

# DSP series amplifier



## Operation Manual

## Important Safety Precautions & Explanation of Symbols



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 humans.



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



The lightning flashes printed next to the output terminals of the amplifier are intended to alert the user to the risk of hazardous energy. Output connectors that could pose a risk are marked with the lightning flash. Do not touch output terminals while amplifier power is on. Make all connections with amplifier turned off.



**CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE THE COVER. NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED PERSONNEL.**



**WARNING: To prevent fire or electric shock, do not expose this equipment to rain or moisture.**



**Do not put any containers that hold water on the amplifier, just in case the water would drip into the amplifier and cause electric shock.**

This amplifier has a serial number located on the rear panel.  
Please write this and the model number down and keep them for your records.  
Keep your purchase receipt. It is your proof of purchase.

Serial Number: \_\_\_\_\_

Date of Purchase: \_\_\_\_\_

Purchased From: \_\_\_\_\_

## Introduction

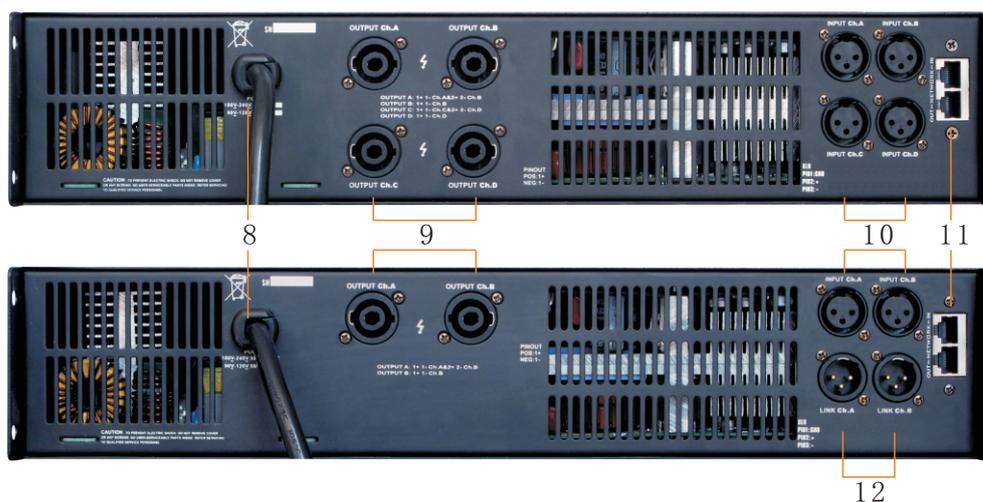
Please read the following directions and obtain the best results.

DSP series amplifier adopts the high-performance 32 bits floating-points DSP chip of TI company. The dominant frequency of the chip is as high as 200MHz, sampling frequency is 96KHz, and with 24 bits A/D and D/A. The 4 inch touch screen enables easy operation. Meanwhile, the amplifier can be connected to the computer either by USB or RS485 connectors. RS485 can be operated as long as 1500 meter, and it supports multiple amps at the same time. Each output got 8 bands EQ, X-over, delay, limiter, gain, polarity. The output signal can be adjusted and limited, so it's a very good match for live control. The DSP amplifier employs high efficiency, high power and high density class D amplification, and uses complete protection (over current, overheat and high frequency protection) to keep the appliance safe.

## Front panel, rear panel, connectors and their function



1-screen 2-signal/limiter (green is signal indicator, red is limiter indicator)  
3-MUTE/PROTECT light 4-power light  
5-USB connector 6-control knob 7-power switch



8-AC power cord 9-speaker output connector  
10-XLR input connector 11-RS485 internet connector  
12-XLR linear output connector



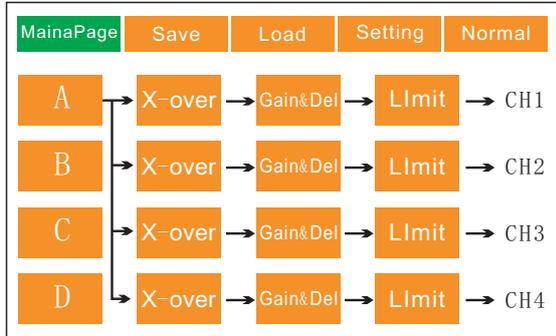
No bridge mode. Do not use the DSP amplifier under 3 ohms load.

Do not support hot-plugging. Only plug in or out input signal when the power is off.

# Touch-screen Operation

## 1. Power on preview and control method

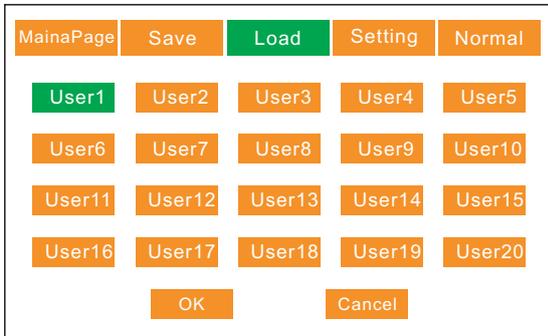
### 1.01 main page



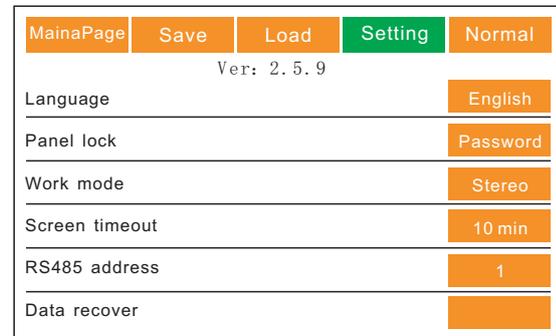
### 1.02 Save



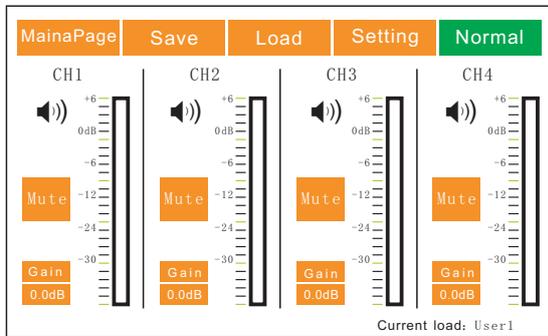
### 1.03 Load



### 1.04 setting



### 1.05 Normal



### 1.06 control



spin the knob

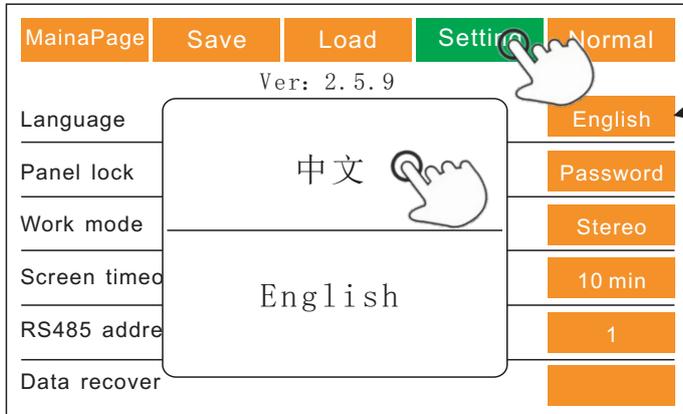


touch the screen

# Touch-screen Operation

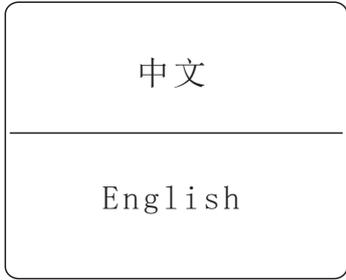
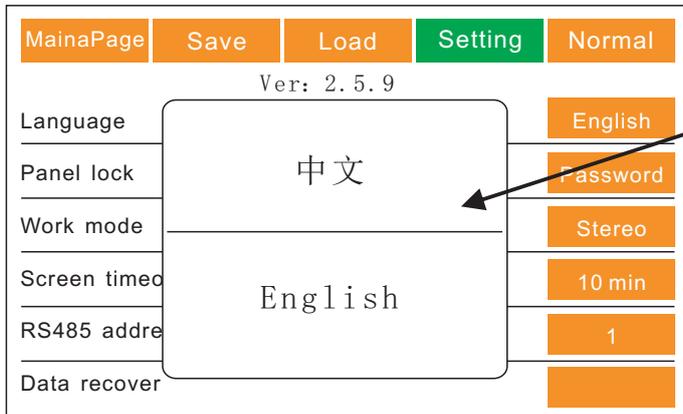
## 2. Panel operation explanation. (take setting the language for example.)

