

# INVOTONE

**USER'S MANUAL**

**D2400/D4400/D2550/D4550**


**PROFESSIONAL POWER AMPLIFIERS**




# IMPORTANT SAFETY INSTRUCTION



TO REDUCE THE RISK OF ELECTRIC SHOCK PLEASE DO NOT REMOVE THE COVER OR THE BACK PANEL OF THIS EQUIPMENT. THERE ARE NO PARTS NEEDED BY USER INSIDE THE EQUIPMENT. FOR SERVICE, PLEASE CONTACT QUALIFIED SERVICE CENTERS.

 This symbol, wherever used, alerts you to the presence of un-insulated and dangerous voltages within the product enclosure. These are voltages that may be sufficient to constitute the risk of electric shock or death.

 This symbol, wherever used, alerts you to important operating and maintenance instructions. Please read.

⊕ Protective Ground Terminal

~ AC mains (Alternating Current)


⚡ Hazardous Live Terminal

ON: Denotes the product is turned on.

OFF: Denotes the product is turned off.

## CAUTION

Describes precautions that should be observed to prevent damage to the product.

1. Read this Manual carefully before operation.
2. Keep this Manual in a safe place.
3. Be aware of all warnings reported with this symbol. 
4. Keep this Equipment away from water and moisture.
5. Clean it only with dry cloth. Do not use solvent or other chemicals.
6. Do not damp or cover any cooling opening. Install the equipment only in accordance with the Manufacturer's instructions.
7. Power Cords are designed for your safety. Do not remove Ground connections! If the plug does not fit your AC outlet, seek advice from a qualified electrician. Protect the power cord and plug from any physical stress to avoid risk of electric shock. Do not place heavy objects on the power cord. This could cause electric shock or fire.
8. Unplug this equipment when unused for long periods of time or during a storm.
9. Refer all service to qualified service personnel only. Do not perform any servicing other than those instructions contained within the User's Manual.
10. To prevent fire and damage to the product, use only the recommended fuse type as indicated in this manual. Do not short-circuit the fuse holder. Before replacing the fuse, make sure that the product is OFF and disconnected from the AC outlet.

## WARNING

To reduce the risk of electric shock and fire, do not expose this equipment to moisture or rain.



Dispose of this product should not be placed in municipal waste and should be separate collection.

11. Move this Equipment only with a cart, stand, tripod, or bracket, specified by the manufacturer, or sold with the Equipment. When a cart is used, use caution when moving the cart / equipment combination to avoid possible injury from tip-over.



12. Permanent hearing loss may be caused by exposure to extremely high noise levels. The US. Government's Occupational Safety and Health Administration (OSHA) has specified the permissible exposure to noise level. These are shown in the following chart:

HOURS X DAY	SPL	EXAMPLE
8	90	Small gig
6	92	train
4	95	Subway train
3	97	High level desktop monitors
2	100	Classic music concert
1,5	102	
1	105	
0,5	105	
0,25 or less	110	
	115	Rock concert

According to OSHA, an exposure to high SPL in excess of these limits may result in the loss of heat. To avoid the potential damage of heat, it is recommended that Personnel exposed to equipment capable of generating high SPL use hearing protection while such equipment is under operation.

The apparatus shall be connected to a mains socket outlet with a protective earthing connection.

The mains plug or an appliance coupler is used as the disconnect device, the disconnect device shall remain readily operable.

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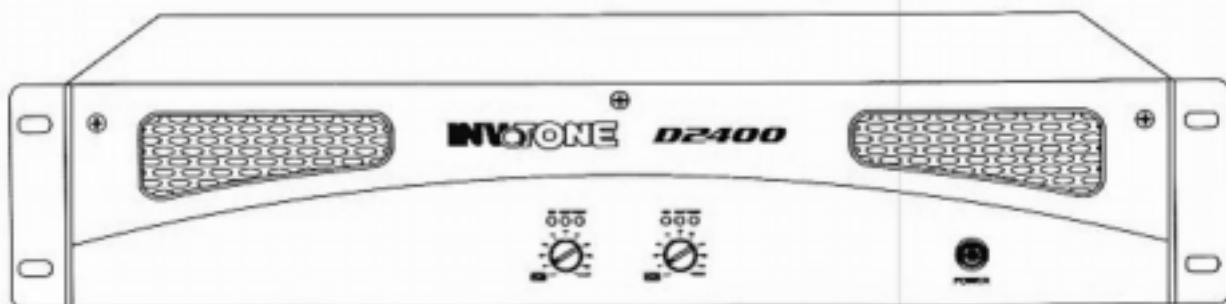
## 1. INTRODUCTION

Thank you for purchasing INVOTONE D series amplifiers. This series has two 2-channel and two 4-channel amplifiers. All models are only two rack units and weigh less than 8kg without any compromising on power. They provide 400W RMS (D2400,D4400) at 4 ohms per channel, and 550W RMS (D2550, D4550) at 4 ohms per channel and high value performance. They are durable, powerful and have a great sound performance.

Enjoy your D-Series amplifiers and make sure to read this manual carefully before operation!

