signal process diagram



1. Feature

1.2 Input and output side panel

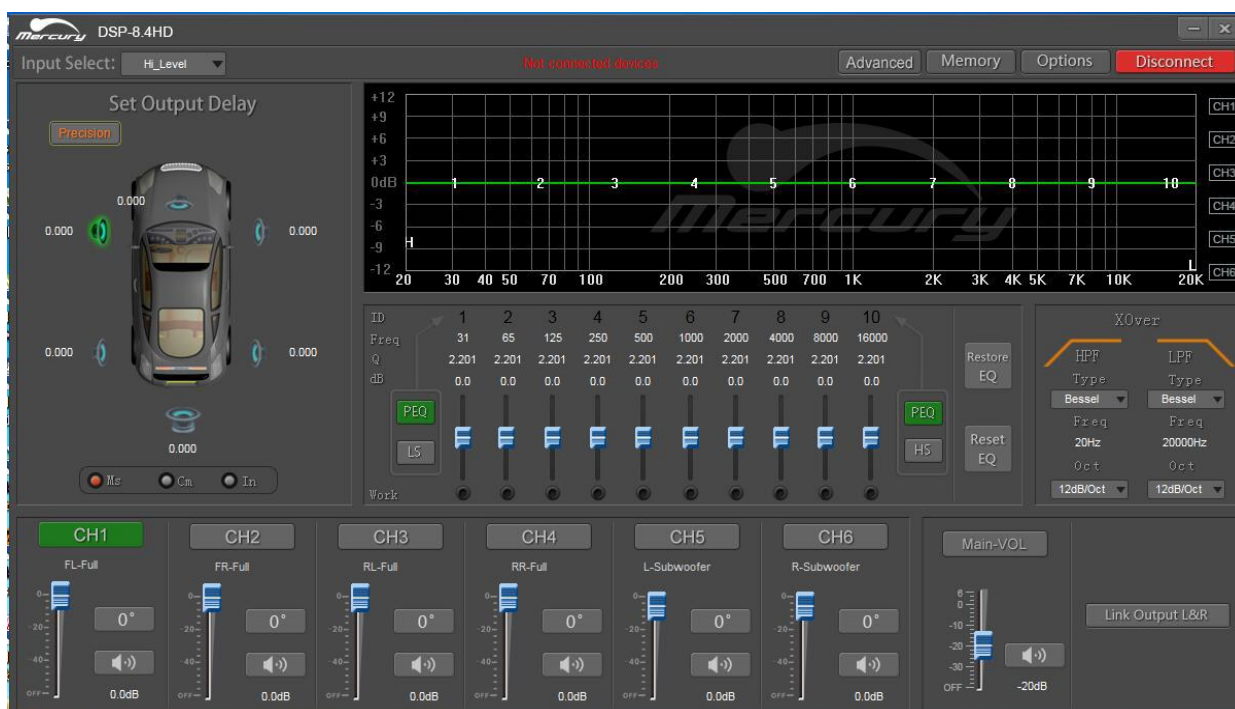


- 1.) Head unit connecting port
- 2.) Power input
- 3.) ACC/DC convertor
- 4.) Low level RCA output, it can connet 4 channel speaker system output
- 5.) USB2.0 port
- 6.) SQ play
- 7.) Remote connect
- 8.) Low level RCA input, stereo input

DSP-8.4HD PC software control: (please check 3. Software Operation detail)

if ready and will connect with head unit autometically.

- 2.) Display resolution over than 1280*760, or else cannot show fully.
- 3.) Only for windows system's computers.



1. Feature

1.4 Function Introduction

Specification

Active Range	$\geq 110\text{dB}$
S/N Ratio	$\geq 100\text{dB}$
T.H.D.	$\leq 0.05\%$
Freq. Response	20Hz $\sim$ 20KHz
Input Impedance	Low level input:20K Ω , High level input:240 Ω
Low level output	100 Ω
Power Output (4 Ω)	RMS 50W X 4 , Peak Power 400W X 1
Signal input/output range	RCA Input : 3.3Vpp; High level: 30Vpp; RCA Output: 13.0Vpp
Temperature	-10 $\sim$ 70 $^{\circ}\text{C}$
Supply Voltage	DC 9V $\sim$ 15V
Turn-on REM input	See page 2.2 for ninth
Turn-on REM output	+12V starting voltage output (0.1A)
Power consumption	$\leq 0.1\text{W}$
Weight	4.6kg
Dimension	345Lx245Wx70H mm

Function

Input signal type	Choice: 4 ch high level, 2 ch stereo low level, Blue Tooth , SQ play
RCA output location	Freely definable output sound position and speaker type
Output signal gain	Gain range: Mute, -59dB to 0dB
Output signal equalizer	1-4 Each output channel 10 band , 5-6 each output channel is independent of the 8 band equalizer engine
	1. Equalizer type: 1st equalizer for Q and low pass option. 2nd equalizer for Q and high pass option others for Q balance 2. Frequency range: 20Hz~20KHz , resolution 1Hz 3. Q (slope or gradient): 0.404~28.85 , resolution 0.01 4. Gain: -12.0dB~+12.0dB , resolution 0.1dB

Output signal crossover	Each output with 2 rank's high/low pass independent filter 1. Professional filter type: Butterworth, Linkwitz-Riley, Bessel 2. Filter crossover: 20Hz - 20KHz , Resolution 1Hz 3. Filter slope setting: CH1-CH4 6/12dB/Oct, CH5-CH6 6/12/18/24dB/Oct °
Output phase and time delay	Each output channel can be adjusted for phase and time delay, parameter range Phase: 0° /180° Time delay: 0.000-5.4ms , 0.00-187.00cm , 0.00-74.00inch
Scene operations	Unit can keep 6-style of music scenes by preset.