### 2.01 first menu and second menu operation



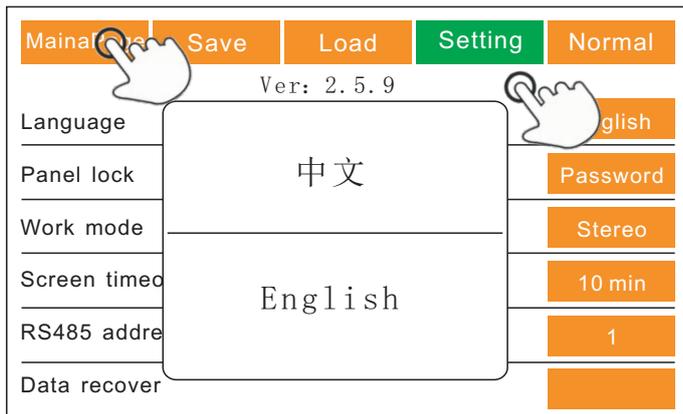
English

Press setting-  
language-  
choose English or chinese



second menu

### 2.02 quit menu



Note: if you want to quit the “setting menu”,  
just press “Main page”, “Save”, “Load”, or “Normal”

# Touch-screen Operation

## 3. Main page operation

### 3.01 Channel Link

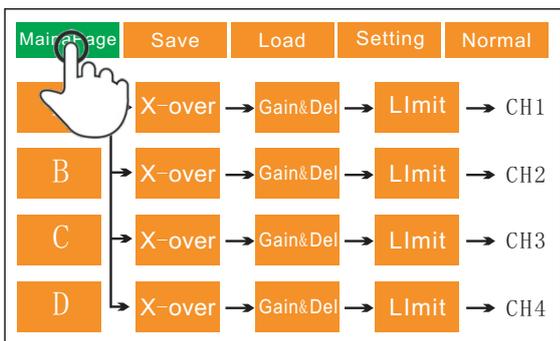


图3-1

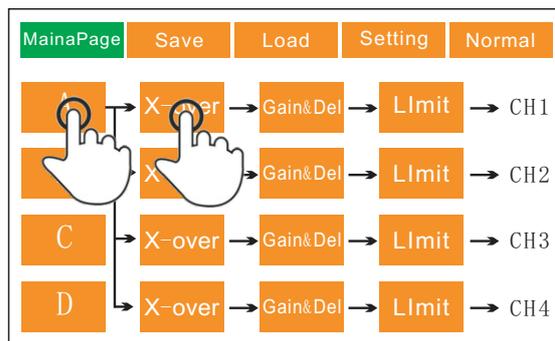


图3-2

Press "A" or "X-over", it will go to the following page

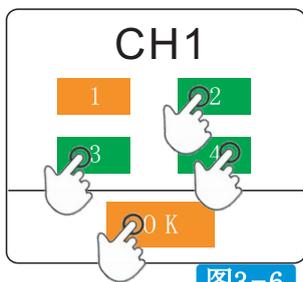


图3-6

图3-5

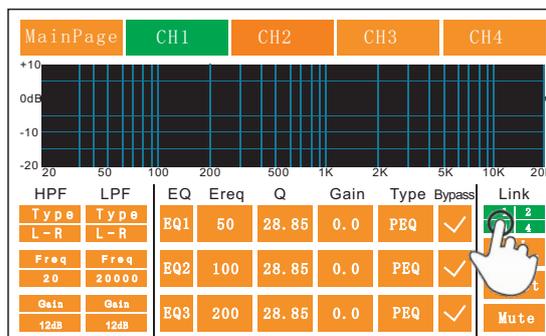
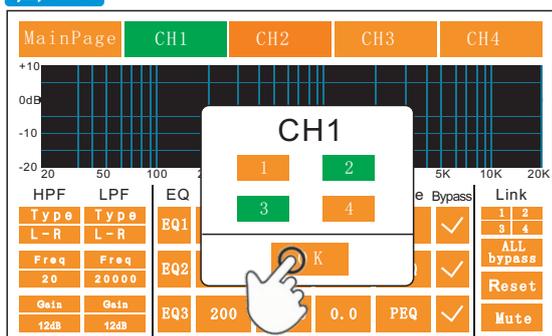
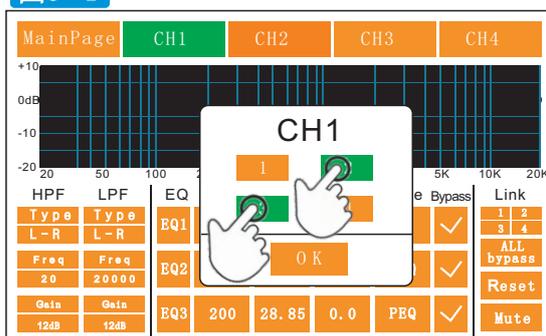


图3-3

图3-4



Press "OK"



Press "Link", and press 2,3,4 (till it turn green)

Note:

- 1.if channel 1 is the source, it means its setting will be copied to other 3 channels.
- 2.Showed as photo 3-5, it means channel A is the source, its setting is copied to channel 2 and 3.
- 3.Showed as photo 3-6, it means channel 1 is copied to other 3 channels.

# Touch-screen Operation

## 3.02 EQ operation

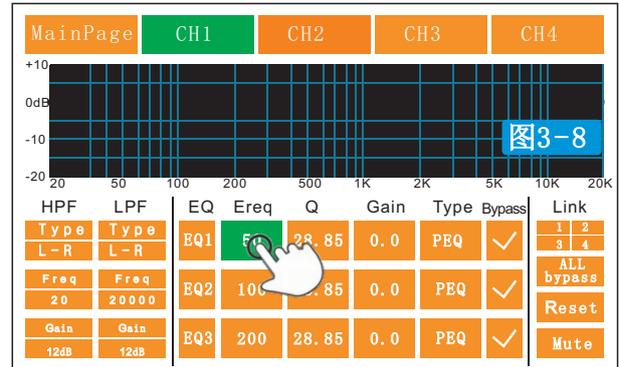
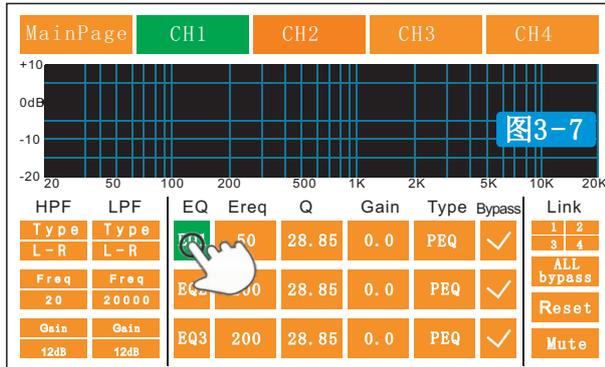
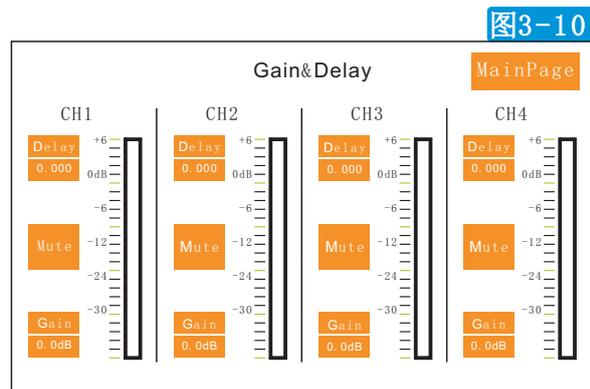
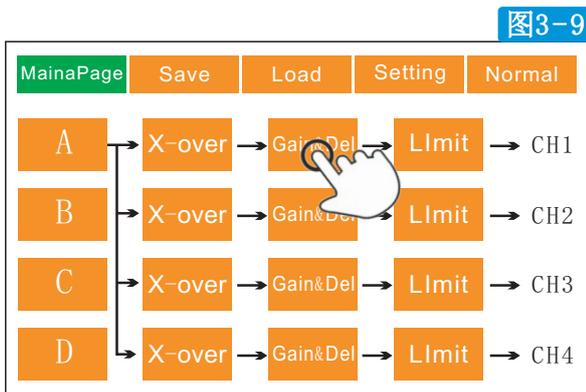


Photo 3-7, press “EQ1”, rotate the knob, you will see “EQ1” to “EQ8”

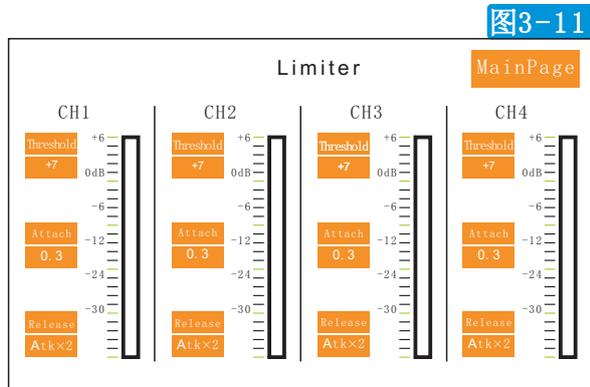
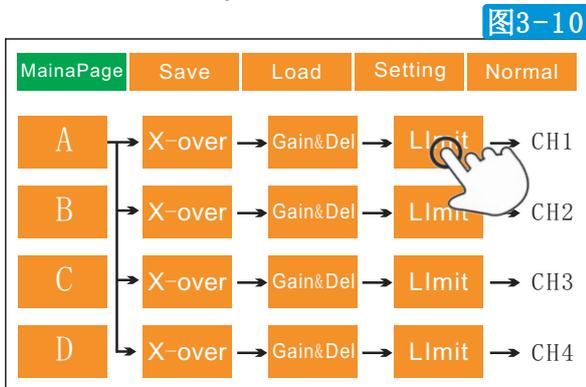
Photo 3-8, press the value and rotate the knob, you can change the value as you want.

## 3.03 Gain, delay operation



Press “Gain&Del”  
Press any item as you want till it turns to green, then rotate it

## 3.04 Limiter operation



Press “Limit”, then press any item as you want till it turns to green, then rotate it

Note: Different threshold value comes with different power, please refer to the table in page 11.

# Touch-screen Operation

## 4. Save, Load operation

### 4.01 Save

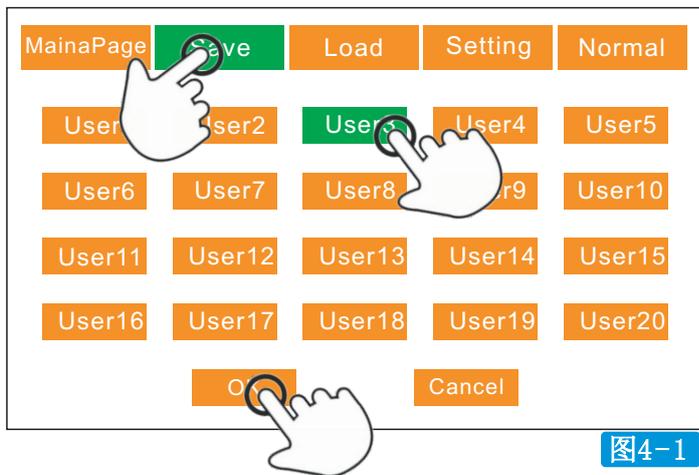
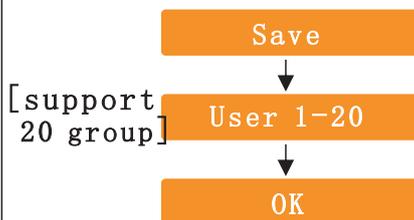


图4-1

If you want to save the setting, press as follow



Note: if the setting is not saved, the setting will lose when you turn on the amp next time. The amp will automatically use the setting which was saved last time.