## 2. FEATURES

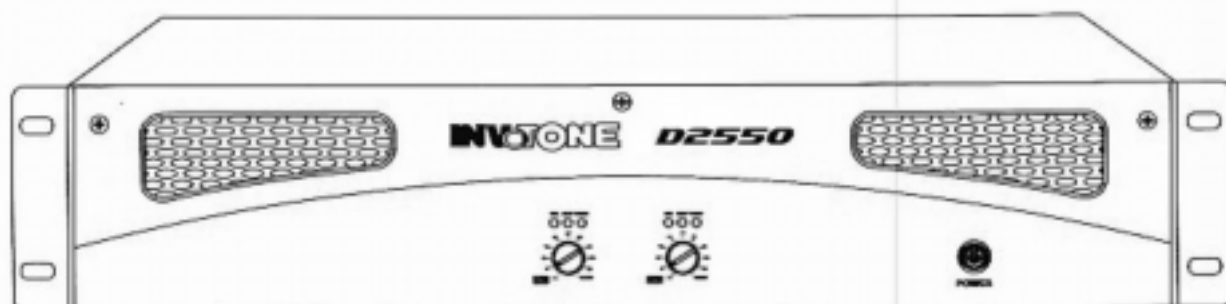
- Illuminated Power Switch
- Automatic Clip-limiter circuit
- Switchable low-frequency filter at 30 Hz
- Operating Mode is: Stereo, Parallel or Bridge
- Balanced Combo input connectors
- Output connectors are speak-on and binding post terminals
- Low-noise, variable speed fan
- Front panel LED indicating SIGNAL, CLIPPING and PROTECTION
- Class D technology, switch power, light weight and high power
- Manufactured under TS16949, ISO14001 certified management system



D2400



D4400



D2550



D4550

## STEREO MODE



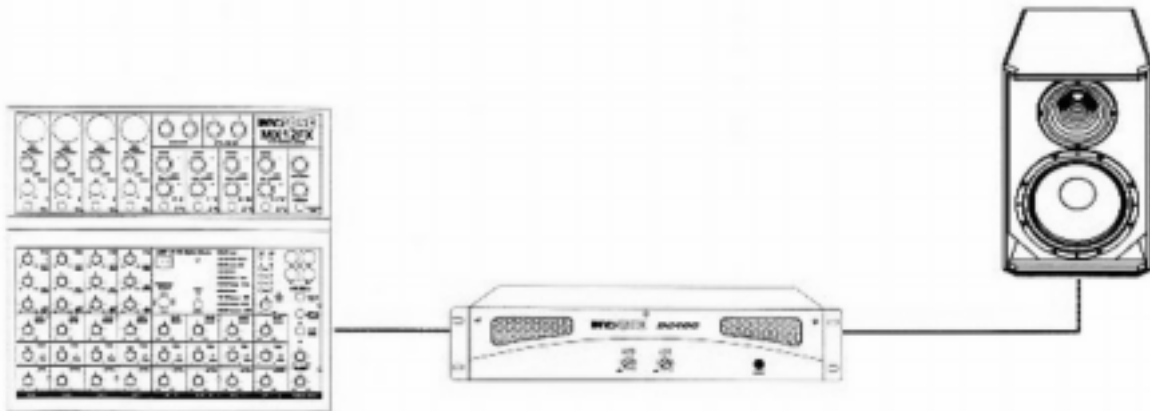
In this mode 2 independent channels are sent to 2 separate speakers.

## PARALLEL MODE



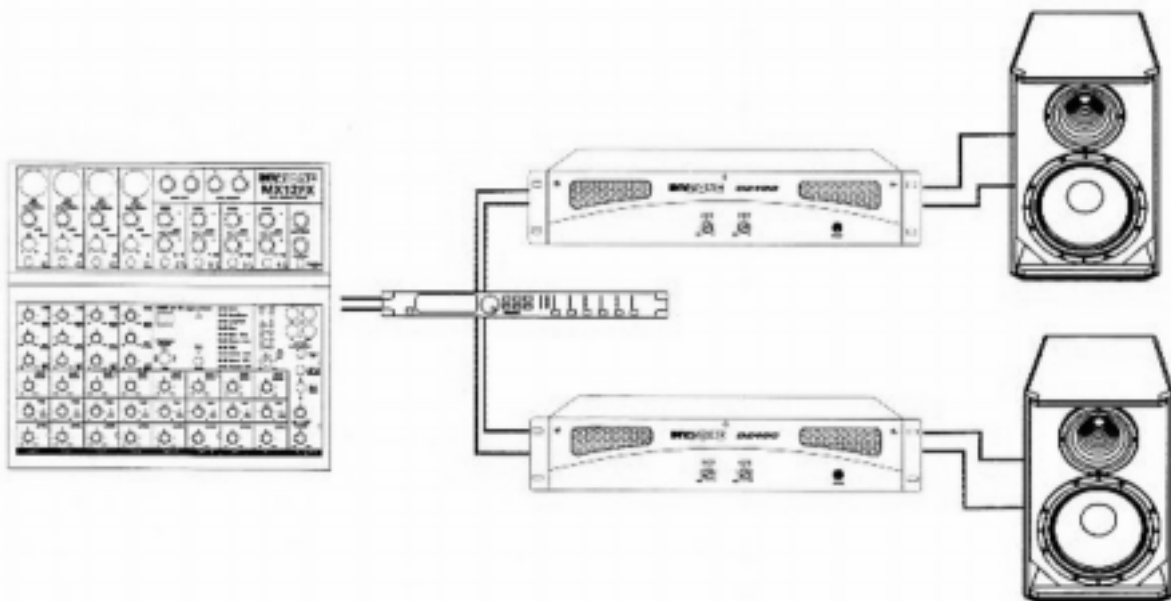
One mono signal is input to CH A or CH B of the D series amplifier and then output to 2 separate speakers. Each speaker volume can be set separately.