2. System connections

2.1 System classic connecting reference

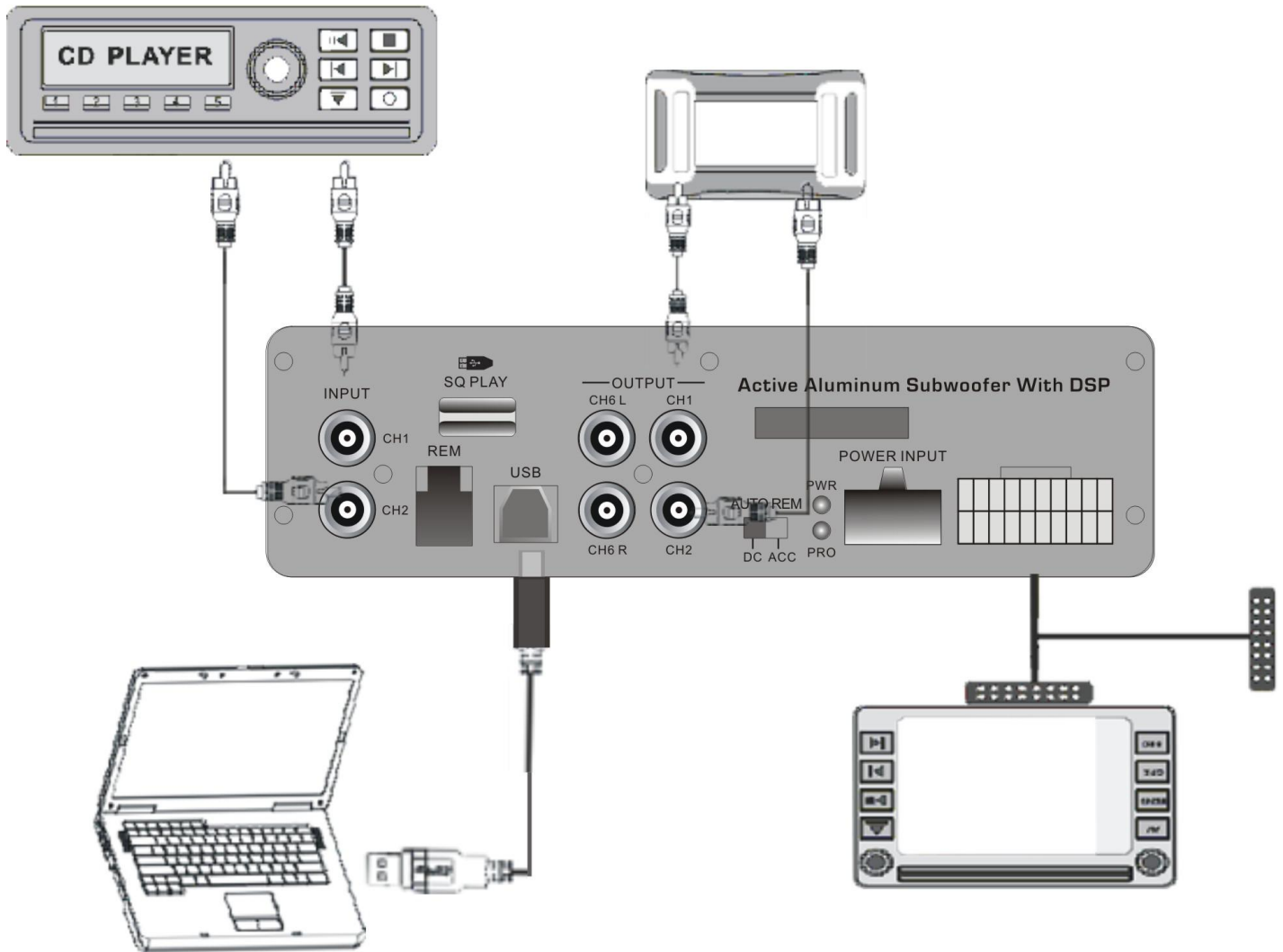


figure 2.1

this connecting method is for two units input, please refer below:

1. Please use Plug & Play cable to connect original car unit and DSP-8.4HD for upgrade audio system effects.

Please use OUT 5 and OUT6 RCA output when Install bass amplifier or subwoofer

2. with the player, using RCA low level input connection, mobile phone use standard AUX special line.

2. System Connections

2.2 Unit connection

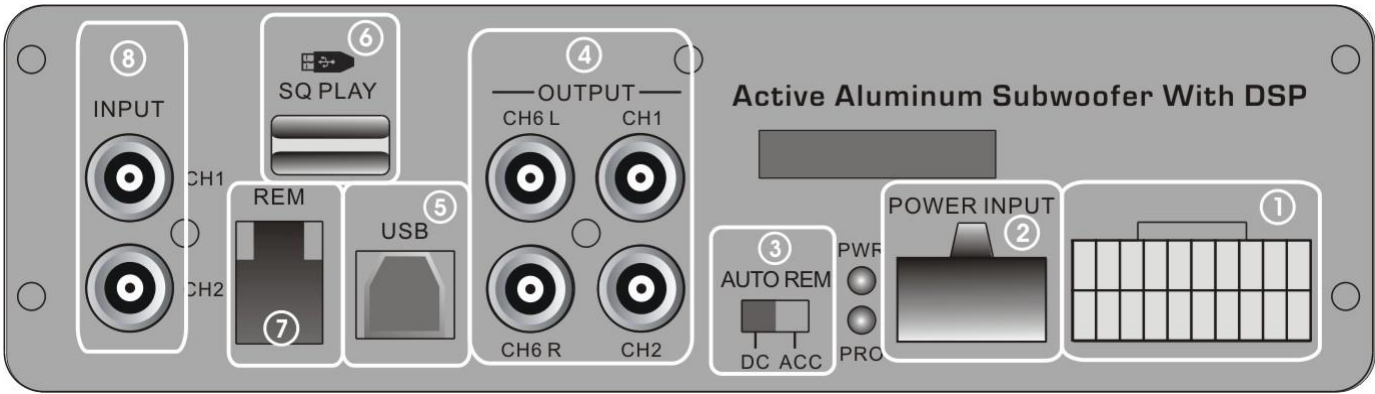


figure 2.2

indication "1" is the plug connecting position and assort with connecting cable which is matching unit.
(figure 2.2) Conncting wire specifically defined in the following table:

REM	REM	RR+	RL+	FL+IN	FR+	OUT3-	OUT3+	OUT4-	OUT4+
IN	OUT	RR input	RL input	FL input	FR input	RL	RL	RR	RR
						Power output	Power output	Power output	Power output
		RR-	RL-	FL-	FR-	OUT2-	OUT2+	OUT1-	OUT1+
		RR input	RL input	FL input	FR input	FR	FR	FL	FL
						Power output	Power output	Power output	Power output

Part of the power supply wire can be connected with the special power and lift docking line

Direction:

- only for the original Plug & Play cables, or user using others directly.
- REM output,when the toggle switch in DC, defined in FL+/FR+/RR+/RL+ these four of the high level any one can input line.
Note: when do not use high level input (only RCA low level input), the toggle switch dial in DC, defined in FL+/
FR+/ RR+/RL+ arbitrary a all can access REM or ACC input, can be normal to start the machine.
- When the switch to the ACC, ACC input only.

2. System Connections

2.3 Low level RCA input/output indication

indication "4" "8" position where is "low level RCA input/output" (figure 2.2)

1. low level RCA inputs, usually followed by an external player RCA output as the auxiliary input, 3.3VPP.
maximum input level is Switching the original car high input and low level input with APP switch.

2. the low level of RCA output, OUT1 to OUT2, output power interface signal CH6 L/CH6 R is consistent with the original car, not just the user to configure the RCA power amplifier, low output frequency of two more high-end system.

2.4 USB2.0 Port

Indication "5" position where is " USB2.0" Port.

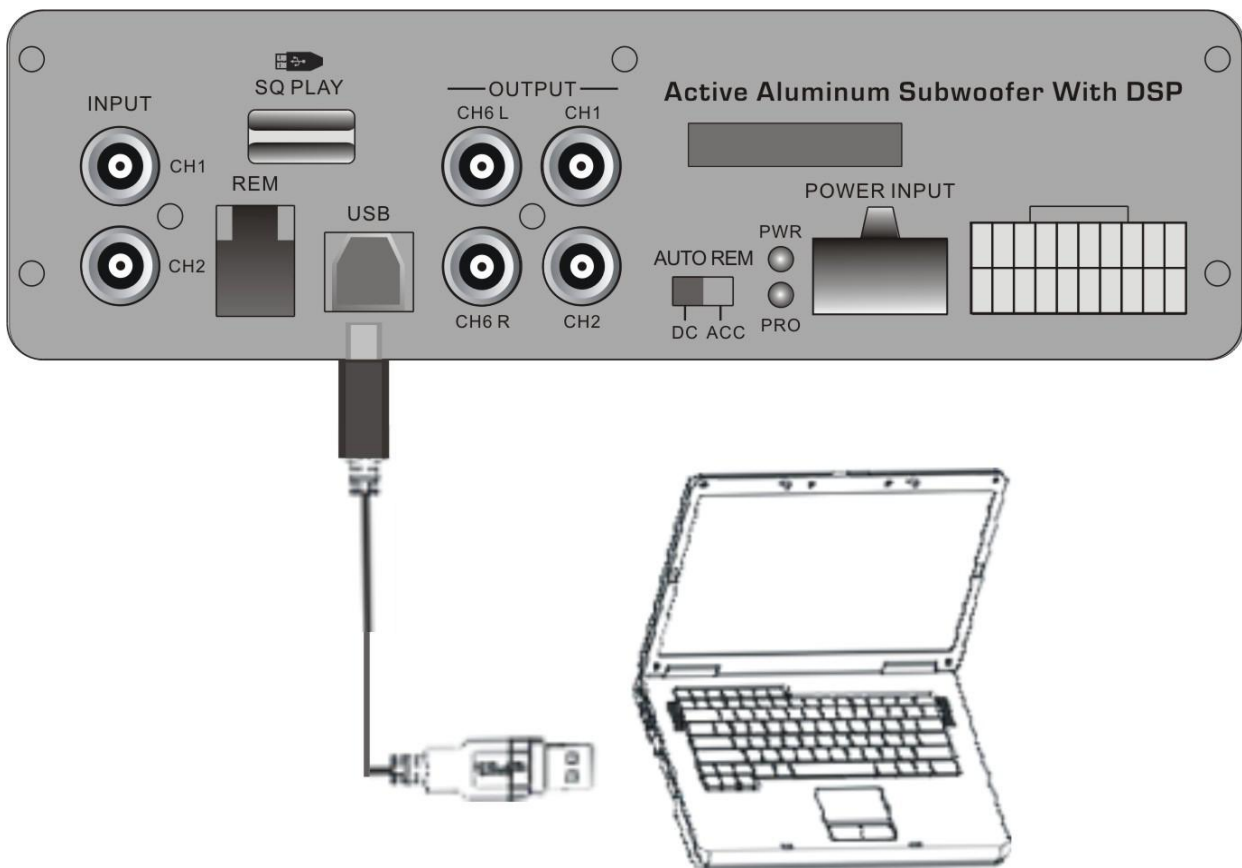


figure 2.3

Use Random accessories USB cable into this hole on a computer connected to the PC, open tuning software to debug the sound system.