### 4.02 Load

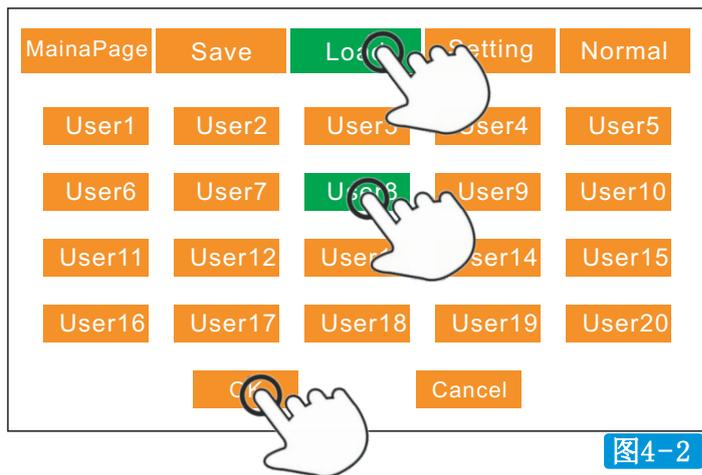
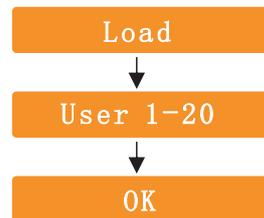


图4-2

If you want to load the saved setting, press as follow

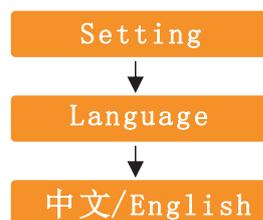
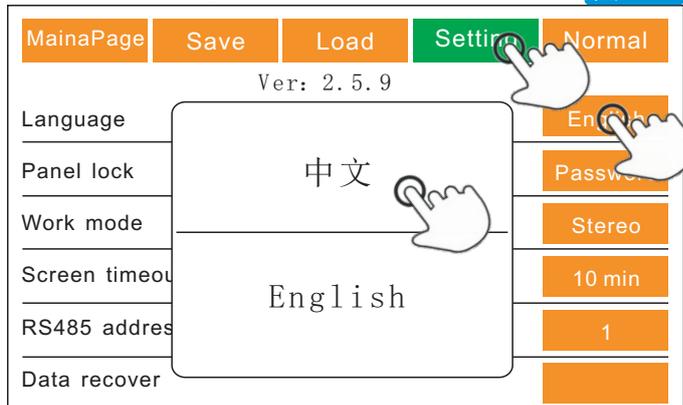


Note: the amp will automatically use the setting which was saved last time.

## 5. Setting

### 5.01 language

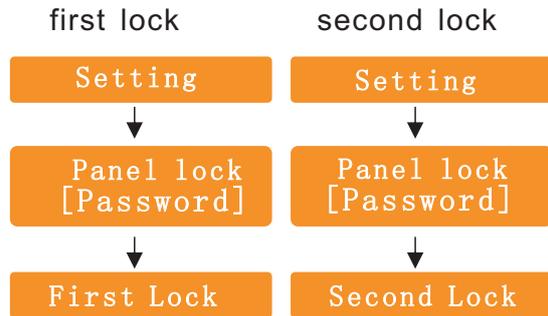
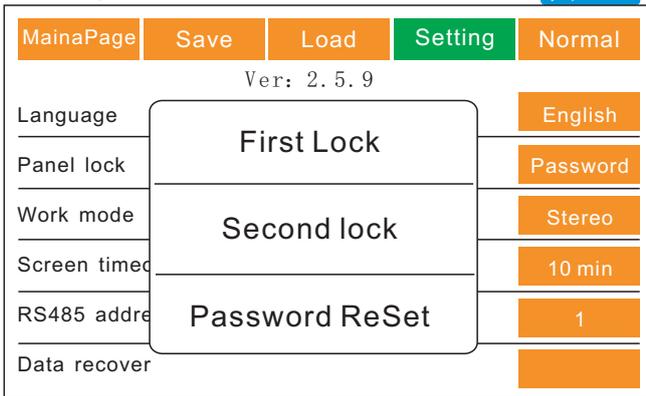
图5-1



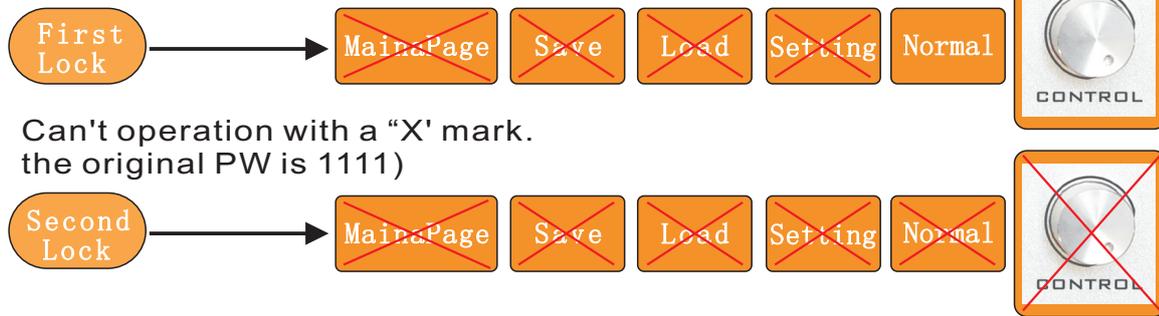
# Touch-screen Operation

## 5.02 panel lock

图5-2



The limit of authority of first lock and second lock



Can't operation with a "X' mark. the original PW is 1111)

## 5.03 panel lock-password reset

图5-3

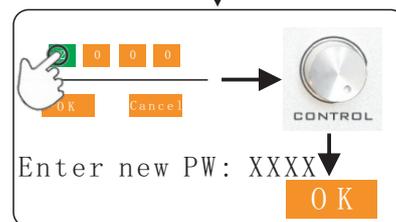
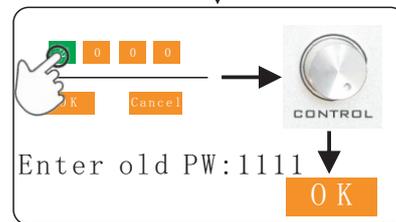
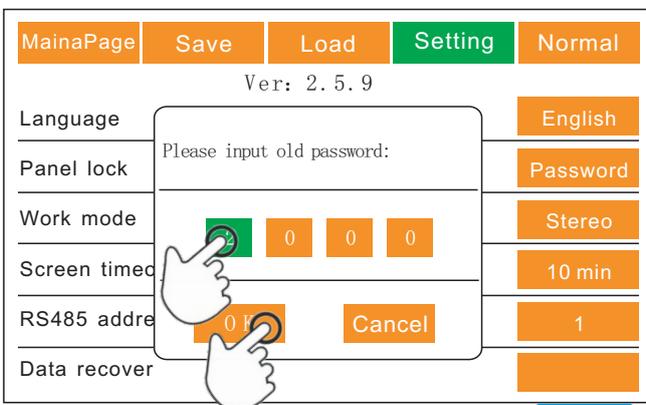
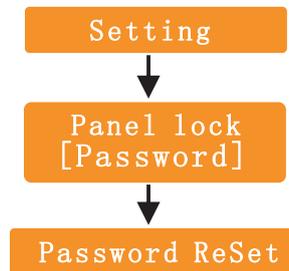
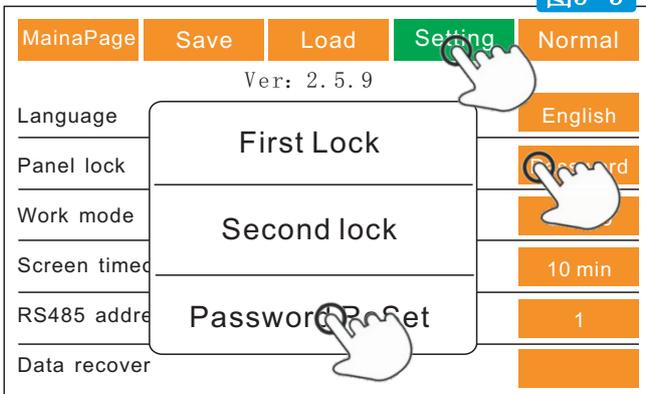


图5-4

Note: if you forgot the PW, the amp will have to be sent back to factory to flash data, so please be careful with the PW!