## BRIDGE MODE



The stereo or mono signal input to CH A and CH B is combined on the BRIDGE MONO connector. Only CH A Gain control is active. The power at the output will be the combined power of the two channels.

## STEREO BIAMP



This application is only for D2400 or D2550. The Main Mix signal is routed into an electronic crossover. CH A drives the woofer and CH B drives the high frequency driver in a 2-way speaker cabinet.

### 3. CONTROL ELEMENTS

#### Front Panel:

#### 1. POWER SWITCH & INDICATOR LED

It powers the D amplifier ON and OFF. When the D amplifier is turned on the power switch illuminates blue.

#### 2. SIGNAL LED

This LED will light up green when the signal at the output is at least -20 dB.

#### 3. PROTECTION LED

It will light up when the unit is in Protection Mode due to short circuit, low impedance load or other causes.

#### 4. CLIP LED

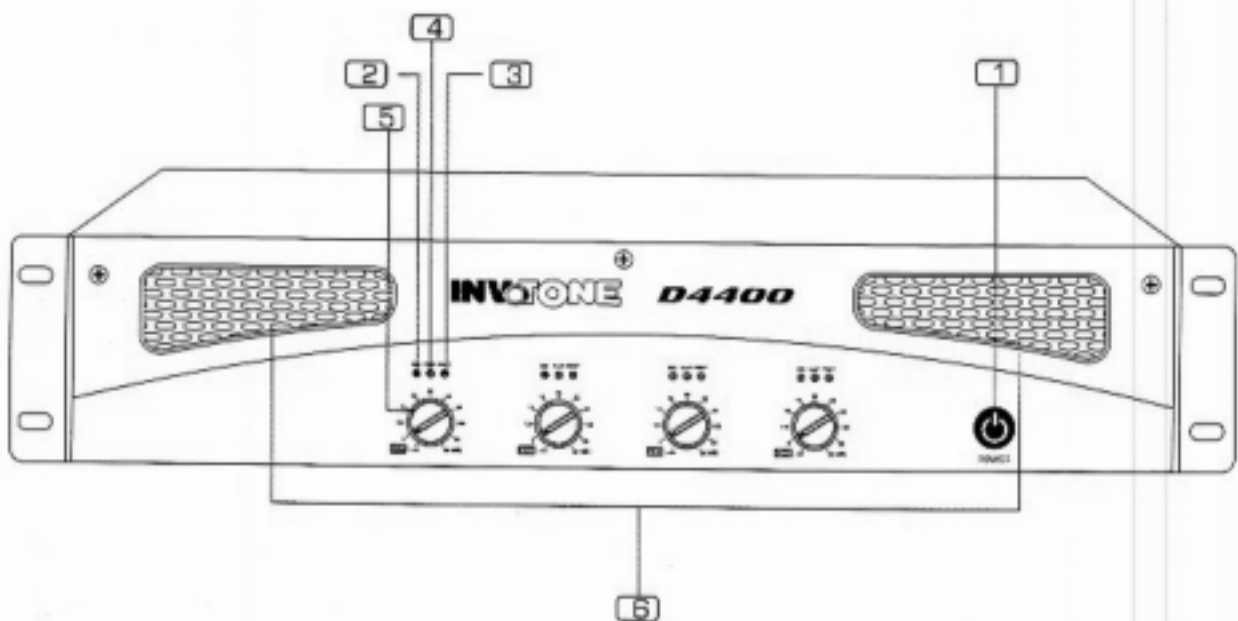
This LED will flash when distortion reaches a level of 0.5%, Turn the relative GAIN control down so that the CLIP LEDs only flash occasionally.

#### 5. GAIN CONTROLS

These controls are used to adjust the output signal level.

#### 6. COOLING VENTS

Allow air circulation from front to back of the amplifier.



## Rear Panel:

### 7. CIRCUIT BREAKER

This is an electronic fuse for protecting the unit from possible damage. When the unit is overloaded or the temperature inside the unit is too high, this push-type button will go off and disconnect the power supply. Push the Breaker to restore normal working conditions.

### 8. IEC socket for AC power cable

Connect the supplied main cord. Do not insert the power cord into the D amplifier and into the AC Outlet until voltage has been correctly set.

### 9. COMBO BALANCED INPUT CONNECTORS

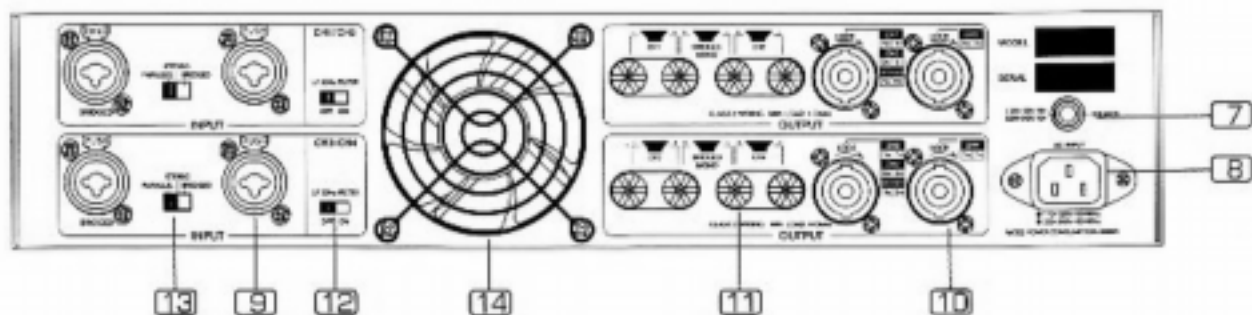
Each Channel features balanced combo connectors that are used to input the signal to the amplifier.