3. Software Operation

3.1 Software Installation

PC tuning software is no need to install drive program, plug and play.

Operating environment: Suitable for Windows XP / Vista / WIN7 / WIN8 operating system.

The installation procedure describes:

After you install the software and downloading, double-click the installation file, step down can be achieved by tuning the software is installed.

3.2 Turn on and turn off

Double click the DSP-8.4HD icon to open the software, the main interface is not brought online until the upper

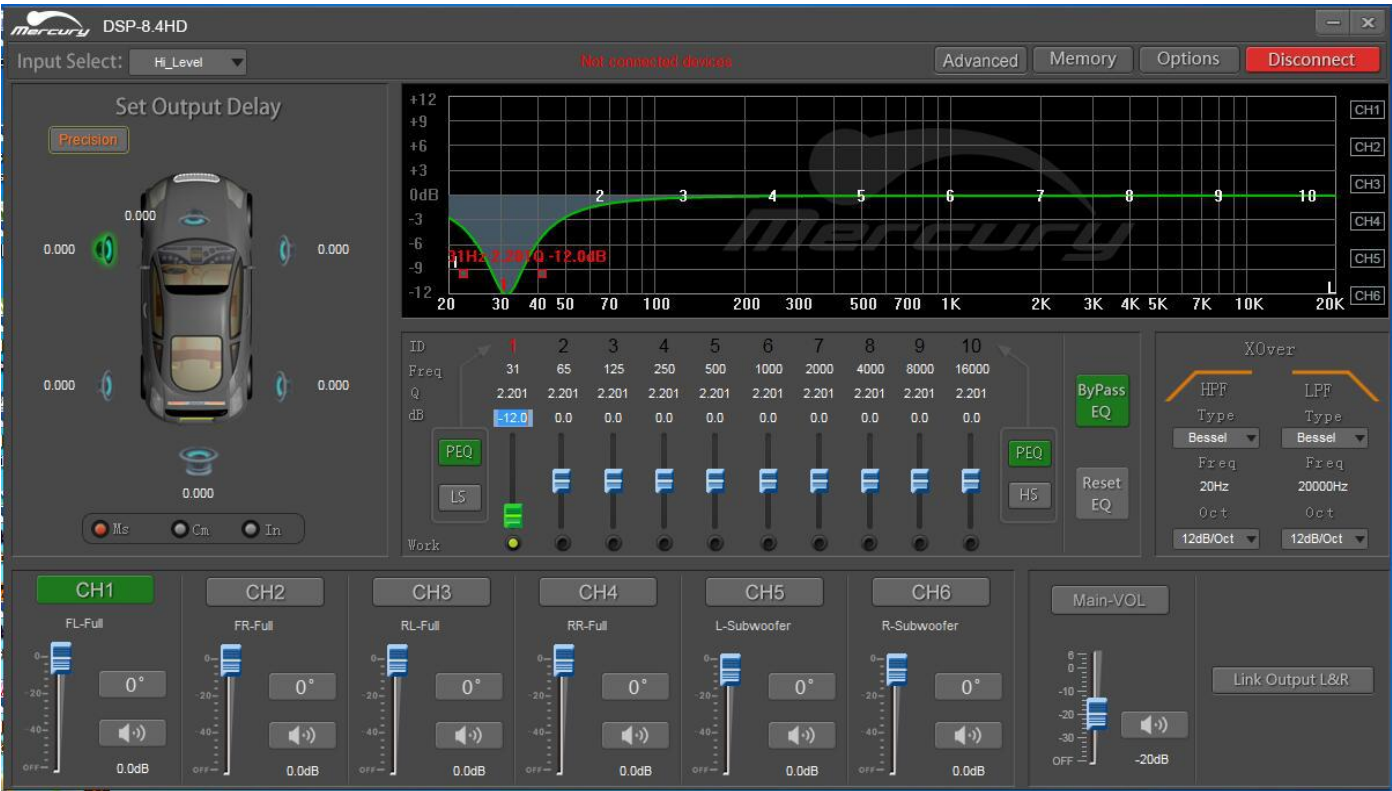
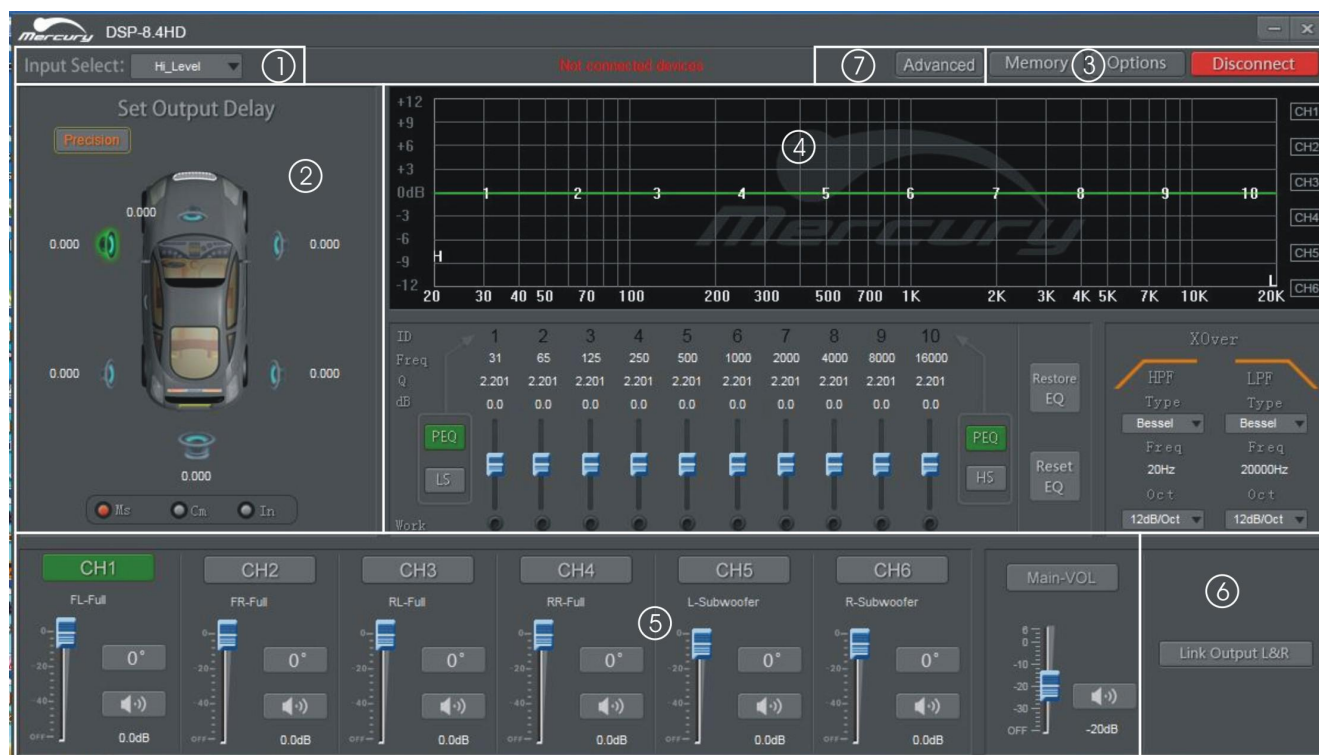


figure 3.2.1

DSP-8.4HD provides only wired USB PC software connection. Wired USB connection:Ensure that DSP-8.4HD power state, with a USB cable to connect to a computer through the USB interface, the computer will find the new device and automatically install the update equipment, after a few seconds the installation is complete. Mixer software will automatically line up with the hardware. Right corner refers to "connected" state.

3. Software Operation

3.3 Software interface



Software interface DSP-8.4HD unit divided into the following functional:

- 1, as shown in 3.2.2, "1", input signal selection: AUX , Phone, Player, High level (optional).
- 2, as shown in 3.2.2 "2" region, illustrating the delay space setting.
- 3, as shown in 3.2.2 "3", the main menu and even unit status display.
- 4, as shown in 3.2.2, "4" zone, the output signal of the frequency and equalization commissioning.
- 5, as shown in 3.2.2, "5" region, output channel configuration and common parameter adjustment.
- 6, as shown in 3.2.2, "6" zone, link output setting.
- 7, as shown in 3.2.2, "7" region, advanced setting.