# Touch-screen Operation

## 5.04 setting-work mode

图5-5

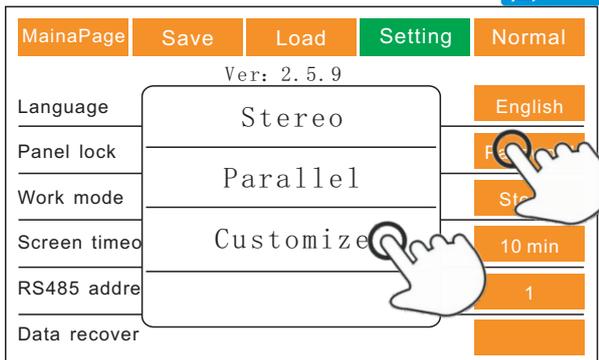
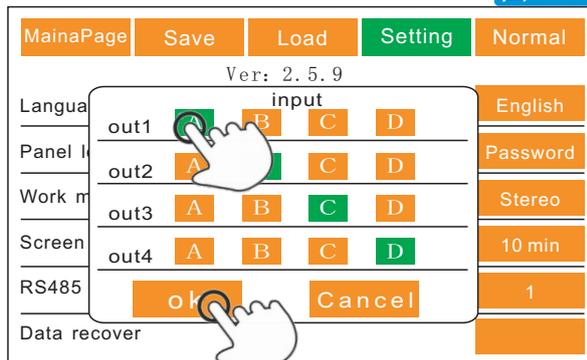
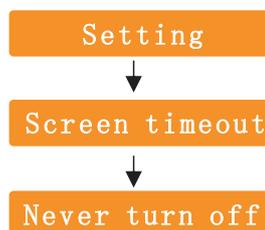
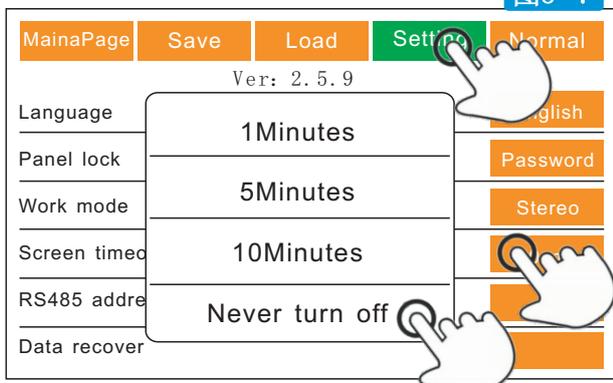


图5-6



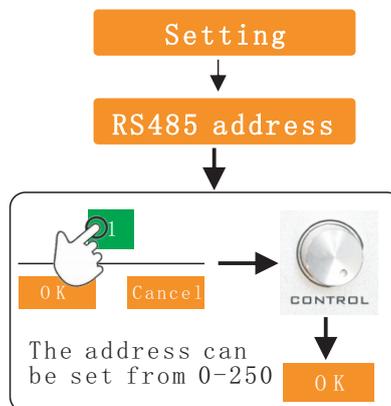
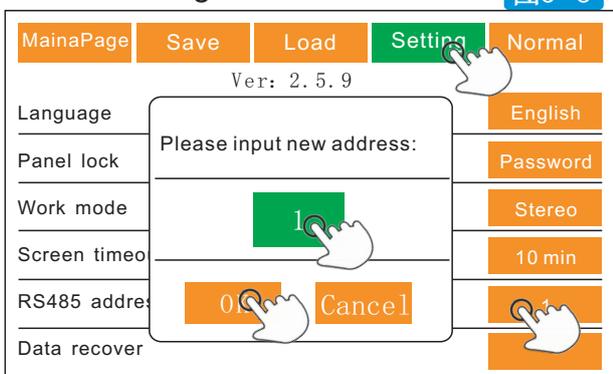
## 5.05 setting-screen timeout

图5-7



## 5.06 setting-RS485

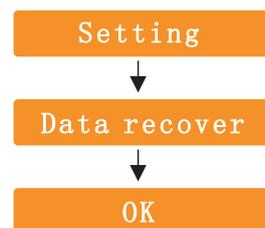
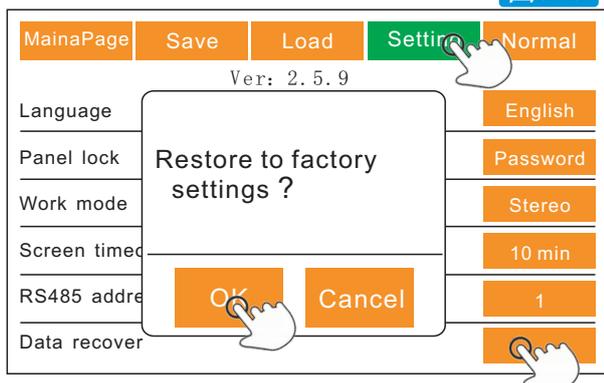
图5-8



Multiple amps can be connected in series. Set different address for different amp.

## 5.07 setting-date recover

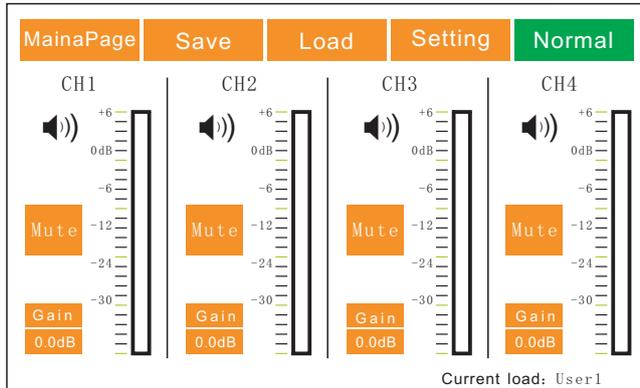
图5-9



## 6. Normal menu

### 6.01 Normal

图6-1



Gain, mute, level and the temperature can be adjusted here

## 7.Limter threshold corresponding power table

7.01 the threshold can be adjusted from +7dB to -5dB

7.02 press "threshold" till it becomes green, then rotate the knob to adjust

7.03 the corresponding power is listed in the next table

Item	Model											
	DSP2.6		DSP2.9		DSP2.12		DSP2.15		DSP2.18		DSP2.21	
	DSP4.6		DSP4.9		DSP4.12		DSP4.15		DSP4.18		DSP4.21	
Thres-hold	8 Ω [W]	4 Ω [W]										
+7dB	600	1200	900	1800	1250	2500	1500	3000	1800	3600	2100	4200
+6dB	590	1180	890	1780	1225	2450	1490	2980	1740	3480	1920	3840
+5dB	500	1000	780	1560	1060	2120	1212	2424	1500	3000	1660	3320
+4dB	400	800	610	1220	840	1680	970	1940	1200	2400	1320	2640
+3dB	320	640	480	960	670	1340	760	1520	950	1900	1050	2100
+2dB	250	500	380	760	530	1060	610	1220	750	1500	830	1660
+1dB	200	400	300	600	420	840	480	960	600	1200	660	1320
0dB	160	320	240	480	340	680	385	770	470	940	520	1040
-1dB	130	260	190	380	260	520	300	600	380	760	420	840
-2dB	100	200	150	300	210	420	240	480	300	600	330	660
-3dB	80	160	120	240	160	320	190	380	240	480	260	520
-4dB	60	120	100	200	135	170	150	300	190	380	210	420
-5dB	50	100	75	150	105	110	120	240	150	300	170	340

# PC Software Operation

## 8 software connected operation

### 8.01 system requirement

When connecting the amp to the computer, it requires 32 or 64 bits windows system.

DSP series amplifiers can be connected to the computer by RS485 or by USB.

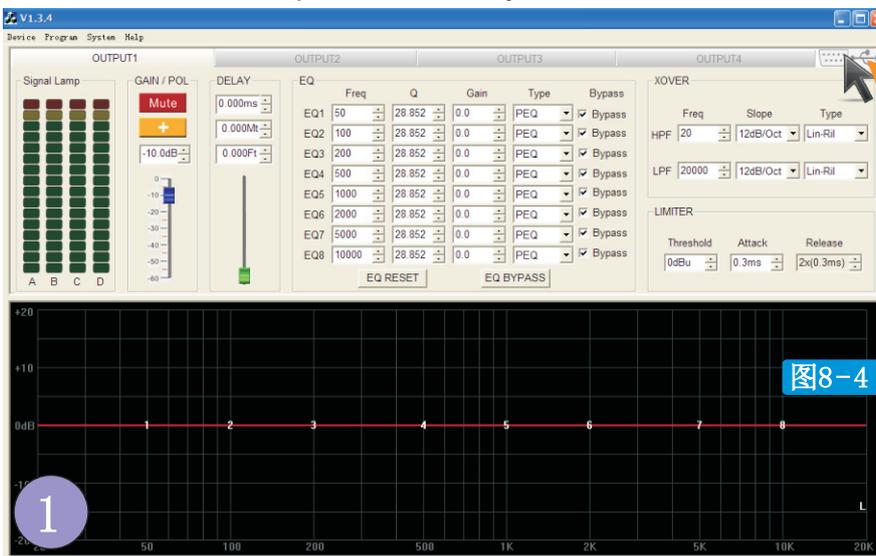
So that users can operate on the software.

Connect the amp with the computer, turn on the amplifier, open the software,

then click here. 

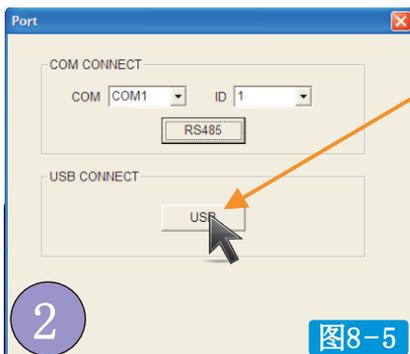
Note: the COM port quantity is 9 top. over 9, the software can't work.

