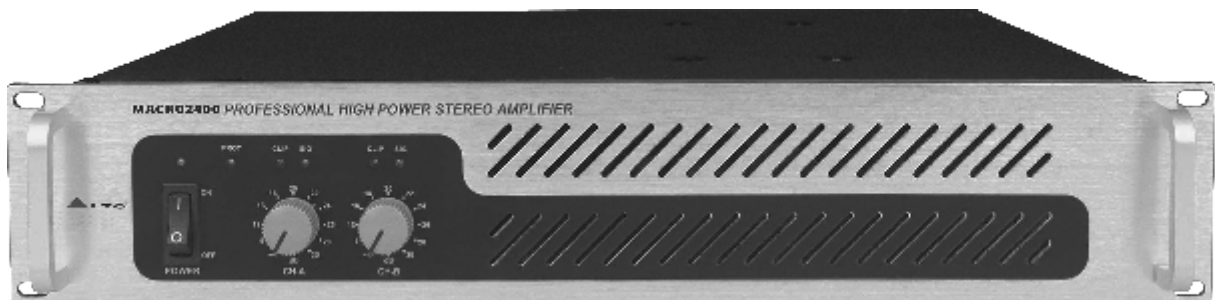


MACRO 830/1400/2400

User's Manual

PROFESSIONAL HIGH
POWER STEREO AMPLIFIER



www.altoproaudio.com
Version 2.2 August 2004

— English —

SAFETY RELATED SYMBOLS



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.

WARNING

Describes precautions that should be observed to prevent the possibility of death or injury to the user.

CAUTION

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

WARNING

Power Supply

Ensure that the mains source voltage (AC outlet) matches the voltage rating of the product. Failure to do so could result in damage to the product and possibly the user.

Unplug the product before electrical storms occur and when unused for long periods of time to reduce the risk of electric shock or fire.

External Connection

Always use proper ready-made insulated mains cabling (power cord). Failure to do so could result in shock/death or fire. If in doubt, seek advice from a registered electrician.

Do Not Remove Any Covers

Within the product are areas where high voltages may present. To reduce the risk of electric shock do not remove any covers unless the AC mains power cord is removed.

Covers should be removed by qualified service personnel only.

No user serviceable parts inside.

Fuse

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.

Protective Ground

Before turning the product ON, make sure that it is connected to Ground. This is to prevent the risk of electric shock.

Never cut internal or external Ground wires. Likewise, never remove Ground wiring from the Protective Ground Terminal.

Operating Conditions

Always install in accordance with the manufacturer's instructions.

To avoid the risk of electric shock and damage, do not subject this product to any liquid/rain or moisture. Do not use this product when in close proximity to water.

Do not install this product near any direct heat source.

Do not block areas of ventilation. Failure to do so could result in fire.

Keep product away from naked flames.

IMPORTANT SAFETY INSTRUCTIONS

Read these instructions

Follow all instructions

Keep these instructions. Do not discard.

Heed all warnings.

Only use attachments/accessories specified by the manufacturer.

Power Cord and Plug

Do not tamper with the power cord or plug. These 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.

Cleaning

When required, either blow off dust from the product or use a dry cloth.

Do not use any solvents such as Benzol or Alcohol. For safety, keep product clean and free from dust.

Servicing

Refer all servicing to qualified service personnel only.

Do not perform any servicing other than those instructions contained within the User's Manual.

PREFACE

Dear Customer:

Thanks for choosing LTO MACRO 830/1400/2400 Professional High Power Stereo Amplifier and thanks for choosing one of the results of LTO AUDIO TEAM job and researches.

For our LTO AUDIO TEAM, music and sound are more than a job... are first of all passion and let us say...our obsession!

We have been designing professional audio products for a long time in cooperation with some of the major brands in the world in the audio field.

The LTO line presents unparalleled analogue and digital products made by Musicians for Musicians in our R&D Centers in Italy Netherlands, United Kingdom and Taiwan. The core of our digital audio products is a sophisticated DSP (Digital Sound Processor) and a large range of state of the art algorithms which have been developed by our Software Team for the last 7 years.

Because we are convinced you are the most important member of LTO AUDIO TEAM and the one confirming the quality of our job, we'd like to share with you our work and our dreams, paying attention to your suggestions and your comments.

Following this idea we create our products and we will create the new ones! From our side, we guarantee you and we will guarantee you also in future the best quality, and the best fruits of our continuous researches and the best prices.

Our LTO MACRO 830/1400/2400 Professional High Power Stereo Amplifier is the result of many hours of listening and tests involving common people, area experts, musicians and technicians.

The result of this effort is the sophisticated circuit design featuring high power and superb quality together with superior reliability and stability to provide the highest possible audio performance.

Nothing else to add, but that we would like to thank all the people that made the LTO MACRO 830/1400/2400 Professional High Power Stereo Amplifier a reality available to our customers, and thank our designers and all the LTO staff, there to make possible the realization of products containing our idea of music and sound and there to support you, our customers, In the best way, conscious that you are our best richness.

Thank you very much.

LTO AUDIO TEAM

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1. INTRODUCTION

Thank you very much for expressing your confidence in LTO products by purchasing our MACRO 830/1400/2400 Professional Stereo Amplifier . With the MACRO 830/1400/2400 you have acquired an extremely musical and flexible High Power Amplifier which is based on many years of experience and findings in amplifier technology and is used through the world in the renowned studios. The MACRO 830/1400/2400 is used for professional output of stage stereo at three levels of power, with excellent performance. Output power can be adjusted at the user's demand, and the sound quality and protecting circuit are both sophisticated.