3.3.1 Input signal select

In the online mode, in Figure 3.2.2 "1", click the appropriate input source, you can switch the audio input signal.
Optional:AUX , Phone, Player, High level

3.3.2 Output channel switch and operations

"5" area, click on the corresponding channel number in Figure 3.2.2 (CH1, CH2 CH6), you can switch to the corresponding channel to adjust relevant parameterswhen changing the channel editing, where there are only 3.2. 2 "4" zone (crossover and equalization parameters) will vary depending on the channel and change the parameter values.

3.3.3 Output volume, delay, type, mute and phase setting

In Figure 3.3.1, there are six output channels commonly used parameters are displayed, the user can quickly adjust the parameters directly here.

3. Software Operation

Specifically adjusted as follows:



figure 3.3.1

- 1, the output volume control, volume control for each channel independently and the master volume, pushing the volume fader below each channel label can be in OFF (off), - adjust between 59dB to 0dB; while on the right also has a total volume of all output is adjustable, adjustment range is oFF (off), - between 59dB to 0dB.
- 2, mute and phase adjustment, also under the label of each channel are phase and mute both buttons select, and click on the button you can be between "positive phase" and "inverted" Switch, click the mute button You can switch between "open tone" and "off the sound." Figure 3.3.2 as follows:



figure 3.3.2

- 3, DSP-8.4HD processor output signal path can be any type of configuration freedom to any sound field point and the speaker type. The system defaults to 4.2 full-range passive mode. Figure 3.3.3 as follows:



figure 3.3.3

- | | |
|--------------------------------|---|
| CH1: front left output | CH2: front right output |
| CH3: After a left-field output | CH4: right after the sound field output |
| CH5: front subwoofer output | CH6: Rear subwoofer output |

3. Software Operation

Users can be customize the speaker type for each output channel, the specific methods of operation:
The first step: Click on the right side of the "Reset Output Configuration" button in the dialog box, select the "Reset EQ" button, return to the main interface, all channels are reset to all EQ.
(no connection to any speaker , there is no output of), as shown below 3.2.4:

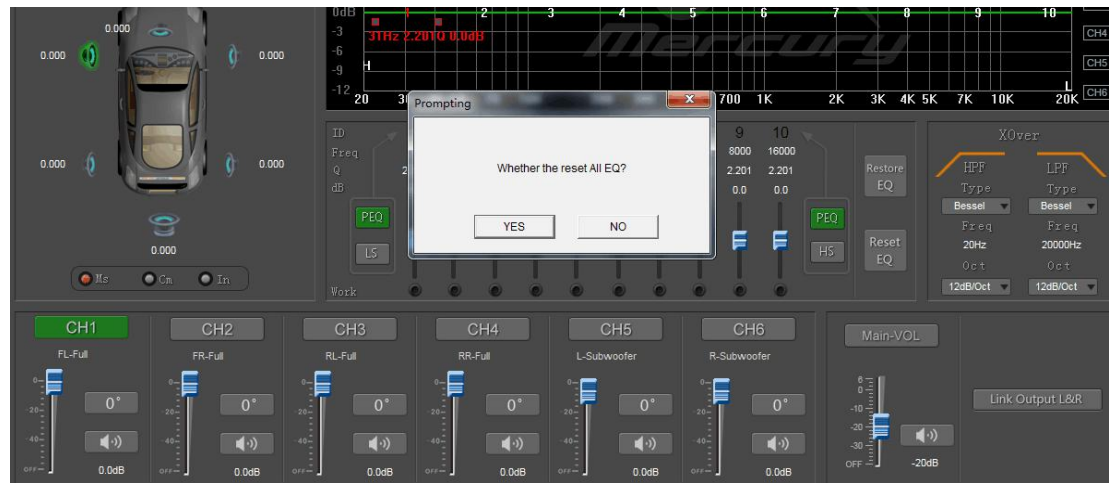


figure 3.2.4

Advanced Setting:

Click "Advanced" in the "7" area of Figure 3.2.2 to switch to (Figure 3.3.10) and adjust the relevant parameter settings accordingly. Figure 3.3.5 as follows:

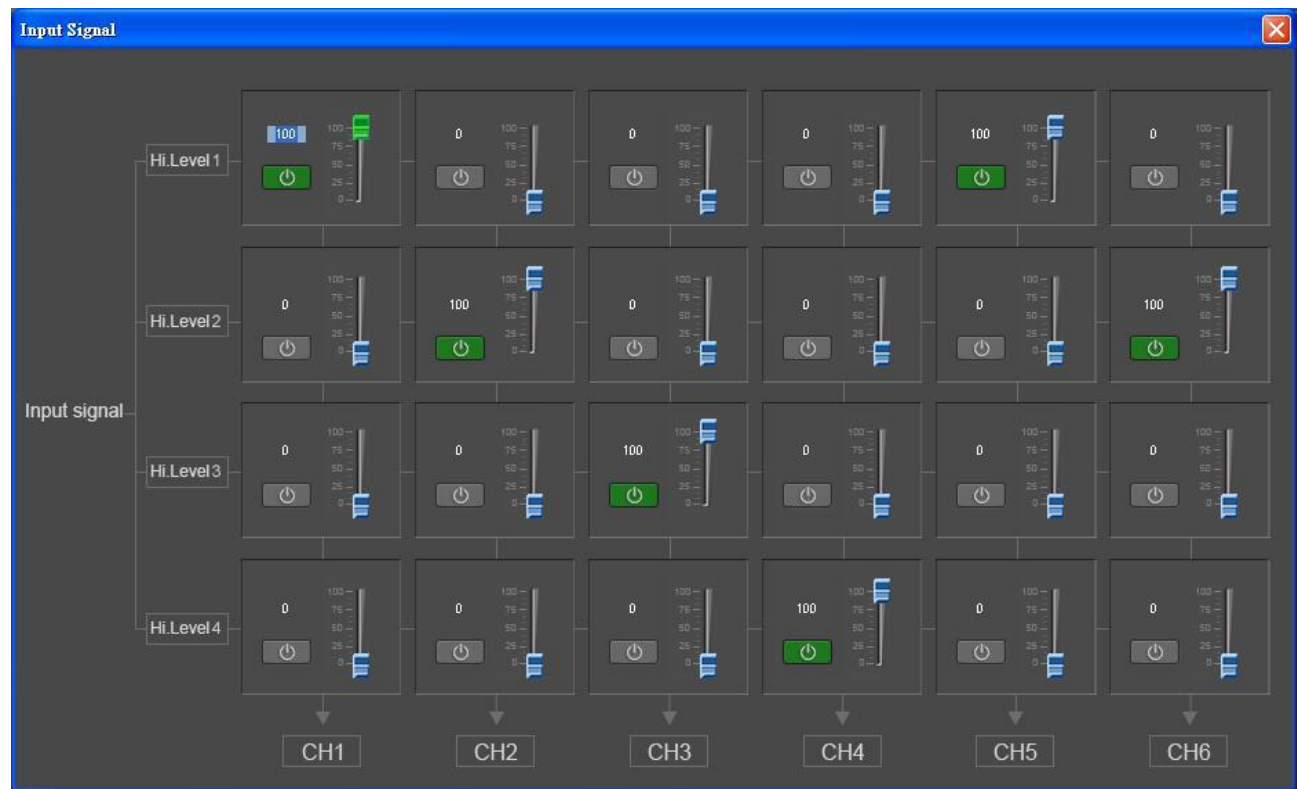


figure 3.3.5

3. Software Operation

4, the output delay adjustment, is set in the delay space area to the left of the illustrated adjustment, as follows (Figure 3.3.6), click on the value of the input box next to the corresponding speaker can be entered after the delay value corresponding units, there are also illustrated below under a handover delay unit: millisecond, centimeters or inches.



figure 3.3.6

3.3.4 Output signal equalizer and crossover operation

Output channel equalizer and crossover editor mainly in the following areas of regulation, as shown in 3.3.7:

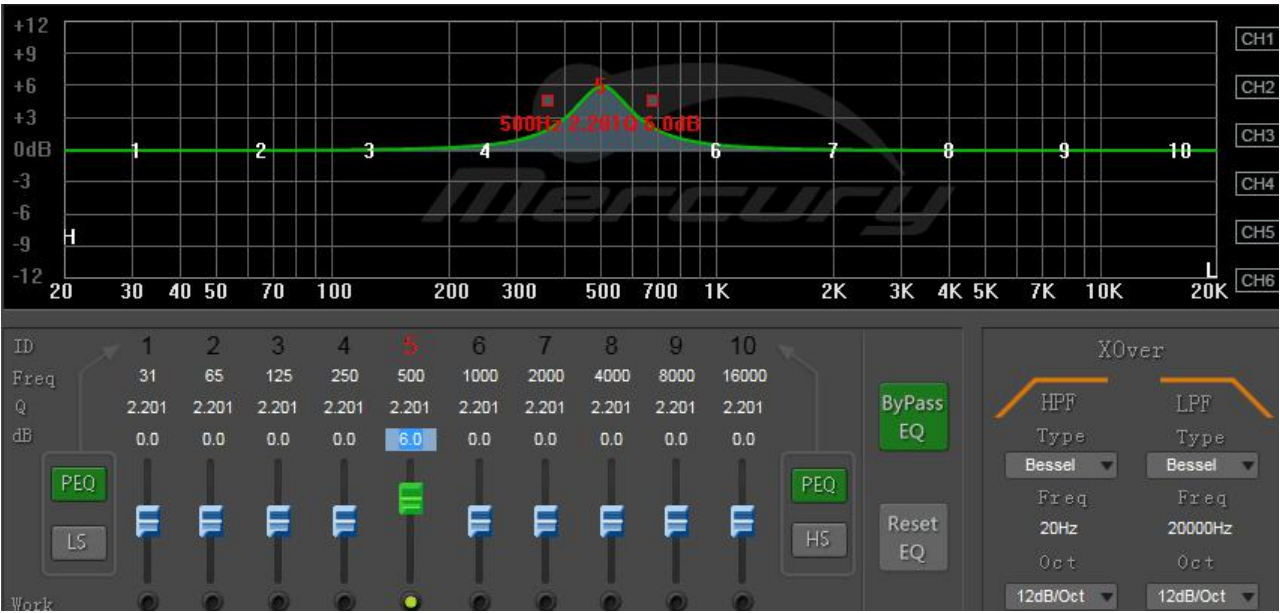


figure 3.3.7

Gain, drag around to adjust the equalizer frequency points; when the mouse is moved to the left and right of the small yellow box, press and drag left and right to adjust the equalizer Q. All parameters are displayed simultaneously adjust the current real-time equalizer is also updated value EQ parameters editing area.

3. Software Operation

1, the output channel EQ editing method, all 10 equalizer will work for the next parametric equalizer. When the parametric equalizer curve, if available in the box below the corresponding input parameter values can be (frequency, Q value, and gain) adjusted in real time will also be revealed at the top (as shown in Figure 3.3.8 parametric equalizer case).

The first equalizer can also be switched to a low-key buttons to the left of the equalizer, only to enhance or reduce the bass components, tunable frequency, Q value (slope) and gain (as a low-key balancing 3.3.9 C. Tenth equalizer can also switch to a high-profile button on the right by the equalizer, only to enhance or reduce the treble components, tunable frequency, Q value (slope) and gain (as a high-profile of equilibrium 3.3.10 Case).

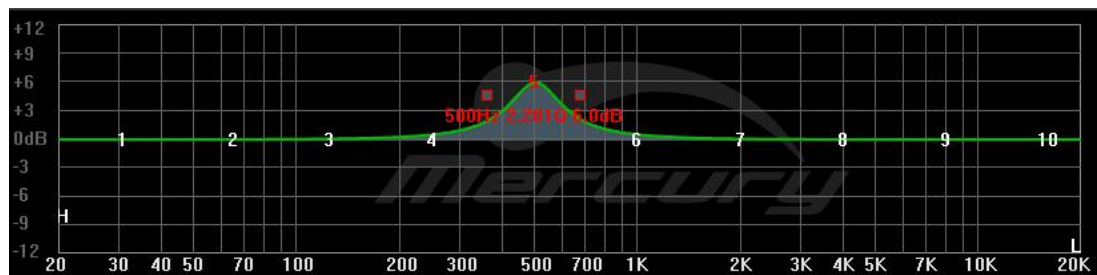


figure 3.3.8

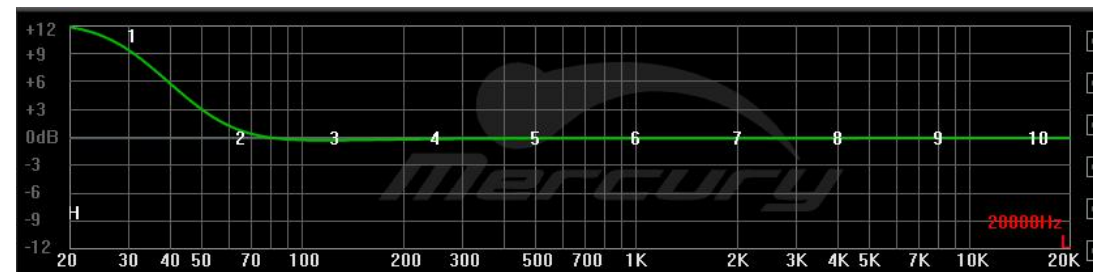


figure 3.3.9

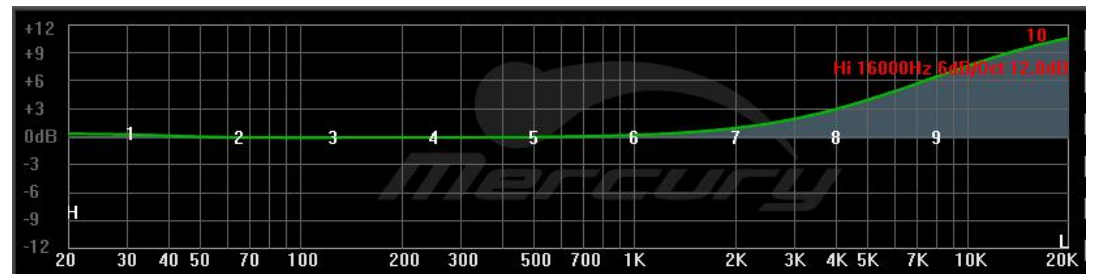


figure 3.3.10

Straight balanced: the button shown in Figure 3.3.7, the current channel as long as there is an equalizer in the open state, this button will appear highlighted in green state, indicating that you can click this button to make all the equalizer current channel change to not start moving (directly). Click the button that will return to "restore the balance." Then click on "restore the balance" button will allow all current equalizer channel back to the last activated state.

Note: This operation will change the equalizer gain.

3. Software Operation

Reset balanced: the button shown in Figure 3.3.7, click this button to make all current channel equalizer parameters return to the initial state: uniform distribution of frequency, Q value is 1.2, a gain of 0dB.

2, the output channel divider editing method

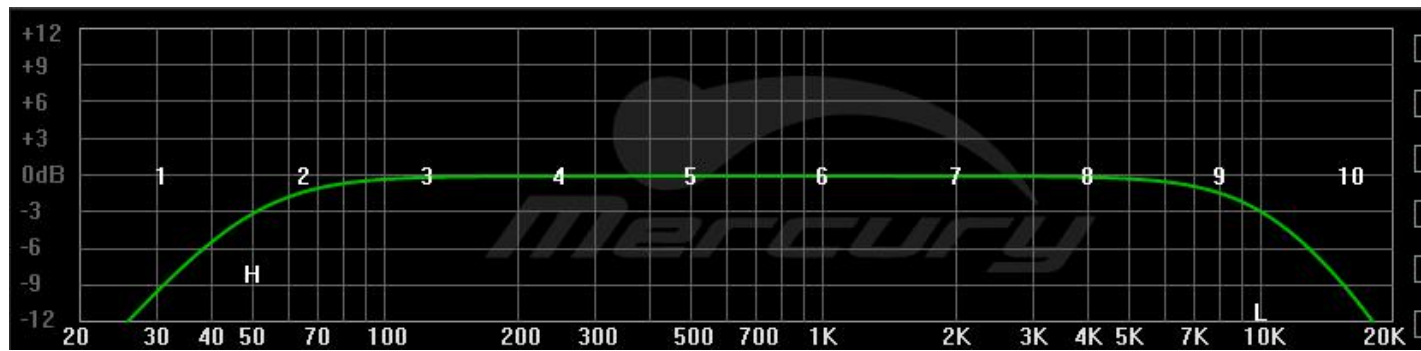


figure 3.3.11

In Figure 3.3.11 the bottom right of the "crossover" column, device divider parameter values.