### 8.02 connect the amplifier to PC by USB connector



Open the software and press here

图8-4



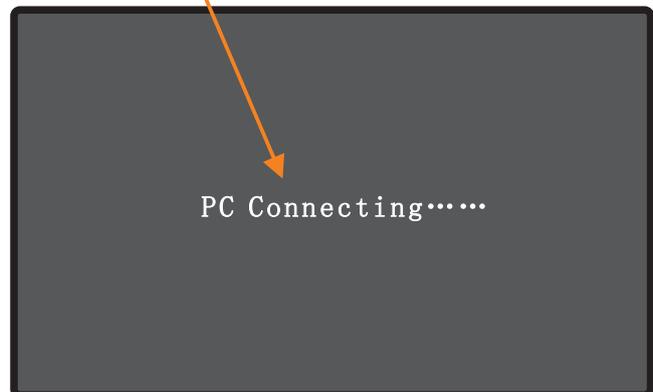
click "USB"

when PC and amp is connected successfully, it will shows "PC connecting"

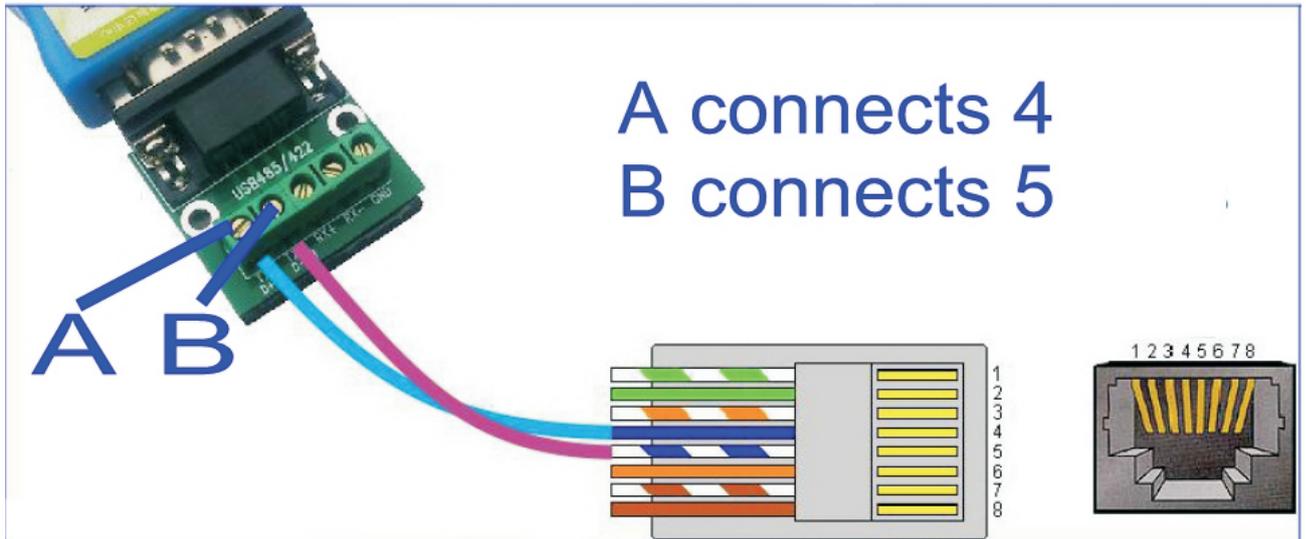
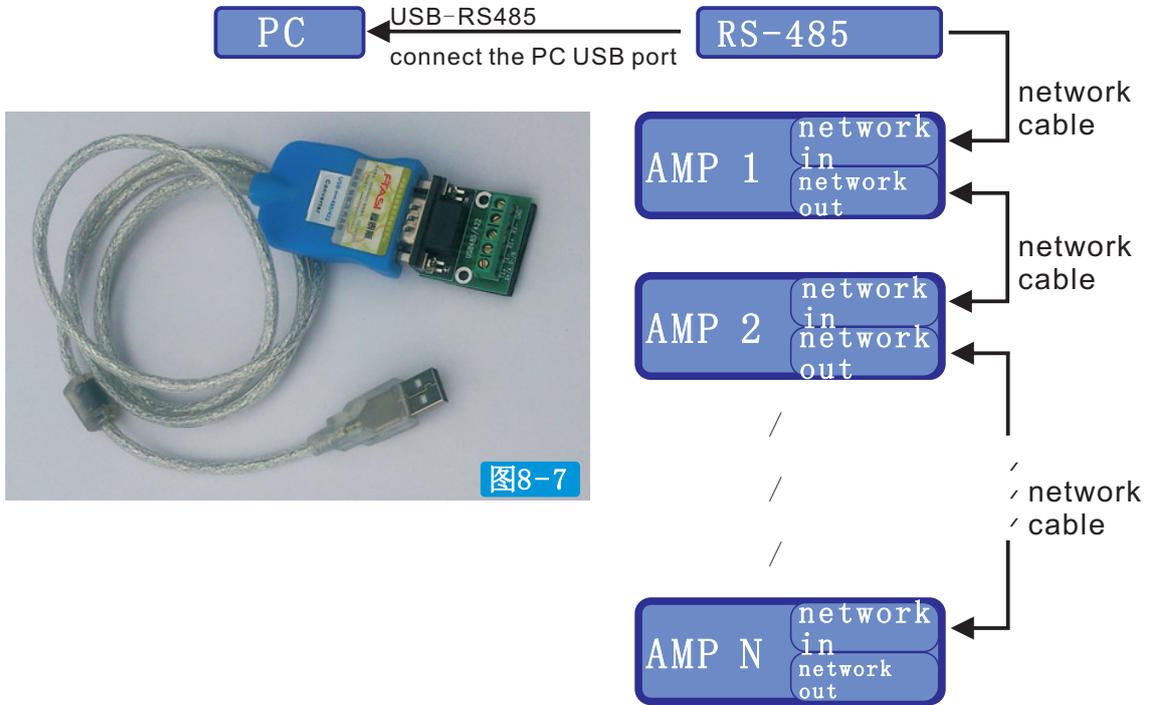


图8-6

this will become red when PC and amp is connected press it again, it will be disconnected.



## 8.03 RS485 connection



# PC Software Operation

## 8. 04 RS485 address

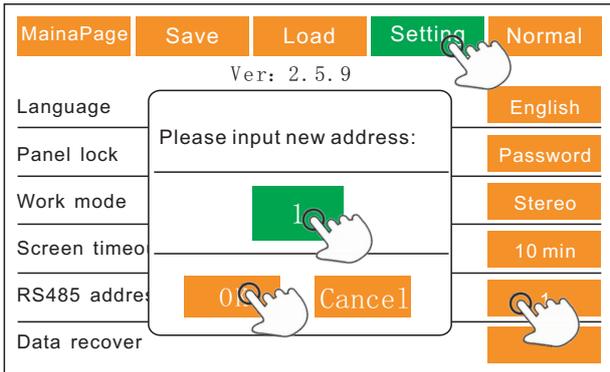
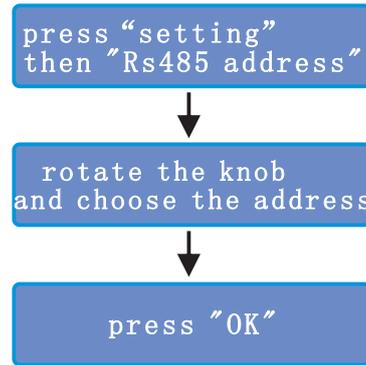
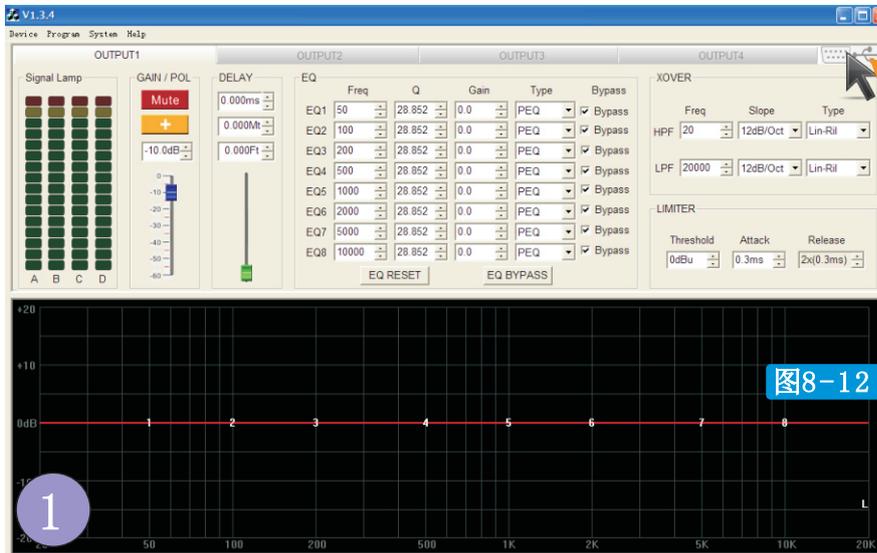


图8-11

Note: when a few amps are linked at the same time, each amp should set a different address

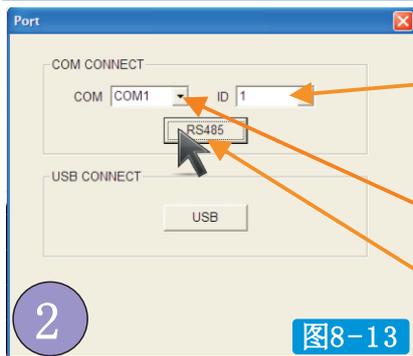


## 8. 05 software



open software and click here

图8-12



choose the amp that you want to control on PC

when it's necessary, choose the COM port here

click "RS485"

when PC and amp is connected successfully, it will shows "PC connecting"



图8-14

this will become red when PC and amp is connected  
click it again, it will be disconnected.