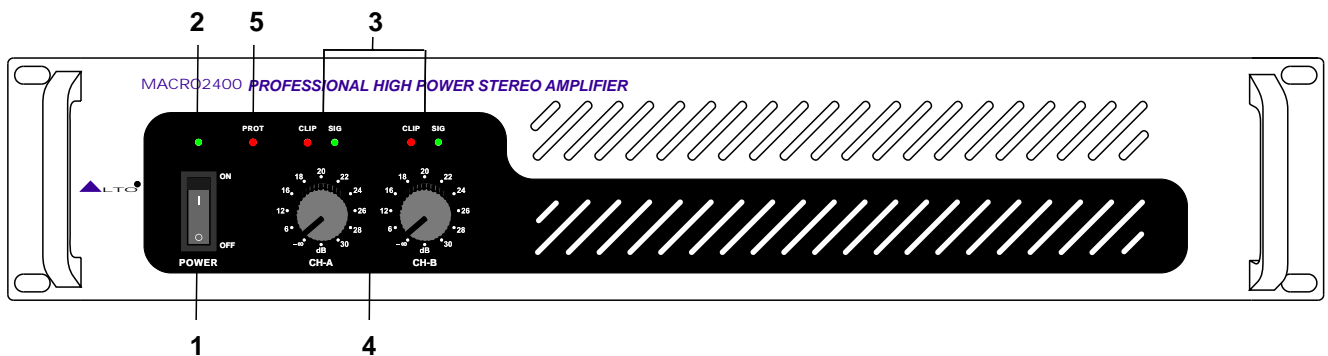
The front panel presents you with 6 LEDs (Power LED, Protection LED, Clip & Signal LED for both channels) and 2 Level Controls (for both channels), you can operate this unit more precise and easier. The Output Connectors are Speak-on jacks, and the binding post terminals are used for better matching. Before connecting this unit into your sound system, please make sure it is powered down to prevent any electric shock.

2. FEATURE LIST

- Sophisticated protecting circuits protect the machine from improper tampering
- Input matching allows collection with any preamplifier
- Excellent frequency echo and sound quality
- High fidelity and low noise
- Balanced XLR and 1/4" TRS Input Connectors
- Output Connectors are speak-on jacks, and the binding post terminals are used for better matching
- Output power can be switched between stereo , parallel and bridged
- High-speed and low noise fan for releasing heat. When the temperature rises, the fan automatically switches to high-speed, it re-back to normal speed at other times to reduce power consumption
- Indicator for the output balance, as well as status indicators of SIG and CLIP. When there is any signal (>100mV), the SIG LED lights up. When there is overload, the CLIP LED lights up. If anything abnormal happens to the circuits, the CLIP LED will be continuously on, with no action from the circuits. This helps the user to determine which status it is in.
- White aluminum panels with acrylic presents an artistic and trendy look
- Solid and durable, can be mounted into a cabinet
- Manufactured under ISO9001 certified management system

3. CONTROL ELEMENTS

3.1 The Front Panel



1. Mains Switch

This switch turns on and turns off the unit by controlling both phases.

2. Power LED

This Power LED lights up when the unit is powered up.

3. Clip LED

The Clip LEDs light up when distortion reaches or exceeds 0.5% approximately, which means the unit is being driven by excessively high signal source, and you'd better adjust the level control until these LEDs re-eliminated.

Signal Indicator

These Signal Indicators light up when the output is more than 100mV.

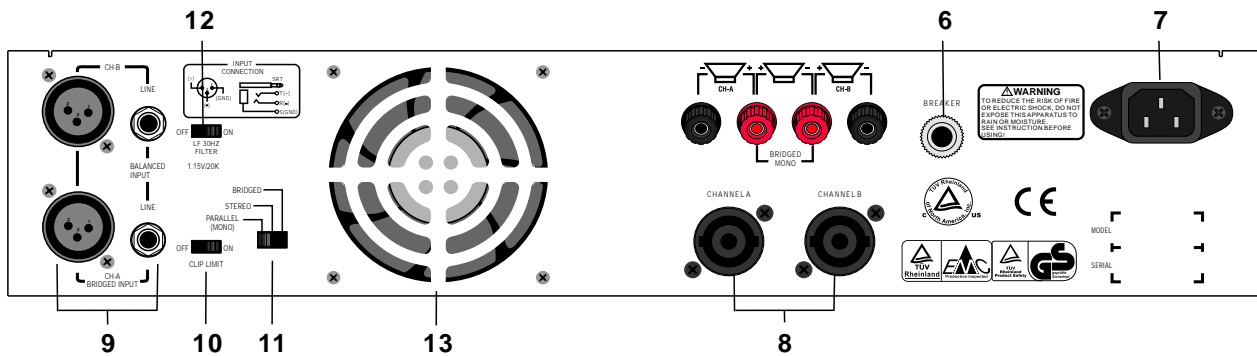
4. Level controls for CHANNEL A, B

These level Controls are used to adjust the output signal level, you'd better adjust them properly to avoid any distortion.