### 10. SPEAK-ON

These connectors are specifically designed to connect high power speakers. The correct polarity is secured automatically, they prevent shock hazard and they lock-in securely.

### 11. BINDING POST OUTPUTS

Please make sure to respect the speaker polarity when using binding post. **Caution: Turn off the unit before connecting an audio signal to the binding post to avoid any electric shock!**





## 12. LOW FREQUENCY FILTER

This Filter rolls off audio signals below 30Hz. In this way bass performance will be improved, because the subsonic motion of the cone will be cut out and more power is made available to the woofer in the audible range of frequencies. Keep the Filter ON most of the time unless you are filtering the signal before the input of the amplifier. Especially vented speakers (bass-reflex) are very sensitive to subsonic frequencies (below 30Hz).

## 13. OUTPUTMODE SELECTOR

The D series power amplifier presents three operating modes:

### - Stereo Mode

In this mode, CH A and CH B operate independently (as a normal stereo amplifier) The CH A input signal will be output from the CH A output connector, and CH B input signal will be output from the CH B output connector.

### - Parallel Mono Mode

In this mode, CH A input signal will be output from the output connectors of both channels. Detail wiring diagram you can refer to chapter 4.

### - Bridged Mode

In this mode, CH A input signal will be output from the bridge-mono output connector. Detail wiring diagram you can refer to chapter 4.

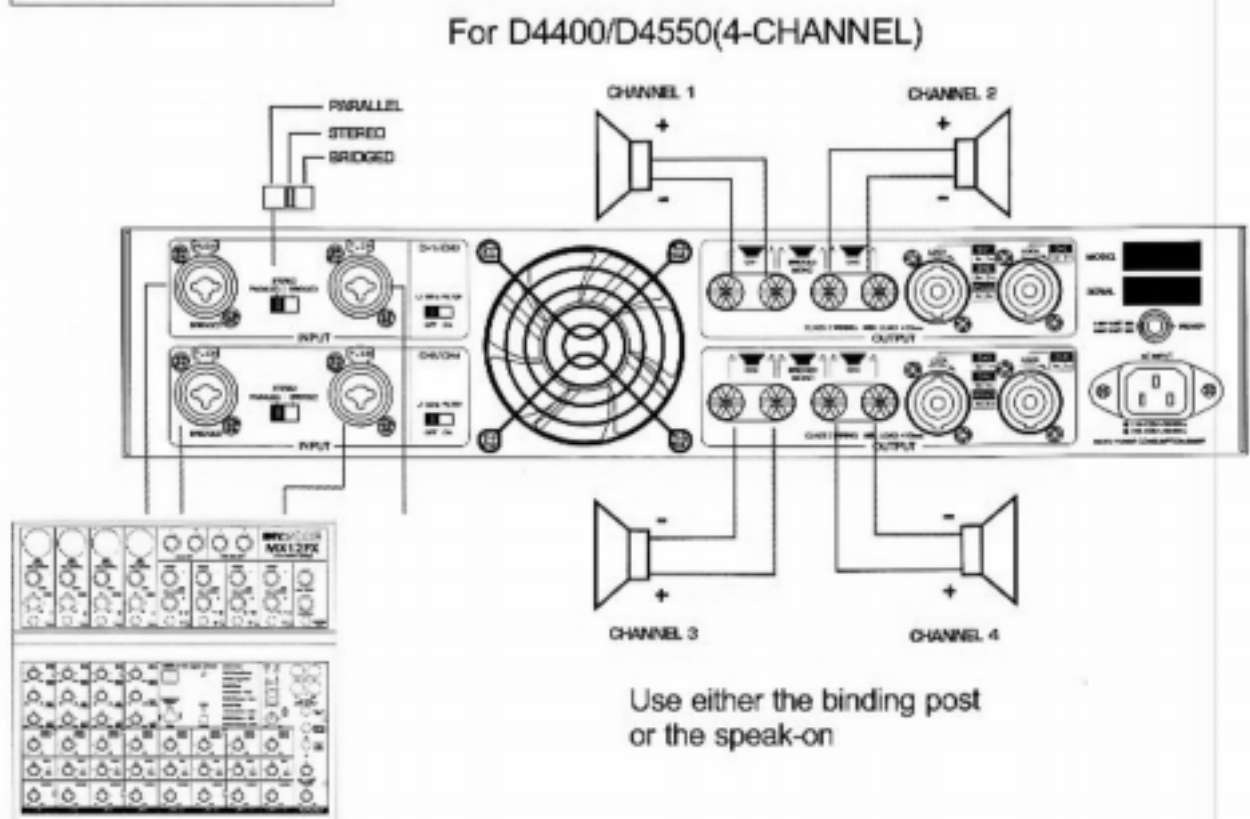
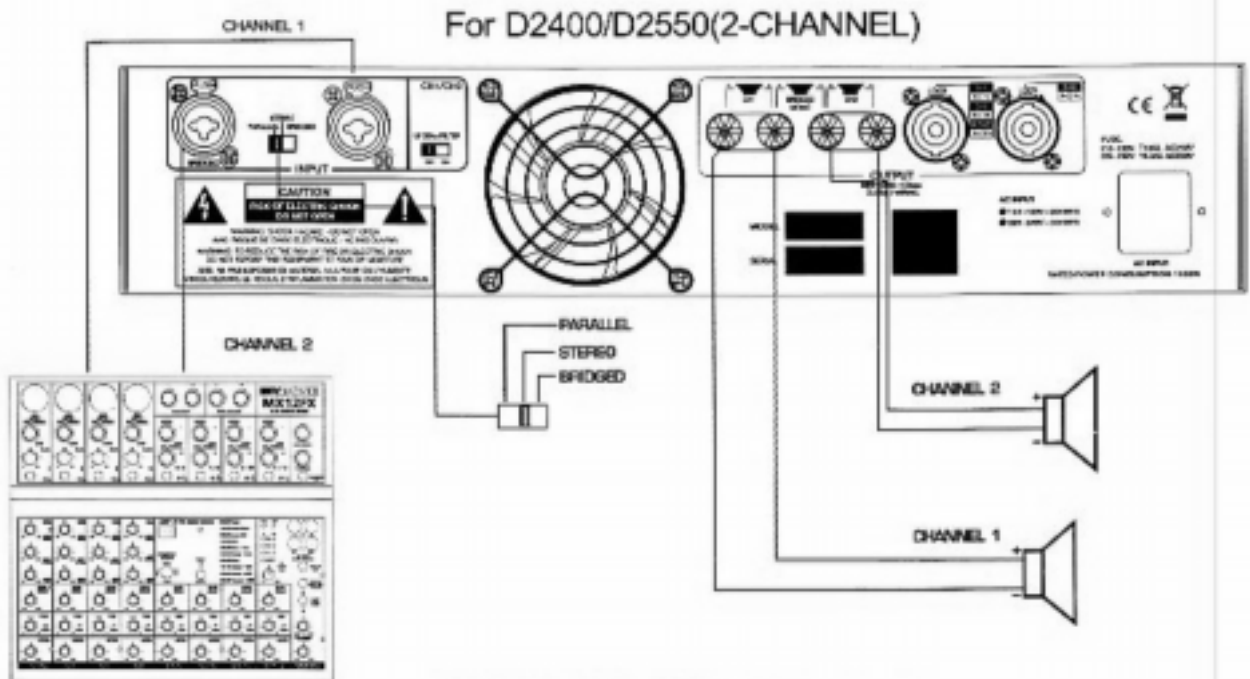
## 14. COOLING FAN