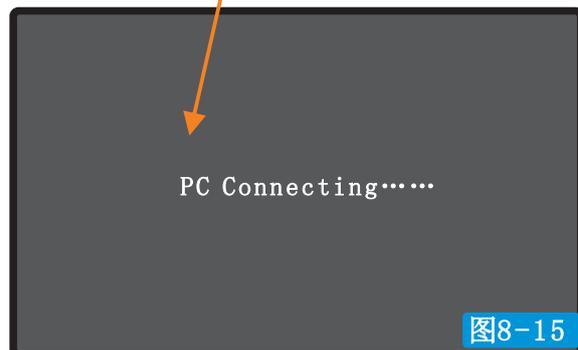


图8-15

## 8.06 software-export

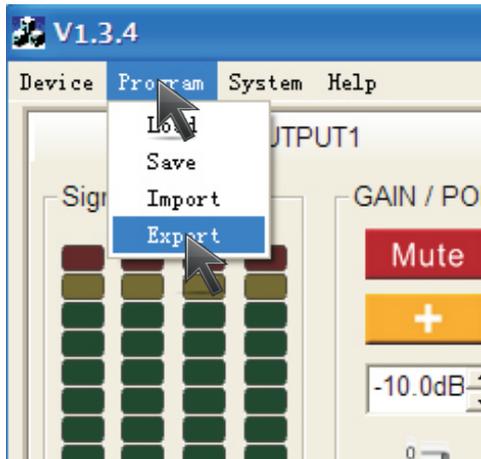


图8-16

Steps:

- 1.do all the setting
- 2.click "program"- "Export"
- 3.Save it to a file
- 4.Rename it

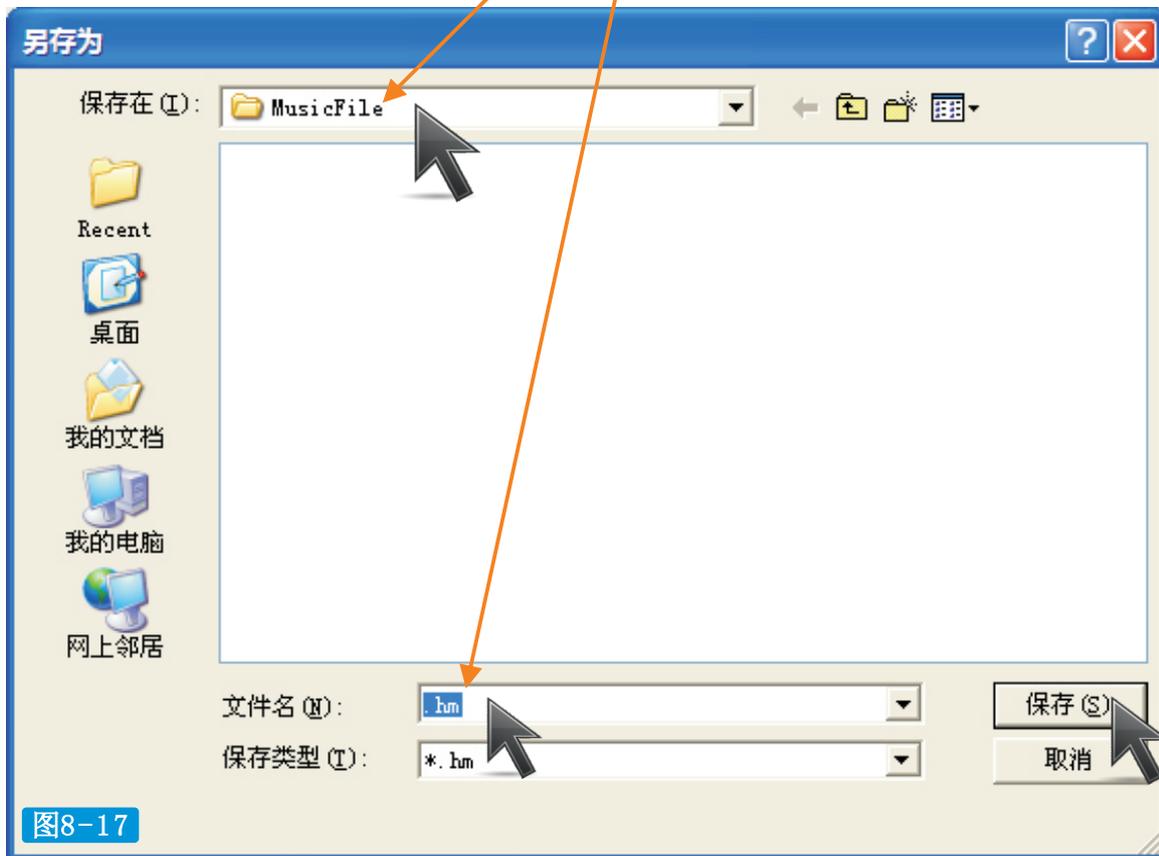
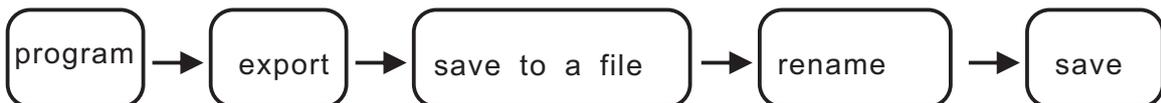


图8-17



# PC Software Operation

## 8.07 software-import

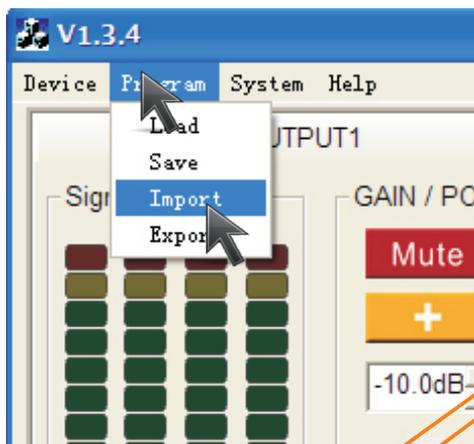


图8-18

steps:

1. connect the amp to PC
2. click "program", then "Import"
3. find the file
4. choose the program
5. open

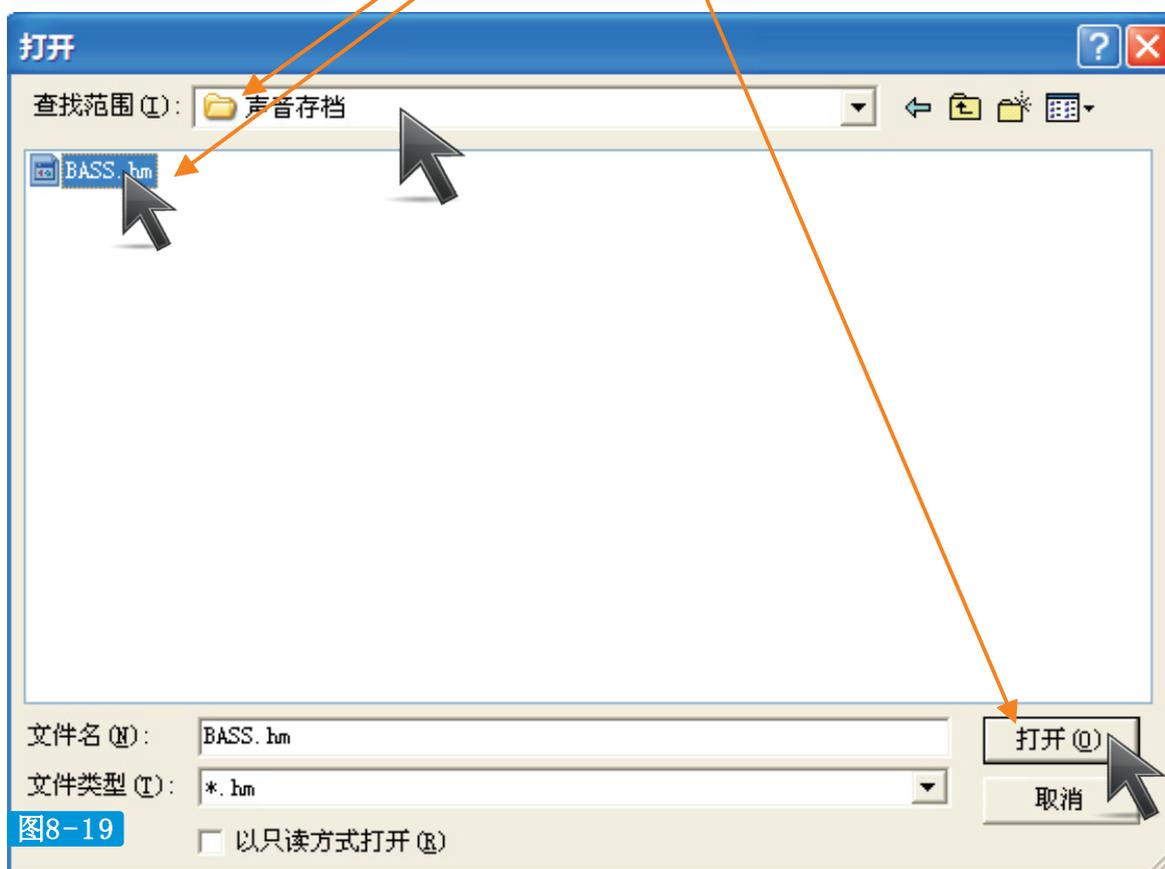
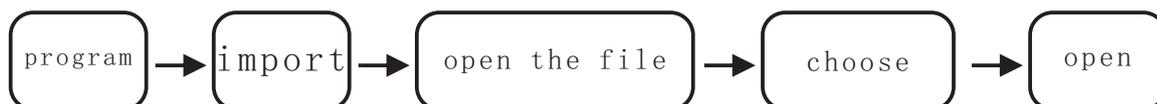
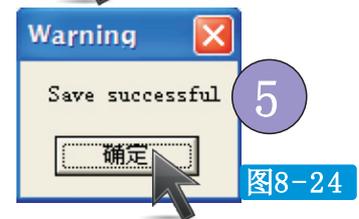
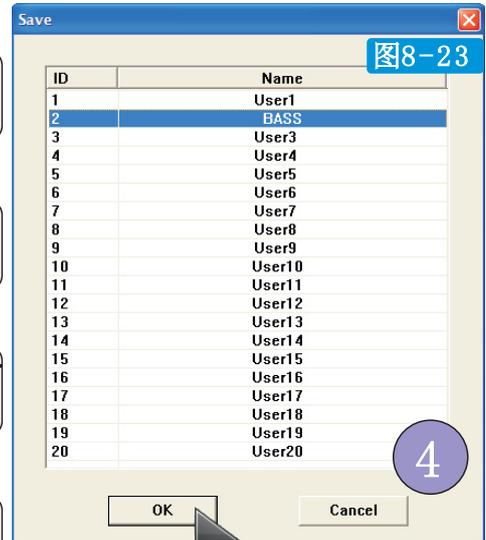
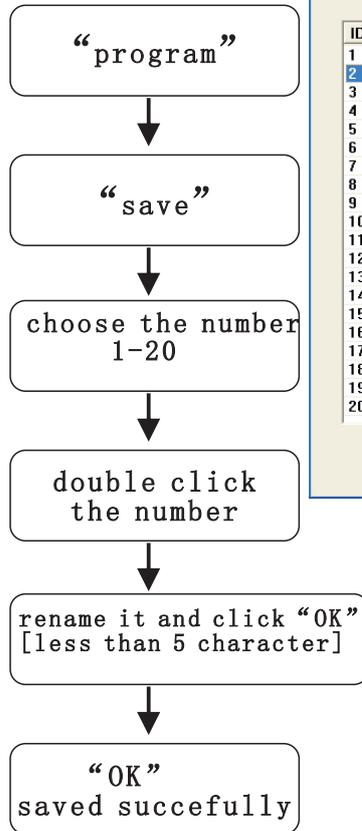
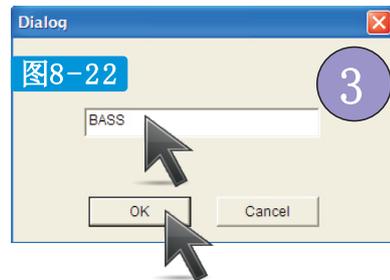
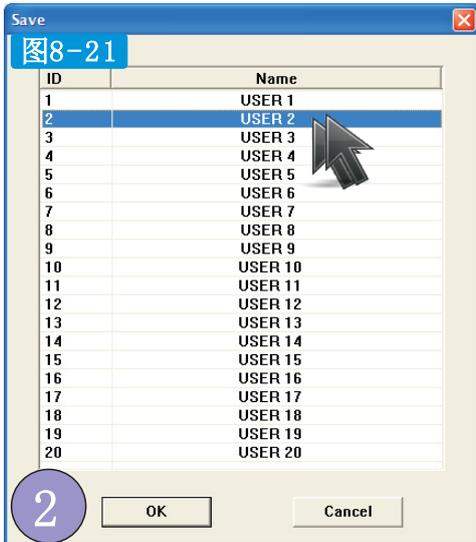
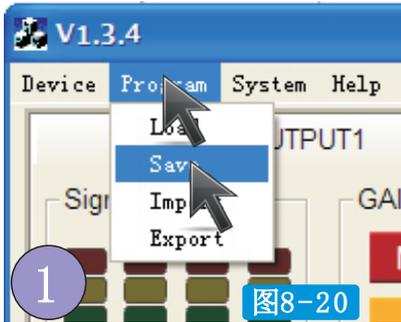