5. Protection LED

This red LED indicator lights up when the thermal-protection system is working, no signal is output during this protection period, and this means any overheating occurs inside the unit (the critical temperature is 80 °C), you must take actions to avoid this overheating, e.g.: speed up the air circulation, decrease the signal level. If the problem is corrected, the protection systems deactivate automatically, this LED eliminates, and normal amplifier operation is resumed.

3.2 The Rear Panel



6. Breaker

This breaker is used to protect the unit in replacement of fuse. Press it to reset.

7. AC Inlet

This connector is meant for the connection of the supplied main cord. Do not insert the power cord into this unit until voltage has been correctly set. Do not plug the power cord into the mains until the voltage has been correctly set.

8. Output Connectors

The Output Connectors include the Speak-on jacks and Binding post terminals, you can use the specific Output connectors according to the actual application circumstance.

Be careful to connect the Output Connectors so as not to occur any problem.

Caution: Turn off the unit before connecting the Output Connectors so as to avoid any electric shock!

9. Balanced Input Connectors

The Input Connectors include the balanced XLR servo connectors and 1/4" TRS phone jack. For the extension to another amplifier, connect these jacks to another amplifier input jacks.

10. Clip Limit Switch

While on, the clip limit function specific to this machine keeps fixed output when the output exceeds the Maximum of the machine to protect its circuits. While off, there is no such limit.

11. Mode Selector

The MACRO 830/1400/2400 Professional Stereo Amplifier presents three operating modes:

- Stereo Mode

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.

- Parallel Mono Mode

In this mode, the Channel A input signal will be output from the output connectors of both Channels, detail wiring diagram you can refer to Chapter 5.

- Bridged Mode

In this mode, the Channel A input signal will be output from the Bridge output connectors, detail wiring diagram you can refer to Chapter 5.

12. LF 30Hz Filter

Some large subsonic frequencies are present in the input signal and these can damage the consequent

speaker systems by over loading or overheating.

This LF30Hz Filter is used to prevent this happening, and add an appropriate low-pass filter in the input circuit.

13. Fan

This fan releases the heating from the unit by accelerating the air circulation (air flow from front to back),and its speed is continuously variable.

4. INSTALLATION & CONNECTION

4.1 Mains Connection

Do not insert the power cord into this unit until voltage has been correctly set. Do not plug the power cord into the mains until the voltage has been correctly set. Please ensure that the MACRO 830/1400/2400 Professional Stereo Amplifier is supplied with the correct voltage before turning on this unit. If you can't power up this unit while turning on the Mains Switch (1), please check the Breaker (6) on the rear panel first, maybe it is pressed to reset. Otherwise, contact the technician or qualified personnel for any service.

Caution: To reduce the risk of electric shock, do not perform any servicing other than contained in this manual unless you are qualified to do so. Please turn off this unit before any installation and connection, esp. when you connect your unit into the sound system. This is important to prevent damage to the unit itself as well as other consequent speaker system. The mains connection of the MACRO 830/1400/2400 Professional Stereo Amplifier is made by using the enclosed power cord and a standard IEC receptacle, and it meets all of the international safety certification requirements.

4.2 Rack Mounting

The most secure mounting is on a universal rack shelf available from various rack manufactures or your music dealer. The MACRO 830/1400/2400 Professional Stereo Amplifier fits into one standard 19" rack unit of space. Be sure that there is enough air space around the unit for sufficient ventilation. If heat release is inadequate, this unit will retain heat inside, which may cause the protection, or even a fire.

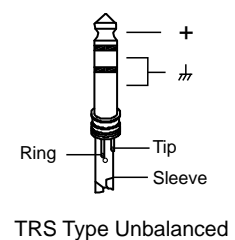
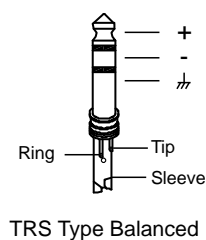
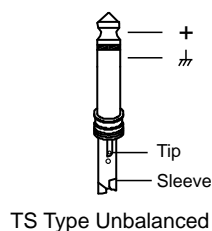
4.3 Audio Connection

The LTO MACRO 830/1400/2400 Professional High Power Amplifier presents with balanced XLR connectors and 1/4" TRS phone jack and it can be interfaced by several ways to support a variety of applications without any signal loss.

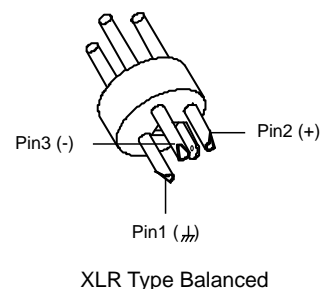
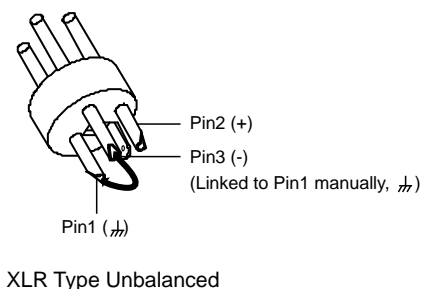
a. Wiring Configuration

Either the 1/4" TRS (Tip-Ring-Sleeve) phone jack or the XLR servo connector can be wired in balanced and unbalanced modes, which will be determined by the actual application status, Please wire your systems as the following examples:

For 1/4" Phone jack



For XLR connector

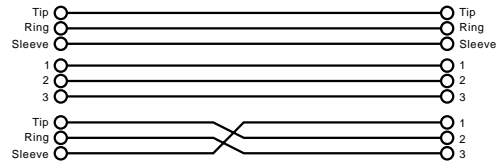
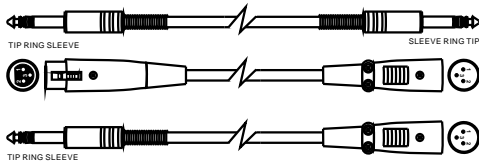


b. In Line Connection

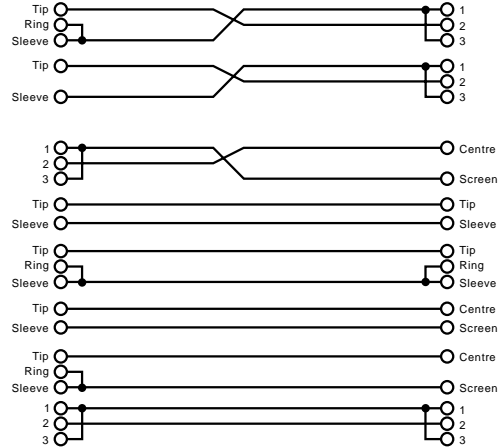
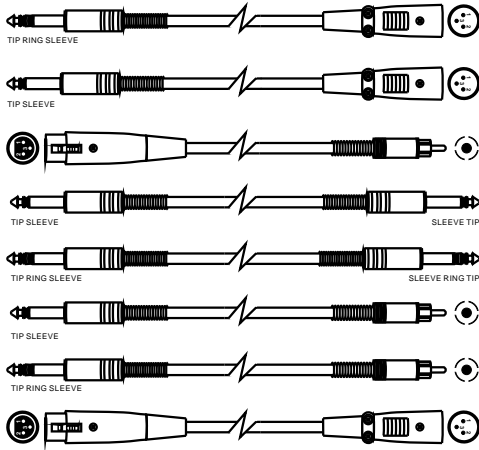
For these applications, the MACRO 830/1400/2400 Professional High Power Amplifier provides XLR connectors and 1/4"

TRS phone jack to easily interface with most professional audio devices. Follow the configuration examples below for your particular connection.