Type setting: drop-down menu to select the way, there are (Linkwitz-Riley), (Bessel) and (Butterworth) and other three options.

Frequency setting: via direct input value, scroll the mouse wheel up and down keys on the keyboard and other ways to adjust low-cut or high-cut frequency. Adjustment range: 20Hz ~ 20KHz.

Slope (slope) settings: CH1-CH4 drop-down menu select 6dB/Oct, 12dB/Oct and other 2 options, CH5-CH6 drop-down menu select 6dB/Oct, 12dB/Oct, 18dB/Oct, 24dB/Oct and other 4 options.

Note: In 6dB / Oct, there is no type of algorithm, but a common type (displayed as NULL).

3.4 Setting introduce



figure 3.4.1

3. Software Operation

As shown in Figure 3.4.1 DSP-8.4HD software of the scene in three major types of actions: the machine stored scene data, computer data stored scene and the whole scene data manipulation.

1, the machine data stored scene operation: refers to the scene data is now running the machine and set aside six in one scene between the data stored load, save, and delete operations. *(Note: the choice of input signal sources, the output signal and the output channel type configuration for the machine stored total volume not save scene data load operation)*

2, the computer stored scene data operation: the machine is now running in the scene data is saved as a computer file, or to load a previously saved scene computer files to the machine running.
(Note: the choice of input signal sources, the output signal and the output channel type configuration for the computer stored a total volume not save scene data load operation)

3, the whole scene data: is to copy all the data in the machine to machine, or save all of the data on existing machines as computer files, of course, including all of the input and output configuration data and advanced options data. This is mainly used for data storage and copy machine.

3.4.1 Original setting change

1, save for the machine preset scene

This function is to save existing work scene preset scene for the machine data (total of 6).

Step1: Click on the main interface to the top menu "Scene" button will pop up all the scenes action item (see Figure 3.4.1).

Step2: Click "Save as machine preset scene" item will pop up after the Save As dialog window machine preset scene (Figure 3.4.2).

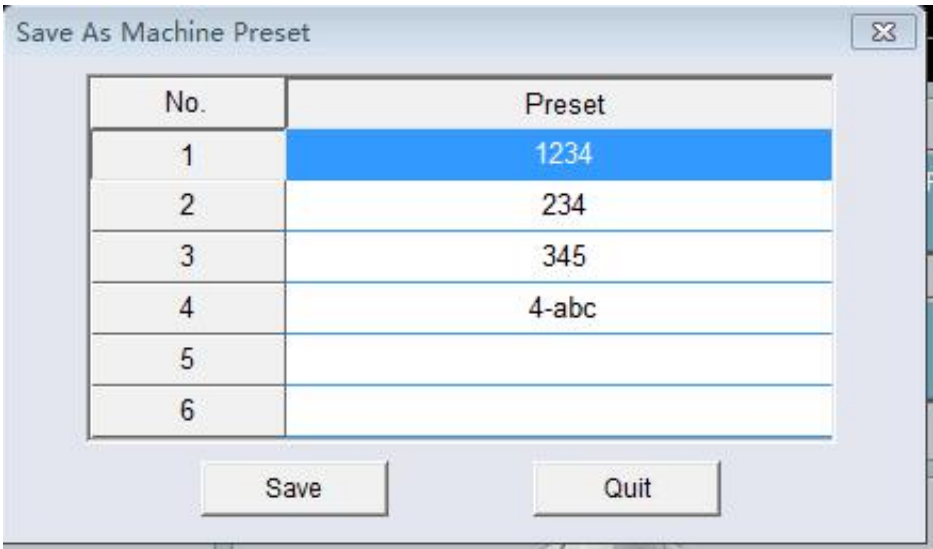


figure 3.4.2

Step 3: Figure 3.4.2 dialog box, does not show the name of the data indicates that this scene is the factory default data, select the user preset number you want to save the machine location (such as Option 4), and then point below the "save " button, you pop up as shown in Figure 5.5.3," enter the scene name "box. **If you select the number of the existing scene name, it will overwrite the original data! !**

3. Software Operation

Step 4: Enter a name (such as 4-abc), named in the point you want as shown in "Input Scene name" dialog box shown in 3.4.3 "OK" button to save and return as shown in Figure 3.4.4 a. Point "Exit" button to complete the save as preset scene machine operation. This completes the scene to save the current operating mode of the machine to the machine presets Group 4, and is also the current machine running scene, you can see the upper left corner of the software will display the current run of the name of the preset scene.

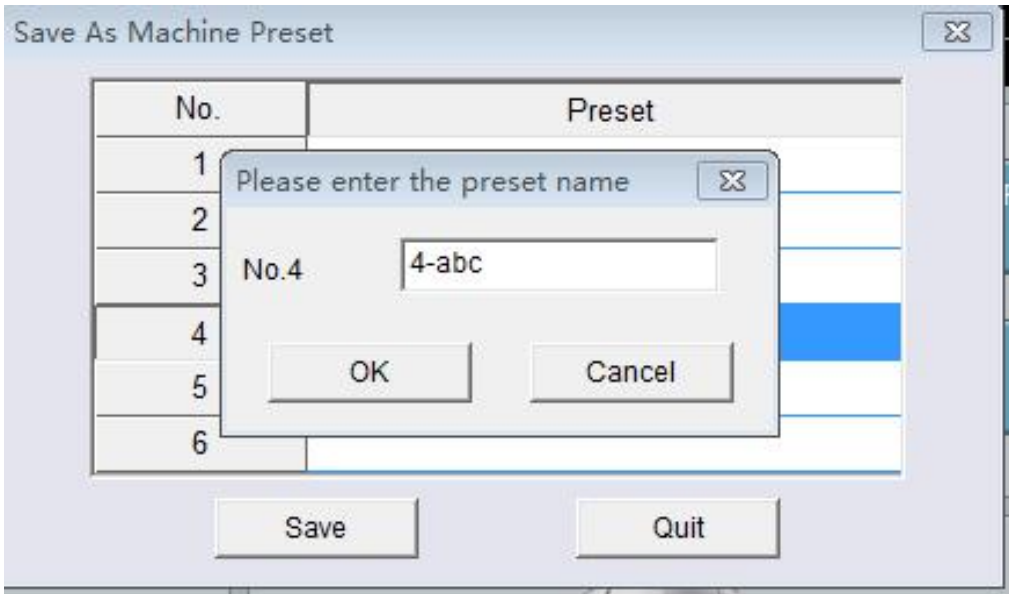


figure 3.4.3

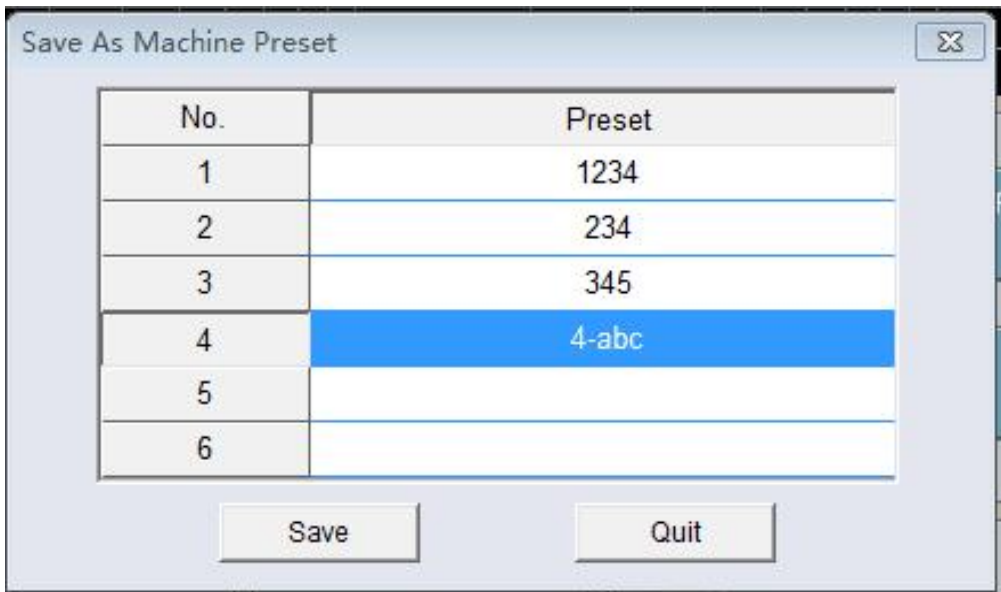


figure 3.4.4

3. Software Operation

2, loading machine preset scene

This feature is to preset scene previously saved machine data (saved as a machine preset scene) out of tune as the machine is currently running scene.

step1: Click on the main interface to the top menu "Scene" button will pop up all the scenes action item (see 3.4.1).