图8-19



## 8. 08 software-save



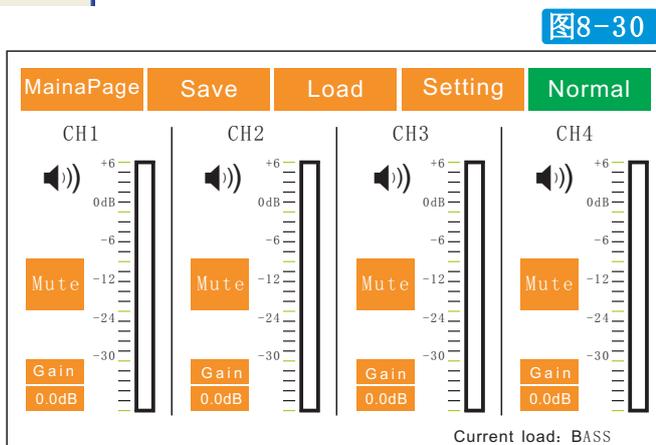
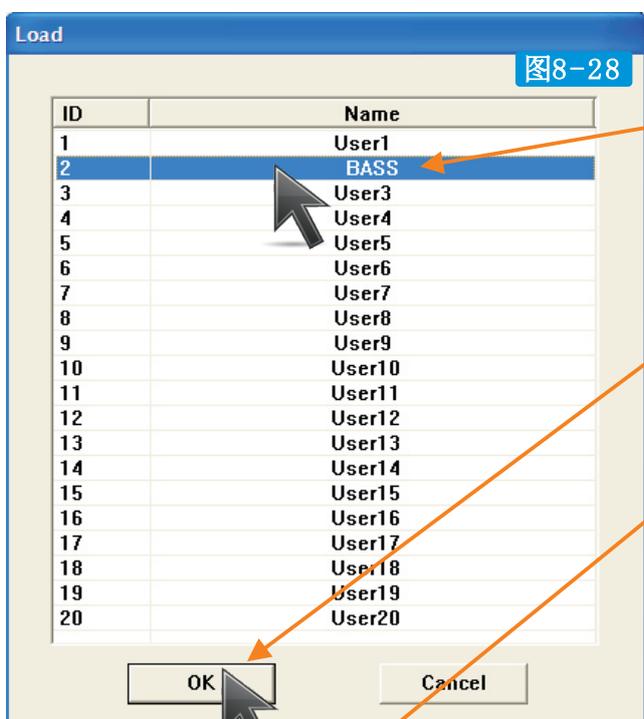
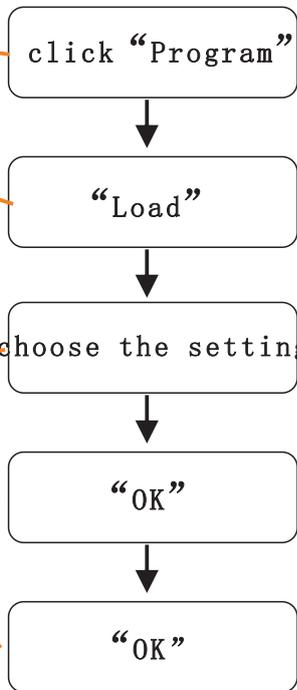
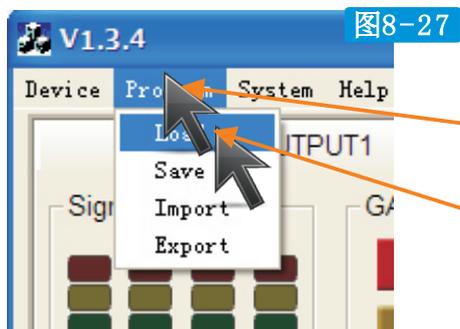
Note: when it's saved, the amp will use this program when it's turned on next time



图8-25

# PC Software Operation

## 8. 09 software-load (load the setting which was saved)



Note: the amp will use the setting that was saved last time.

[it will shows the setting name here ]

## 8. 10 software-setting-language



图8-31

Chinese to English

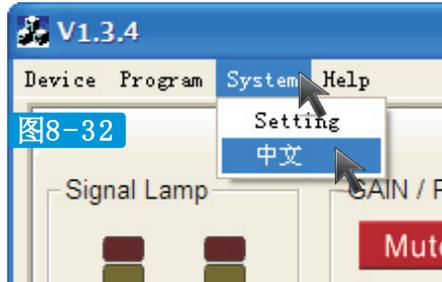


图8-32

English to Chinese



Note:  
the language setting  
of software and  
panel is separate.

## 8. 11 software-setting-channel copy

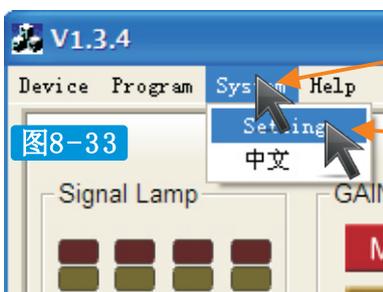


图8-33



图8-34

## 8. 12 software-setting-channel link

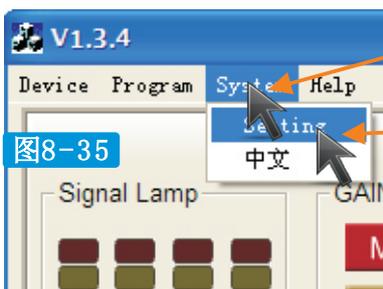


图8-35

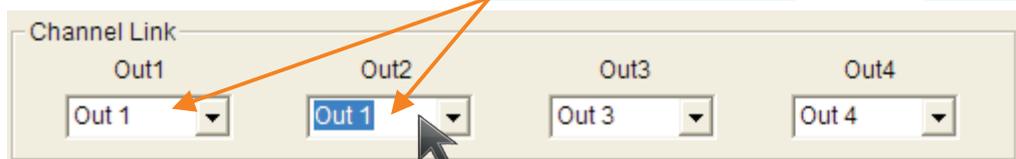


图8-36



图8-37

# PC Software Operation

## 8. 13 software-setting-channel sensitivity

图8-38

“System”

“Setting”

channel sensitivity

close it when finished

图8-39

Channel Sensitivity

Out1 Out2 Out3 Out4

0.775V 0.775V 0.775V 0.775V

3 choices:  
0.775V  
1.000V  
1.400V

## 8. 13 software-setting-work mode

图8-41

“System”

“Setting”

choose “work mode”

close it when finished

图8-42

Work Mode

Mode

Customize

OUT1	<input checked="" type="checkbox"/> INA	<input type="checkbox"/> INB	<input type="checkbox"/> INC	<input type="checkbox"/> IND
OUT2	<input type="checkbox"/> INA	<input checked="" type="checkbox"/> INB	<input type="checkbox"/> INC	<input type="checkbox"/> IND
OUT3	<input type="checkbox"/> INA	<input type="checkbox"/> INB	<input checked="" type="checkbox"/> INC	<input type="checkbox"/> IND
OUT4	<input type="checkbox"/> INA	<input type="checkbox"/> INB	<input type="checkbox"/> INC	<input checked="" type="checkbox"/> IND