· **Balanced**



· **Unbalanced**

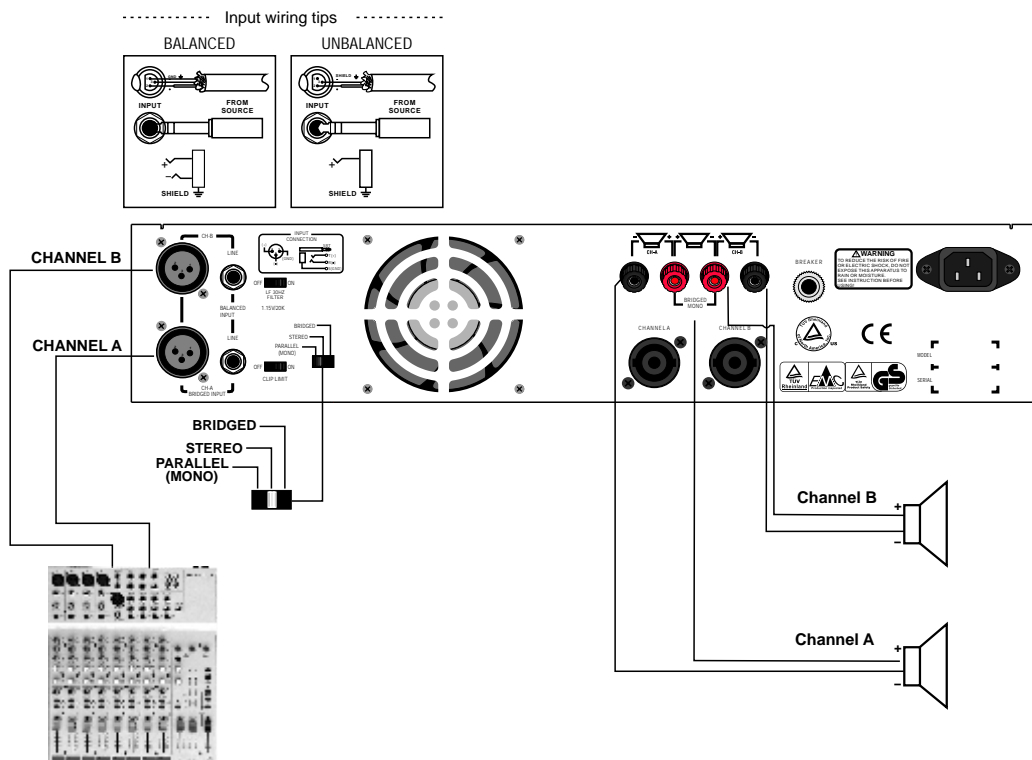


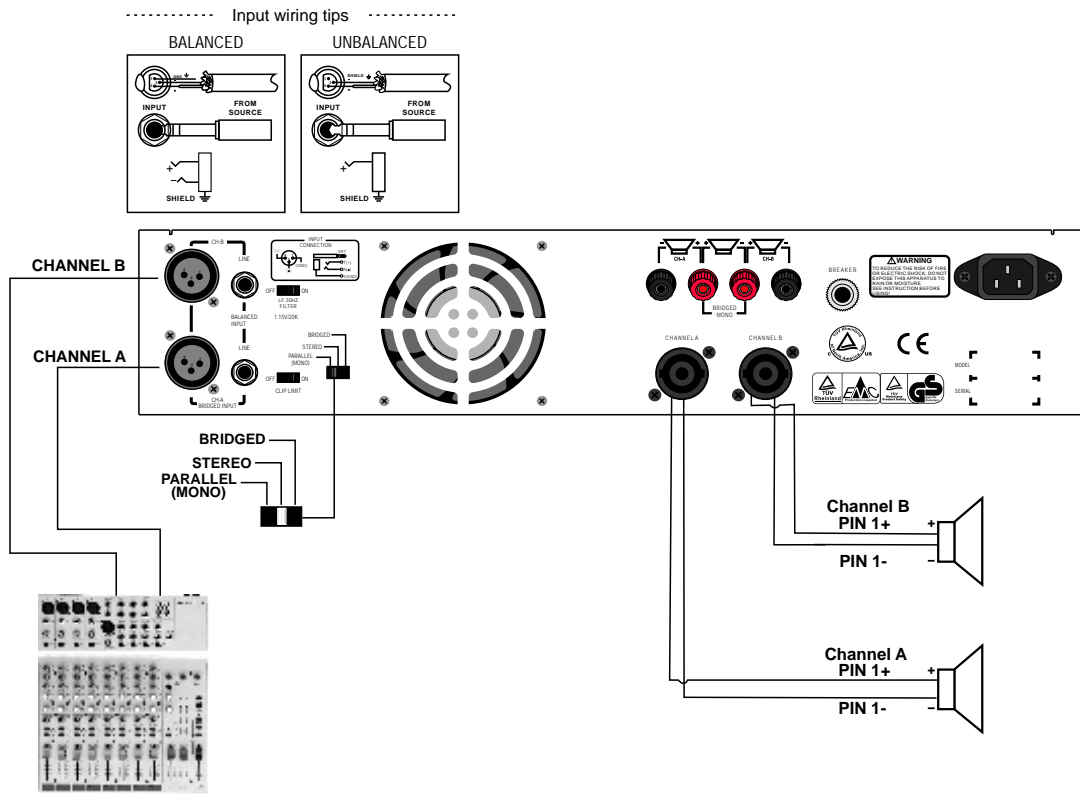
5. OPERATION

The MACRO 830/1400/2400 Professional High Power Stereo Amplifier provides three operating modes with each unit: Stereo mode, Parallel (Mono) mode and Bridged mode, you can decide each specific operating mode according to your actual application circumstance. Following examples will show you the typical connections, you can refer to install your MACRO 830/1400/2400 into a sound system:

5.1 Operate MACRO 830/1400/2400 in Stereo Mode

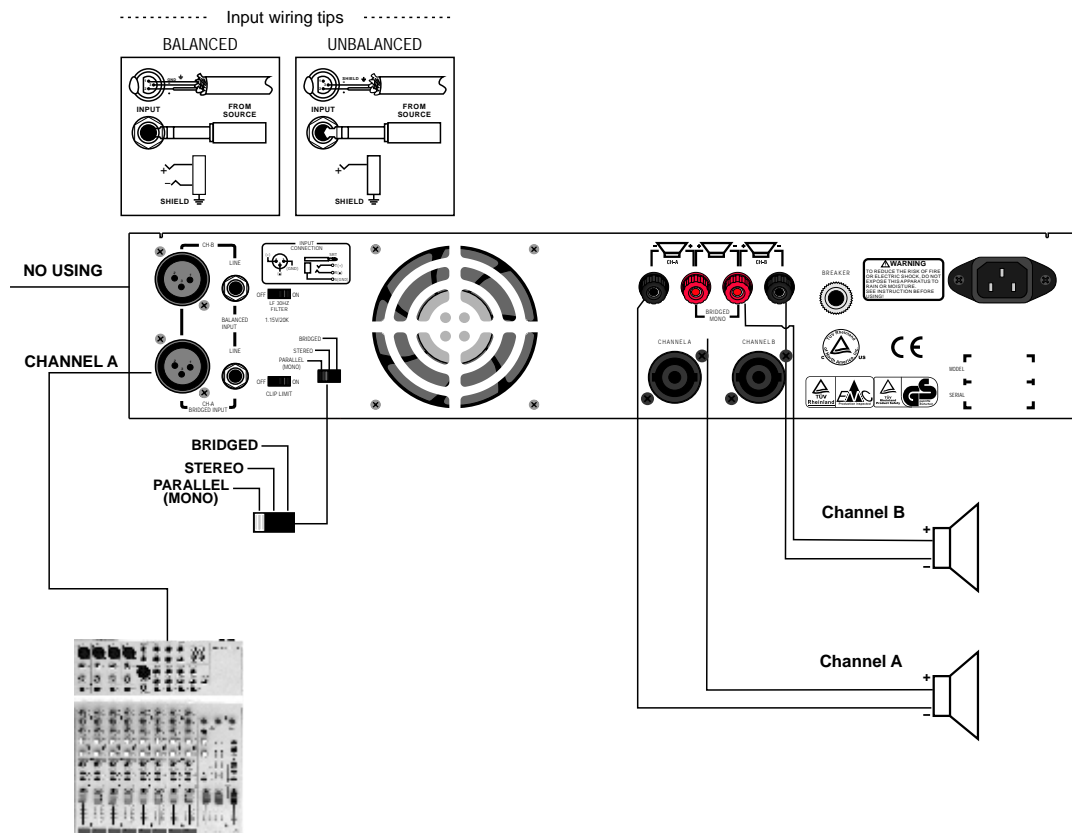
In this mode, Channel A and Channel B operate independently (as a conventional stereo amplifier). The Channel A input signal will be output from the Channel A output connectors, and the Channel B input signal will be output from the Channel B output connectors.