Step2: Click "Load machine preset scene" item will pop up after loading machine preset scene window dialog box (Figure 3.4.5).

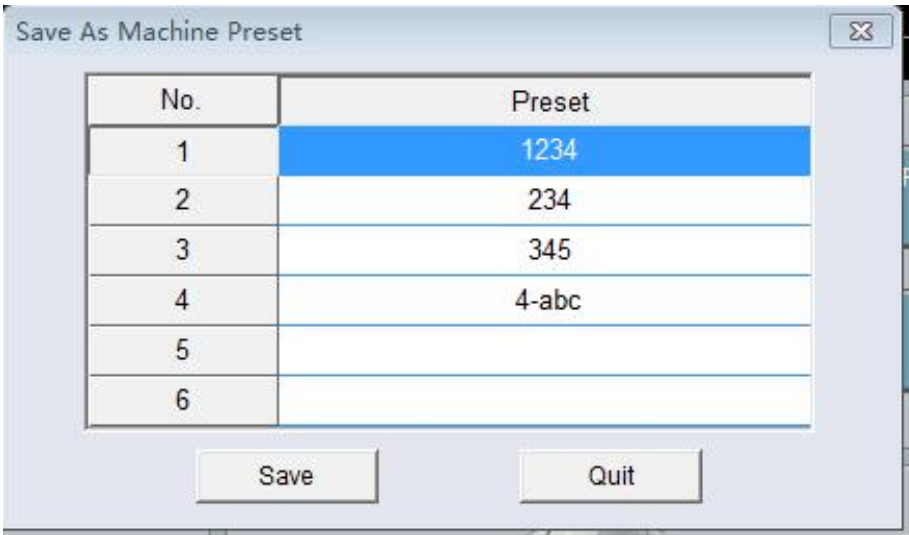


figure 3.4.5

Step3: as dialog box of figure 3.4.5 , select the machine where the user wants to load a preset number (as selected on the 3rd), and then point below the "Load" button on the pop-up shown 3.4.6 loading data transfer progress shown in the wait window.

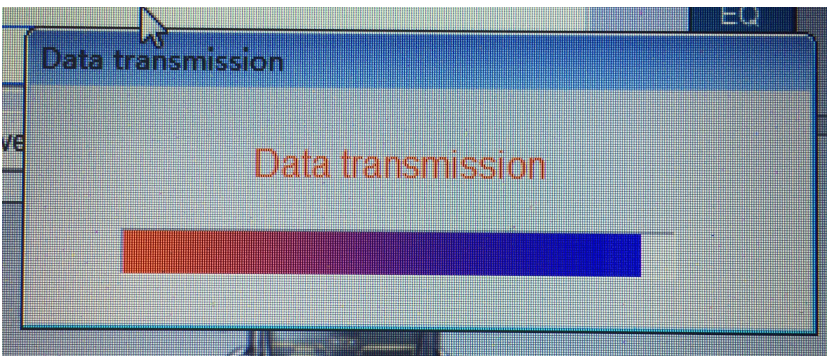


figure 3.4.6

Step 4: After data transfer is completed, the machine load preset scene is complete, but you can see the upper left corner of the software will appear as the currently running preset scene the name of (Figure 3.4.7 "345 "but once in the console interface parameters changed, it will become the" Custom "in the name, because this time the machine is running and the data has been loaded set of data that is different).



figure 3.4.7

3. Software Operation

3. Remove the machine preset scene

This function is to machine the preset scene (total of 6) Delete, after deleting the name is blank, and while the data returned to the factory default data before. **Note that this operation does not affect the machine currently running data changes.**

step 1: Click on the main interface to the top menu "Scene" button will pop up all the scenes action item (see3.4.1).
Step 2: Click the "Delete machine preset scene" after deleting the item will pop machine preset scene window dialog box (Figure 3.4.7).

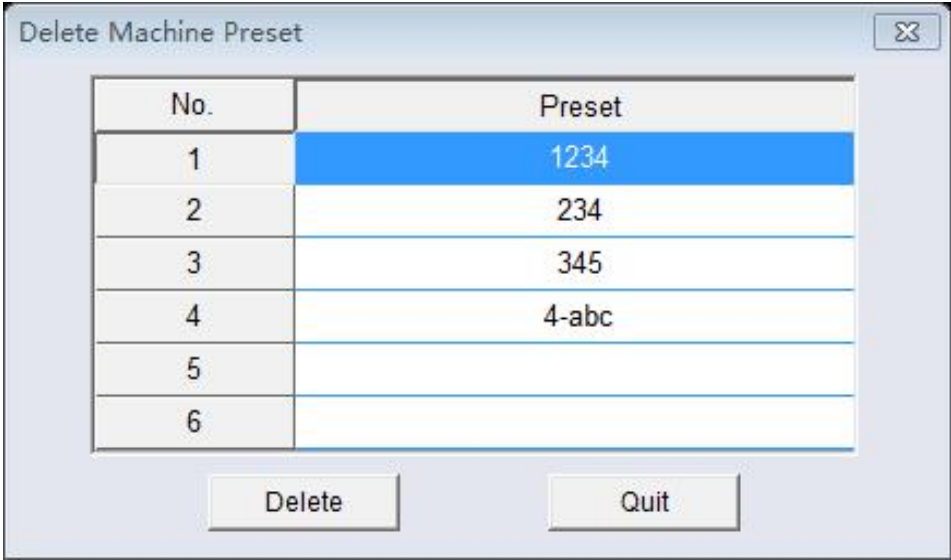


figure 3.4.7

Step 3: As shown 3.4.7 dialog box, select the location of the user's machine preset number you want to delete (such as Option 3), and then point below the "delete" button, you pop up as shown in Figure 3.4.8 the delete confirmation dialog window.



figure 3.4.8

3. Software Operation

Step 4: the dialog as shown in "Yes" on figure 3.4.8 to confirm the deletion, machine delete preset scene is complete, and can see the machine preset number 3, there is no name (Figure 3.4.9).

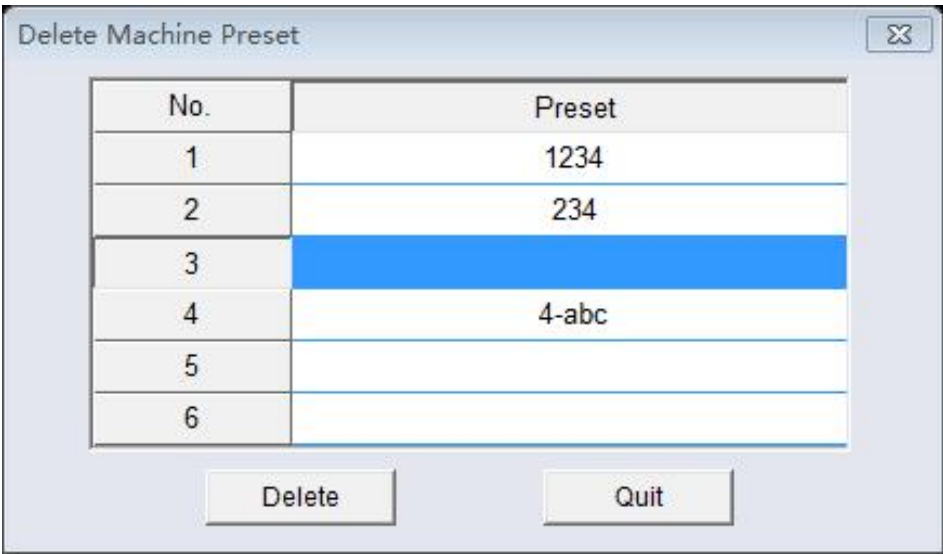


figure 3.4.9

3.4.2 Load and Save to store scene files on your computer

1, save as a scene file on the computer

This function is to save the current machine working scene data to a computer in order to prepare the late call

step 1: Click on the main interface to the top menu "Scene" button will pop up all the scenes action item (see 3.4.1).