1. stereo mode-each channel use its own input signal
2. parallel mode-all channels use channel A input signal
3. customize-each channel's output can use any channel's input signal

take “customize” for example

sample A

OUT1	<input checked="" type="checkbox"/> INA	<input type="checkbox"/> INB	<input type="checkbox"/> INC	<input type="checkbox"/> IND
OUT2	<input checked="" type="checkbox"/> INA	<input type="checkbox"/> INB	<input type="checkbox"/> INC	<input type="checkbox"/> IND
OUT3	<input type="checkbox"/> INA	<input type="checkbox"/> INB	<input checked="" type="checkbox"/> INC	<input type="checkbox"/> IND
OUT4	<input type="checkbox"/> INA	<input type="checkbox"/> INB	<input type="checkbox"/> INC	<input checked="" type="checkbox"/> IND

图8-43

channel B output uses channel A's input signal

sample B

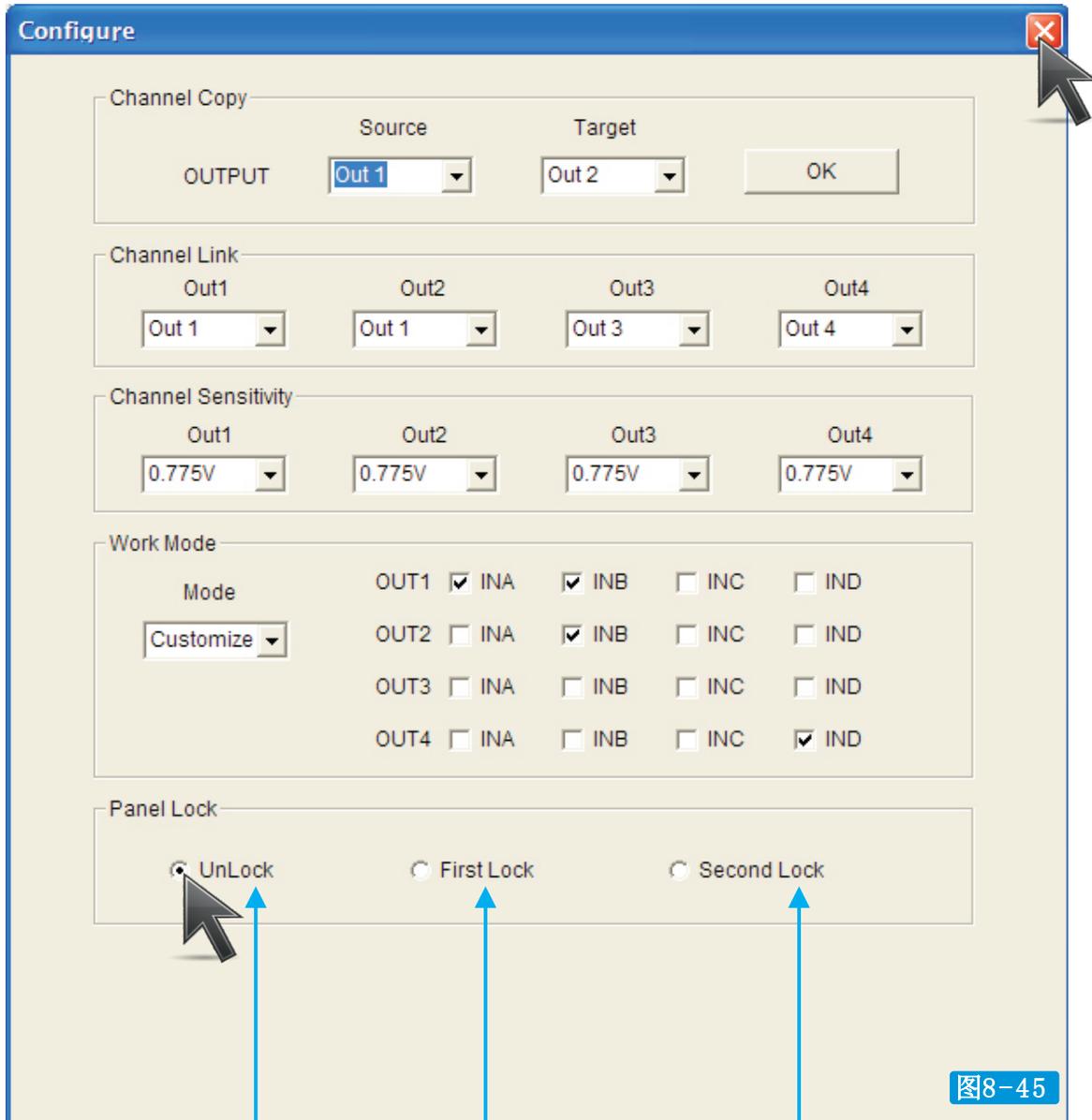
OUT1	<input checked="" type="checkbox"/> INA	<input checked="" type="checkbox"/> INB	<input type="checkbox"/> INC	<input type="checkbox"/> IND
OUT2	<input type="checkbox"/> INA	<input checked="" type="checkbox"/> INB	<input type="checkbox"/> INC	<input type="checkbox"/> IND
OUT3	<input type="checkbox"/> INA	<input type="checkbox"/> INB	<input checked="" type="checkbox"/> INC	<input type="checkbox"/> IND
OUT4	<input type="checkbox"/> INA	<input type="checkbox"/> INB	<input type="checkbox"/> INC	<input checked="" type="checkbox"/> IND

图8-44

channel A output use both channel A and B's input signal.

channel 3 without output

## 8. 14 software-setting-panel lock



[ UnLock ]

[ First Lock ]

[ Second Lock ]



### The limit of authority of panel lock

**unlock**-free control on the screen

**first lock**-can only control “normal” page

**second lock**-can't control anything on screen

# Performance

## XLR input

### 1. Balanced input connection

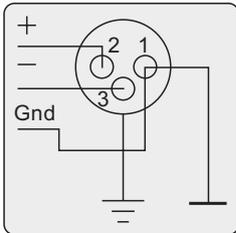
XLR input connectors are electronically balanced.

XLR input connectors should be wired as follows:

Pin 1 Ground

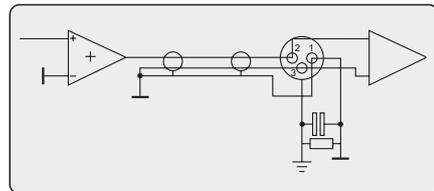
Pin 2 hot (+)

Pin 3 cold (-)



### 2. Unbalanced input connections

To connect an input to an unbalanced source, it is possible to connect pins 1 and 3 in the XLR plug at the amplifier end of the cable. However, a better method is to connect pin 3 to the shield at the source end of the cable, as this usually results in better hum and noise rejection. Balanced input connections are recommended whenever possible



each channel has a balanced XLR input connector. Balanced connections is recommended, especially when using long cables. Unbalanced connections can be used with when using short cables, and the signal source resistor should be less than 600 ohm.



### **OUTPUT TERMINAL SAFETY WARNING!**

Do not touch the outputs when the amp is power on!

Turn off the amp before connecting cables!

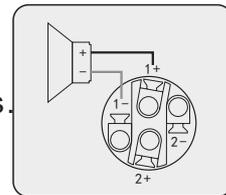
## Speakon output

the amplifier is equipped with speakon output connectors.

### VPL

Voltage Peak Limiter (VPL) is a unique feature in DSP series amplifiers. It is used to select the maximum power available on each output channel.

VPL enables users to set the best output power for the speakers.



## LED Indicators

POWER	green
MUTE	red
SIG/VPL	green/red

-When the amp is turned on, the green power light is on. there will be about 7-9 seconds delay.

meanwhile, the MUTE light is on.

-The signal LED is green.

-When "MUTE" is on, output will mute to protect the amp.

-“VPL“ flashes and other LEDS are on means the amp is at its highest output.

VPL will work to avoid overload output.

-“MUTE” flashes, the fans will run faster.

-When the amp is at its highest temperature, the “MUTE” will flashes at high speed,

“VPL” will be on and the amp will be in overheat protection.

## Overheat Situation:

When the ventilation is not good or the amplifier is overloaded under low impedance, it will lead to the overheat protection.

The overheat protections is as follow:

25-50°C : fans run in low speed

50-60°C : fans run from low speed to high

75°C : protection LEDs start to flash

85°C : protection splash quickly and CLIP LED is illuminated, output is controlled at 15 dB

90°C : overheat protection, the protection LEDs flash in high speed and the CLIP LED is fully bright, which shows the extreme low load, no ventilation or fans are broken.

Model	DSP2.6 DSP4.6	DSP2.9 DSP4.9	DSP2.12 DSP4.12	DSP2.15 DSP4.15	DSP2.18 DSP4.18	DSP2.21 DSP4.21
output power FTC:20Hz-20KHz@0.03% THD						
8 Ω per channel	600w	900w	1250w	1500w	1800w	2100w
4 Ω per channel	1200w	1800w	2500w	3000w	3600w	4200w
THD	<0.03%					
frequency response (10 dB output power)	20 Hz—20 kHz, ±0.15 dB -3 dB points: 5 Hz and 50 kHz					
damping factor	> 400 @ 8 Ω					
hum&noise	102dB					
input sensitivity	0.775V, 1V, 1.4V					
input impedance	10 kΩ unbalanced 20 kΩ balanced					
connectors	input: 2 channels of XLR F & XLR M; 4 channels of XLR F output: speakon					
cooling	front-to-rear airflow, temperature controlled fans					
protections	short circuit, open circuit, overheat, radio-frequency, ultrahigh or ultralow frequency protection					
power requirement	AC 220 V (±10%) 50-60 Hz					
Dimensins(mm)	88x483x425					
Net weight	2CH:11±0.2KG		4CH:12±0.2KG			
Gross weight	2CH:15±0.5KG		4CH:16.5±0.5KG			