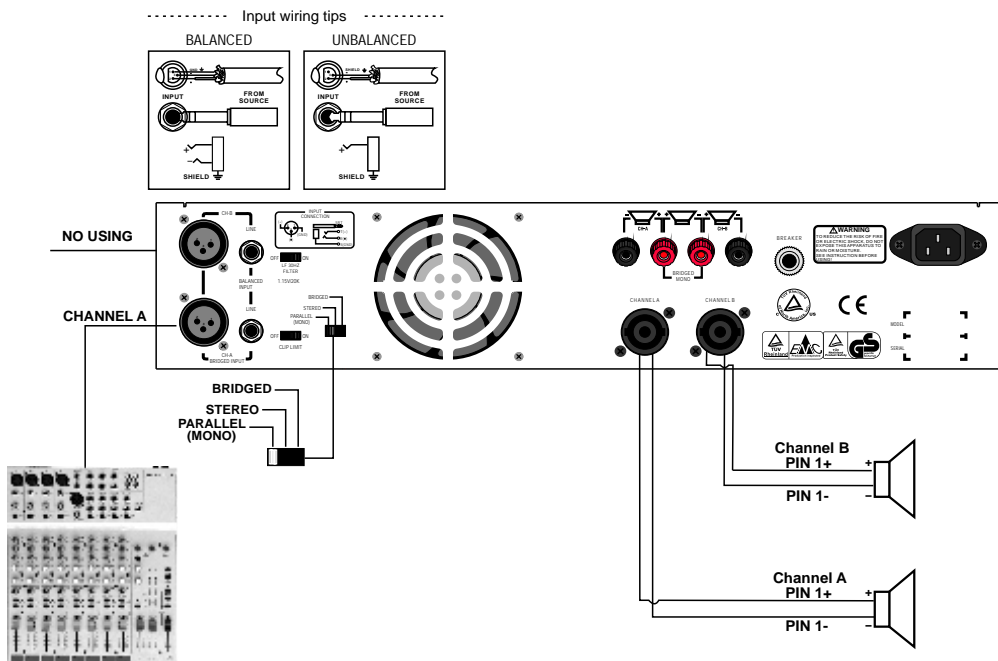




5.2 Operate MACRO 830/1400/2400 in Parallel (Mono) Mode

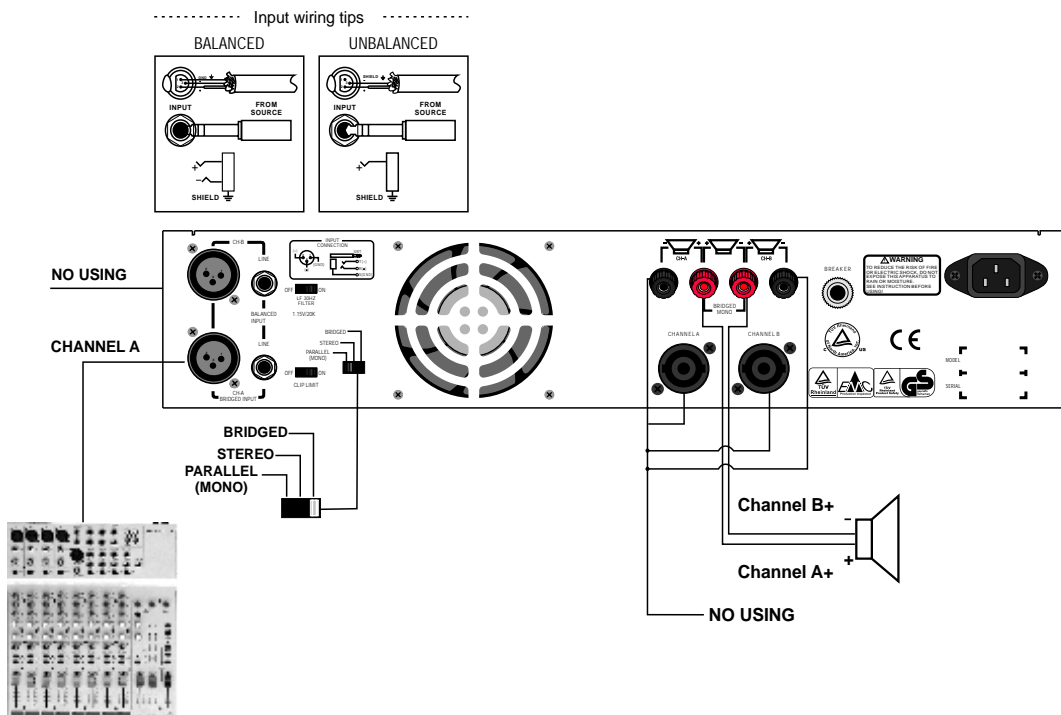
In this mode, the Channel A input signal will be output from the output connectors of both Channels. The Channel B input jack is not used, the Channel A and B volumes can be adjusted independently.