This fan secures enough cooling for your amplifier. The airflow is front-to-rear. The fan speed is electronically regulated depending on the temperature of the power devices.

## 4. OPERATION-In Stereo Mode

The D-SERIES power amplifiers provide three operating modes: stereo mode, parallel (mono) mode and bridged mode. You can choose each specific operating mode according to your current application circumstance.

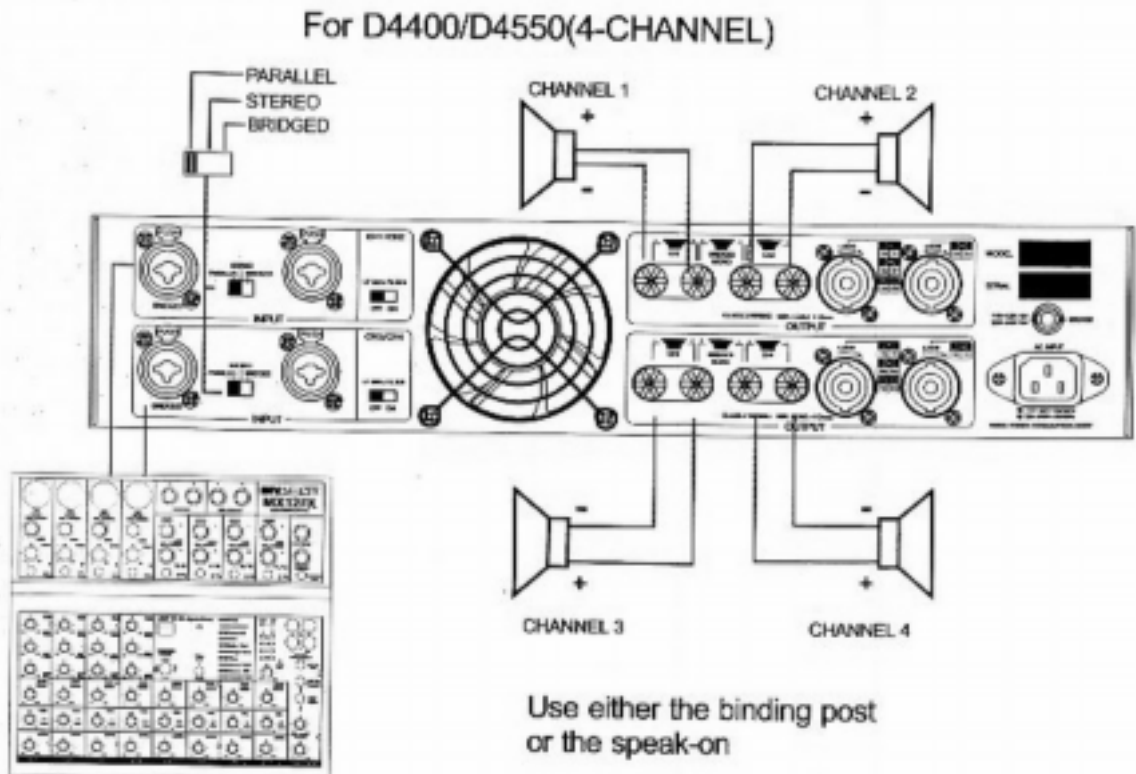
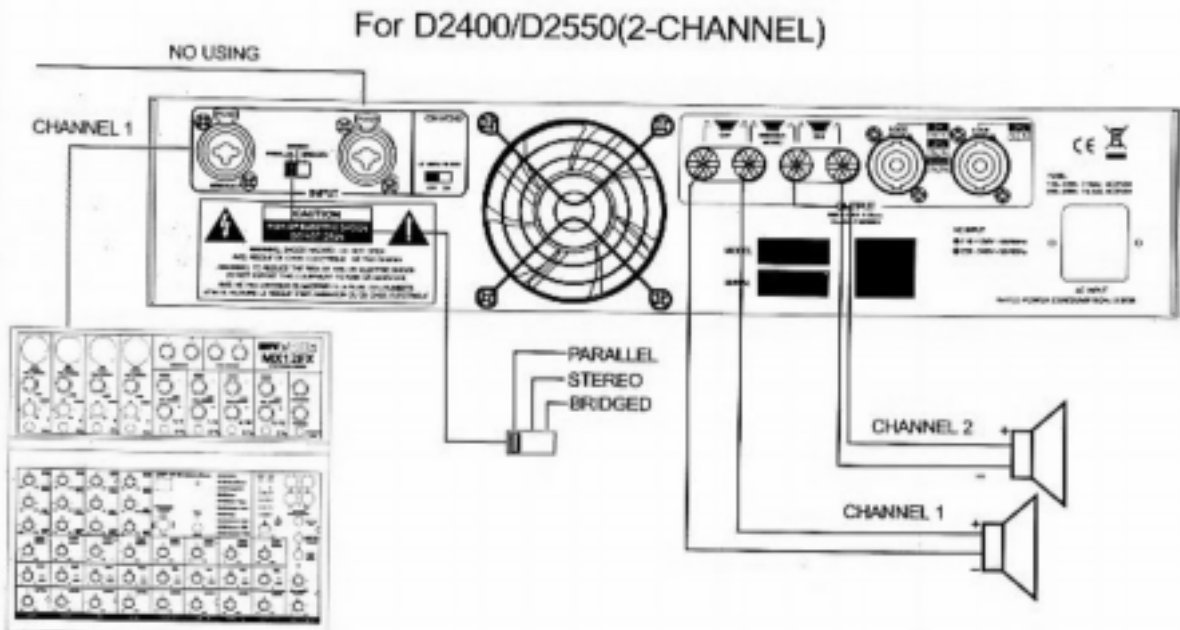
In this mode, channel A and channel B operate independently (as a conventional stereo amplifier). The channel A input signal will be output from the channel A output connectors, and the channel B input signal will be output from the channel B output connectors.