Step 2: Click "Save as a scene file on the computer" will bring up the file after item Save As dialog window 3.4.10.

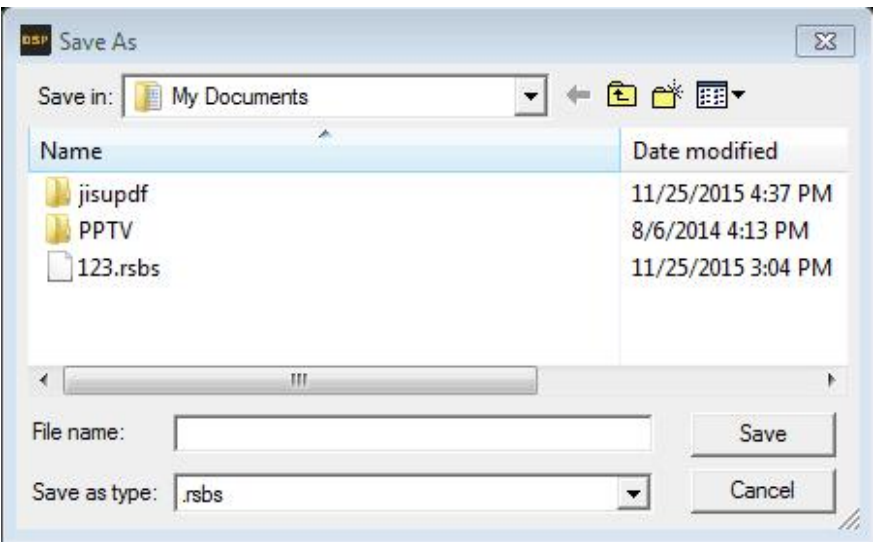


figure 3.4.10

3. Software Operation

step 3: Enter the file name in the pop-up window you want, save point on it, but back to the main interface, but also in the title bar will display the file name you saved As figure 3.4.11, once there is a change parameter does not display the file name you saved, it becomes "custom" in the name)



figure 3.4.11

2, loading scene files on your computer

This function is previously stored in the scene file on the computer the machine work load for the current scene

step1: Click on the main interface to the top menu "Scene" button will pop up all the scenes action item (see 3.4.1)
Step2: Click "Load scene file on the computer," after entry window will pop open file dialog box (Figure 3.4.12).

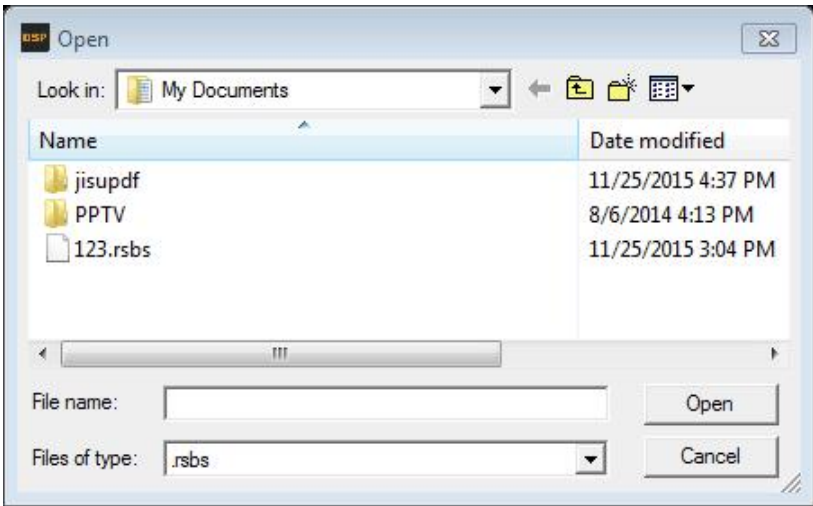


figure 3.4.12

step 3: open the pop-up window, select the file name of the user you want to call, point to open it, but return to the main interface, you will display the file name in the title bar of the opened (Figure 3.4.13, once there do not appear to change the parameters after you save the file name, becomes "custom" in the name).



figure 3.4.13

3.4.3 Load and save the whole store a scene

1, save the whole store the scene

This function is to save all the data on the machine is now on-line for a computer file data (data file of the whole machine, including the current job scenario, six groups of all machine data preset scene, output channel configuration data and advanced data and other options), to when copying machine call late the whole device. This action does not change any data now on-line machine Specific methods of operation and the "Save the scene file on the computer is" basically the same, please refer to the operation on their own.

3. Software Operation

2, load the whole scene

This function is to load previously saved on the computer the whole machine to machine data files (data file of the whole machine, including the current job scenario, six groups of preset machine all the scenes, the o channel configuration data and advanced data and other options data). **That is, the previous overall good** debugging machine data copied to now coupled machines. We recommend similar models when making audio system, for the whole replication functions.

3.5 Options Introduction

After click on the main interface to the top menu "Options" button in Figure 3.5.1, it will pop up "option" of each menu item.

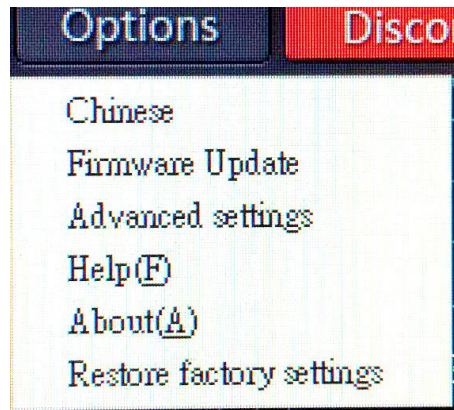


figure 3.5.1

3.5.1 software in English and switching method

In the Options menu, use the mouse to click on the first one option (Chinese display "English", the English show "Chinese") to the control software interface in English to switch.

3.5.2 Unit firmware update method

In the Options menu, click on "Firmware Update" pop-up dialog box shown in Figure 3.5.2, the dialog box by clicking the "Browse file" button, found to * .hex extension of the DSP-8.4HD upgrade file (see the official website of the latest information and download), and then click on the "update" button to upgrade the hardware upgrade schedule began to fill with color, about 60 seconds, the progress bar is full, a hardware upgrade is successful, click on the "Exit" button to exit the hardware update. After the update, the machine will automatically restart work.

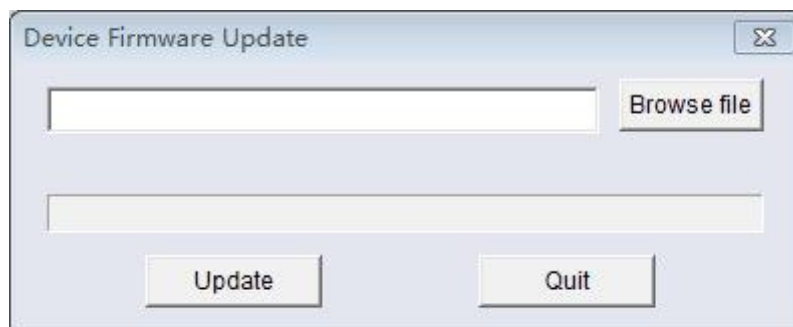


figure 3.5.2

3. Software Operation

3.5.3 Help information acquisition method

In the Options menu, use the mouse to click on the "Help" option the system will automatically link to open a text help file format, users can access the machine operating information in the file.

3.5.4 Information about the inquiry

In the Options menu, use the mouse to click on the "About" option the system will pop up a message Query dialog box, in which you can query to: SEQ ID letter version information of the device, the software version information and device information.

4. Common troubleshooting

Part 4: Common troubleshooting

Before applying power, carefully check the cable is normal, we must ensure that all interfaces as a normal connection. Common Fault diagnosis and treatment

Failure occurs: Before repaired, please refer to the following table to find a cause



After checking still beyond repair: Keep the machine back to the initial value.



Still can not be repaired when: Please consult the manufacturer customer service department.

Troubleshooting methods:

No.	Symptom	
1	No electricity	1. pls check if power linking correct? 2. pls check if REM IN if linking correct?
2	No voice	1. pls check if turn on mute style 2. pls check if input channel is correct?
3	cannot link USB	1. pls check if USB cable is setting correct 2. pls cehck if find name as "HID-compliang device" in the computer