5.3 Operate MACRO 830/1400/2400 in Bridged Mode

In this mode, the Channel A input signal will be output from the Bridge output connectors. In this case, use the Channel A volume control to adjust the volume, keep the volume control of Channel B turned completely down (counterclockwise). Bridged Mode is intended for driving loads with a total impedance of 4 ohms or greater.



6. CAUTION FOR APPLICATION

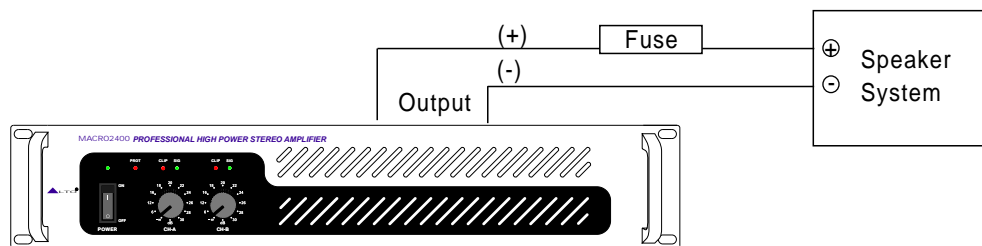
6.1 General Application Instruction

The following instructions describe the common ways to install your MACRO 830/1400/2400 Professional Stereo Amplifier into a sound application system:

1. First, turn off power switch before connection.
2. Refer to Chapter 5 for speaker connection
3. MACRO 830/1400/2400 Professional Stereo Amplifier may be operated in one of the three modes, please slide the Mode Selector (11) for the specific operating mode.

6.2 Caution for Speaker Connection

The output capacity of our MACRO 830/1400/2400 Professional Stereo Amplifier is very high, be sure to use a speaker system that has sufficient input capacity. If the input capacity of your speaker system is lower than the rated output of the MACRO 830/1400/2400 Professional Stereo Amplifier, you can protect your speakers by connecting a fuse serially between the speaker and the amplifier as shown below.



Use the following formula to determine the fuse capacity according to the speaker's input capacity.

$$P_o = I^2 R \rightarrow I = \sqrt{P_o / R}$$

P_o [W] : Speaker's continuous input capacity (noise or RMS)

R [] : Speaker's nominal impedance

I [A] : Required fuse capacity

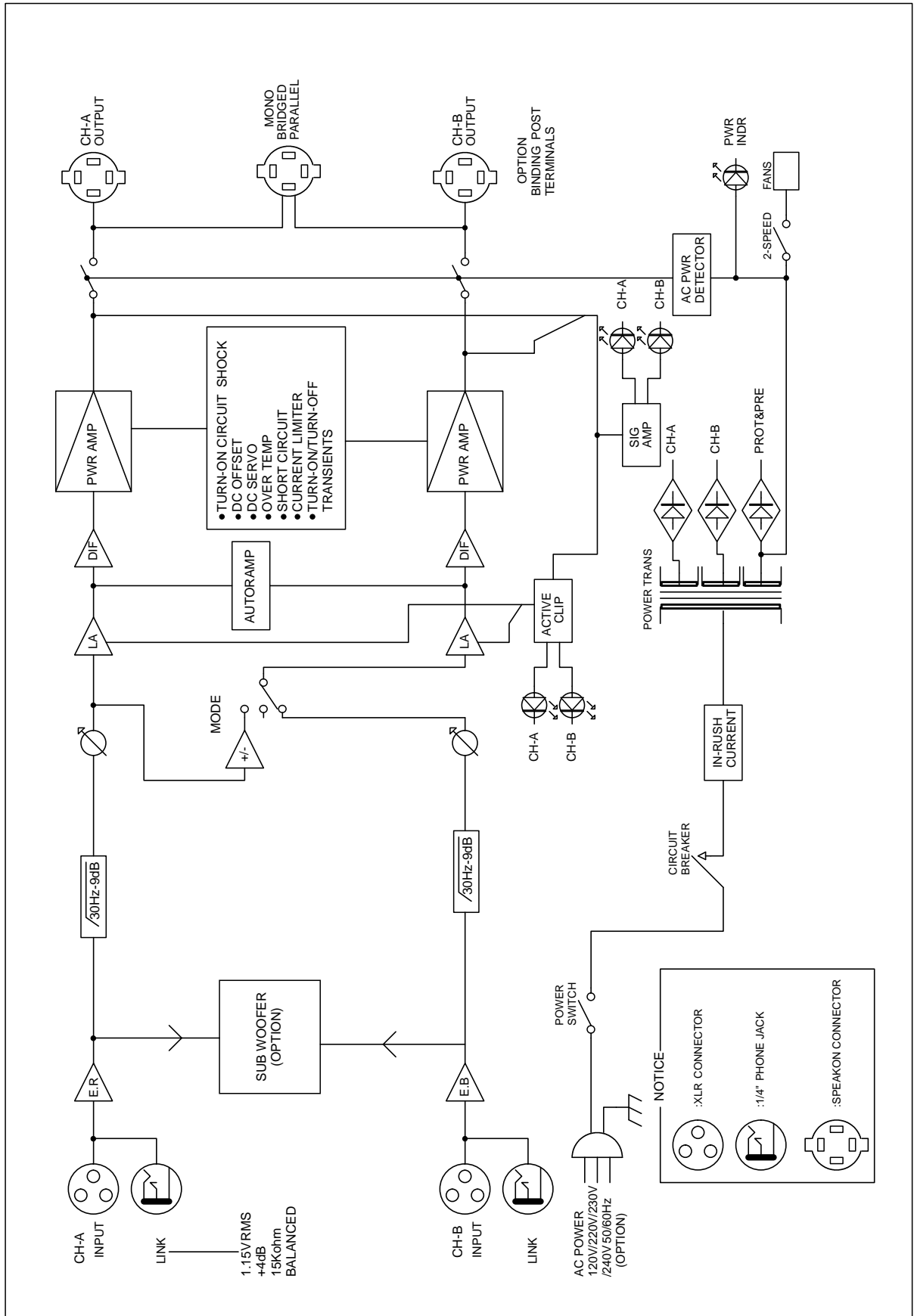
As to the speaker cable, if you use a long one, use as thick a cable as possible to prevent deterioration of the damping factor or power loss inside the cable.