## 4. OPERATION-in Parallel Mode

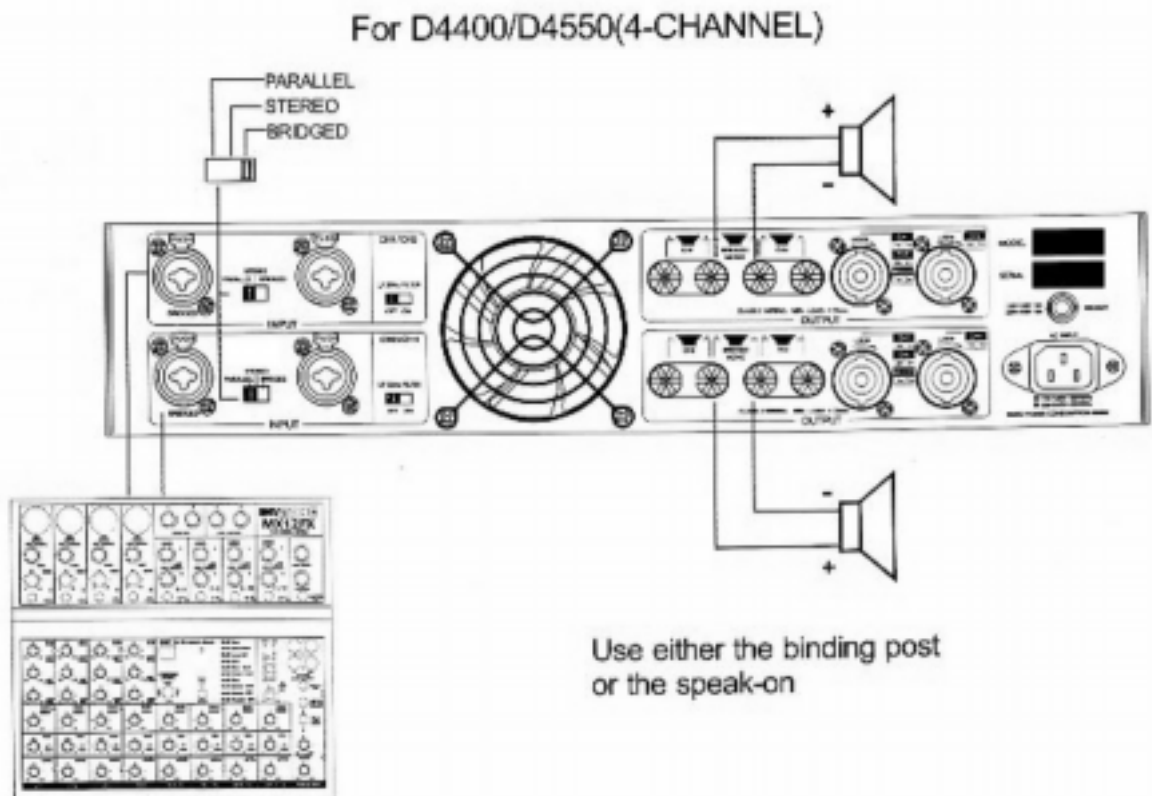
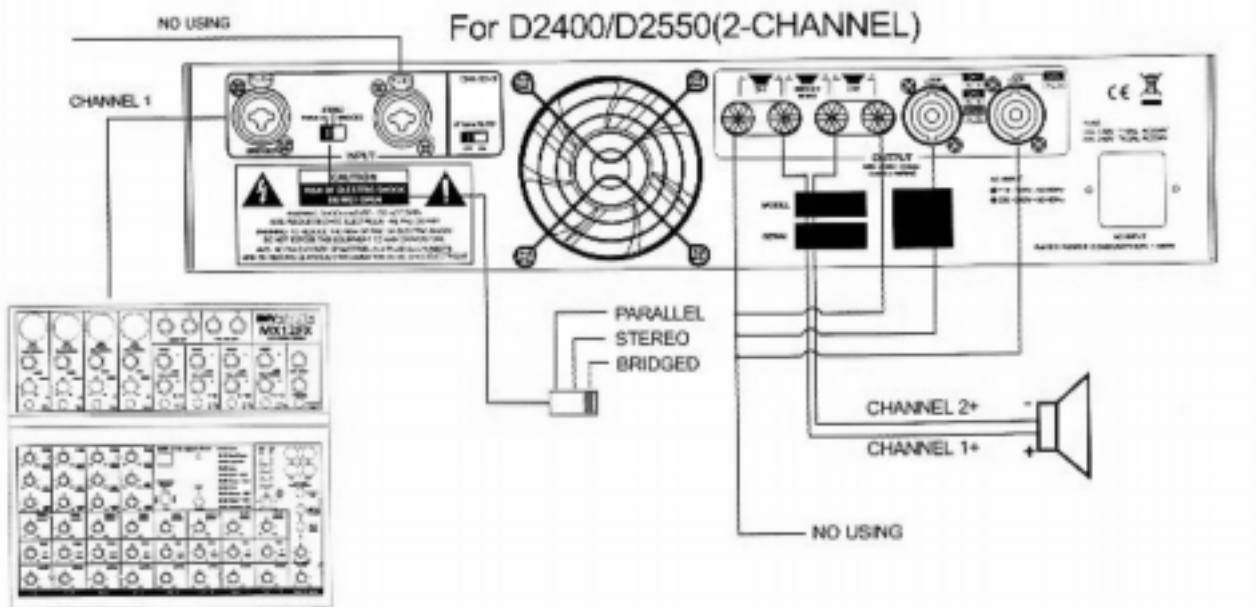
In this mode, the channel A input signal will be output from the output connectors of both channels. The channel B input is not used; the channel A and B volumes can be adjusted independently. Use the Parallel Mode when you want to drive two speakers with only one input signal keeping separate control of the volume of the two channels.

**NOTE:** since you are not using the channel B input you can use this socket to "daisy-chain" the signal to another amplifier.