7. TECHNICAL SPECIFICATIONS

7.1 Specifications

POWER SPECIFICATIONS		MACRO830	MACRO1400	MACRO2400
STEREO MODE (Both channels driven) 20Hz~20KHz	2 Ohms	480	800	1400
	4 Ohms	300	450	750
	8 Ohms	205	310	575
Bridge Mono Mode 20Hz~20kHz	8 Ohms	560	900	1500
	4 Ohms	800	1400	2500
ELECTRICAL SPECIFICATIONS		600W	900W	1500W
INPUT SENSITIVITY		1.15V(+3.4dBu)	1.15V(+3.4dBu)	1.15V(+3.4dBu)
INPUT IMPEDANCE		10K Unbalanced	20K Balanced	
FREQUENCY RESPONSE (at 10dB below rated output power)		25Hz~25KHz +0/-1dB -3dB points: 5Hz~50KHz		
VOLTAGE GAIN		30dB	32dB	34dB
DISTORTION(SMPTE-1M)		<0.03%	<0.03%	<0.03%
S/N ratio		100dB	100dB	100dB
GENERAL SPECIFICATIONS		600W	900W	1500W
PROTECTIONS		Full short circuit, open circuit, thermal, ultrasonic, and RF protection stable into reactive or mismatched loads, turn ON/OFF, muting, tried crowbar.		
CONTROLS		Front: AC switch 40-detect input level control for each channel. Rear: stereo/ parallel/ bridged selector, 30Hz filter selector clip ON/OFF selector.		
INDICATORS		SIGNAL: 2 x green LED CLIP: 2 x red LED POWER: 1 green LED PROTECTION: 1 red LED		
CONNECTORS		INPUT : Active balanced XLR and 1/4"(6.3mm)TRS OUTPUT: "Touch-proof" binding posts and speak-on jacks.		
POWER SUPPLY		Available for 110-120V or 220~240V AC, 50/60Hz		
DIMENSIONS		483(W) x 400(D) x 88.8(H)mm		
WEIGHT		13.6kg	15.6kg	19kg

7.2 Block Diagram



7. WARRANTY

1. WARRANTY REGISTRATION CARD

To obtain Warranty Service, the buyer should first fill out and return the enclosed Warranty Registration Card within 10 days of the Purchase Date.

All the information presented in this Warranty Registration Card gives the manufacturer a better understanding of the sales status, so as to purport a more effective and efficient after-sales warranty service.

Please fill out all the information carefully and genuinely, miswriting or absence of this card will void your warranty service.

2. RETURN NOTICE

2.1 In case of return for any warranty service, please make sure that the product is well packed in its original shipping carton, and it can protect your unit from any other extra damage.

2.2 Please provide a copy of your sales receipt or other proof of purchase with the returned machine, and give detail information about your return address and contact telephone number.

2.3 A brief description of the defect will be appreciated.

2.4 Please prepay all the costs involved in the return shipping, handling and insurance.

3. TERMS AND CONDITIONS

3.1 LTO warrants that this product will be free from any defects in materials and/or workmanship for a period of 1 year from the purchase date if you have completed the Warranty Registration Card in time.

3.2 The warranty service is only available to the original consumer, who purchased this product directly from the retail dealer, and it can not be transferred.

3.3 During the warranty service, LTO may repair or replace this product at its own option at no charge to you for parts or for labor in accordance with the right side of this limited warranty.

3.4 This warranty does not apply to the damages to this product that occurred as the following conditions:

- Instead of operating in accordance with the user's manual thoroughly, any abuse or misuse of this product.
- Normal tear and wear.
- The product has been altered or modified in any way.
- Damage which may have been caused either directly or indirectly by another product / force / etc.
- Abnormal service or repairing by anyone other than the qualified personnel or technician.

And in such cases, all the expenses will be charged to the buyer.

3.5 In no event shall LTO be liable for any incidental or consequential damages. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above exclusion or limitation may not apply to you.

3.6 This warranty gives you the specific rights, and these rights are compatible with the state laws, you may also have other statutory rights that may vary from state to state.

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