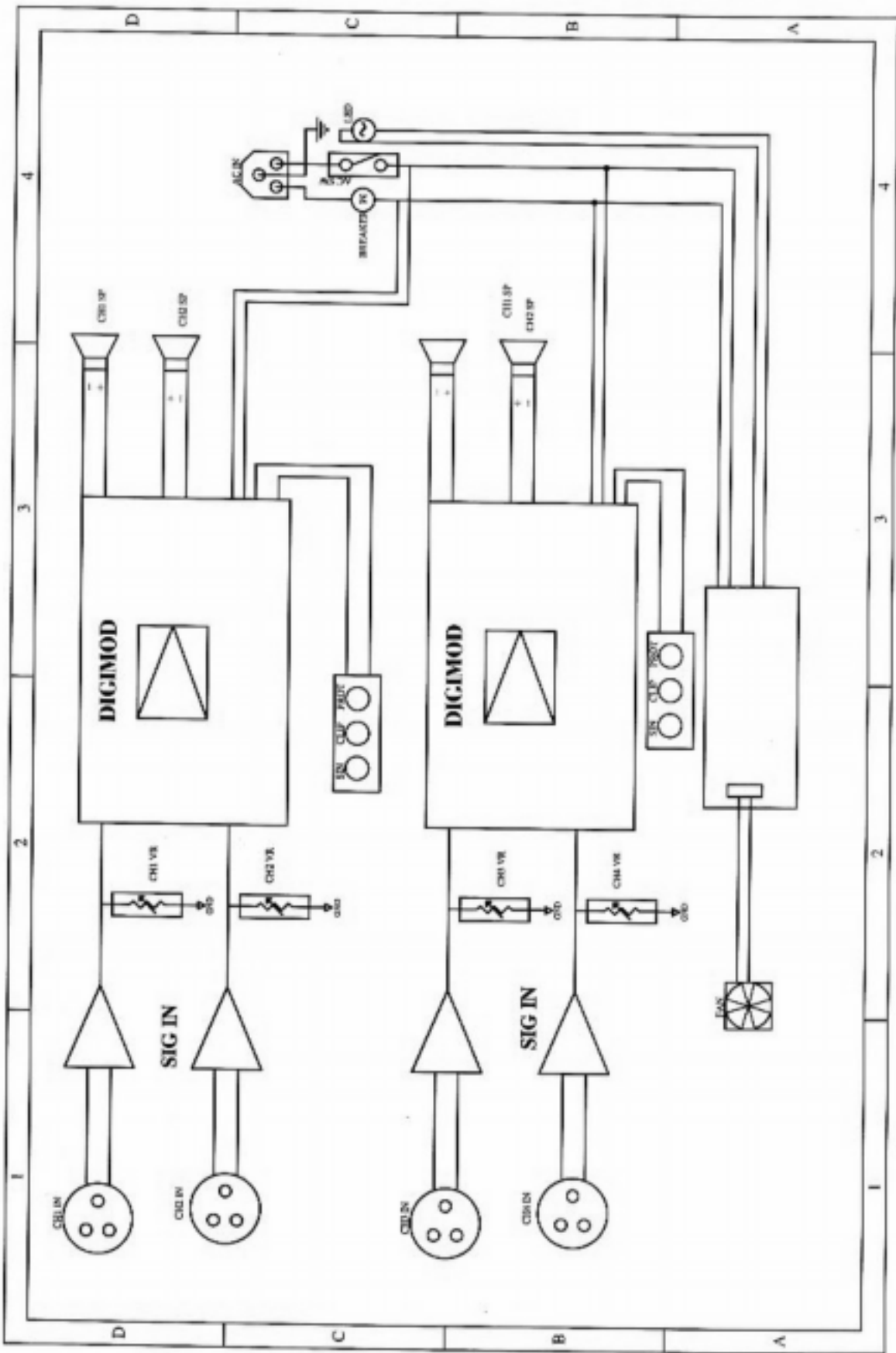


## 4. OPERATION-In Bridged Mode

In this mode, the channel A input signal will be output from the bridge output connectors. (The 2 RED binding post) In this case, use the channel A volume control to adjust the volume, keep the volume control of channel B turned completely down. Bridged mode is intended for driving loads with a total impedance of 8 ohms or more. In Bridge Mode you will combine the power of both channels into one speaker. You will have a massive amount of power available so check carefully the power handling of your speaker before operation.



## 5. BLOCK DIAGRAM



## 6. TECHNICAL SPECIFICATIONS

POWER SPECIFICATIONS		D2400	D4400	D2550	D4550
Power RMS @0.5% THD. Both channels driven, 230V		2 CH Amplifier	4 CH Amplifier	2 CH Amplifier	4 CH Amplifier
	4 Ohms	2 X 400 W	4 X 400 W	2 X 550 W	4 X 550 W
	8 Ohms	2 X 240 W	4 X 240 W	2 X 340 W	4 X 340 W
Power EIAJ@1% THD. Both channels driven, 230V	4 Ohms	2 X 500 W	4 X 500 W	2 X 750 W	4 X 750 W
	8 Ohms	2 X 270 W	4 X 270 W	2 X 370 W	4 X 370 W
Bridged Mode	8 ohms	1 X 1000 W	2 X 1000 W	1 X 1500 W	2 X 1500 W
	16ohms	1 X 520 W	2 X 520 W	1 X 740 W	2 X 740 W
<b>ELECTRICAL SPECIFICATIONS</b>					
INPUT SENSITIVITY	1Vrms				
INPUT IMPEDANCE	10 kohms unbalanced, 20 kohms balanced				
FREQUENCY RESPONSE	20 Hz-20 kHz+/-0.1dB, -3 dB points: 10 Hz - 80kHz				
INPUT CLIPPING	10 Vrms (+22 dB)				
VOLTAGE GAIN	32dB				
DISTORTION(SMPTE-1M)	< 0.5%				
S/N RATIO	> 105dB				
<b>GENERAL SPECIFICATIONS</b>					
PROTECTIONS	On/off muting, DC-fault load grounding relay. Internal fault fuses				
CONTROLS	Front: AC switch, gain knobs Rear: low pass filter, mode selector				
INDICATORS	SIGNAL: green LED CLIP: red LED POWER: blue LED PROTECTION: red LED				
CONNECTORS	INPUT : balanced combo OUTPUT: "Touch-proof" binding posts and speak-on.				
POWER SUPPLY	Available for AC230V, 50-60Hz				
DIMENSIONS(WxDxH)		483x285x88.8 mm	483x376x88.8 mm	483x285x88.8 mm	483x376x88.8 mm
WEIGHT		5.5 Kg	7.9 Kg	5.5 Kg	7.9 Kg