



OWNER'S MANUAL

PBM4

COMPACT POWERED MIXER





www.altoproaudio.com
Version 1.2 OCTOBER 2007
English

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	110	
0,25 or less	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.

IN THIS MANUAL:

1. INTRODUCTION.....	1
2. FEATURES.....	1
3. QUICK START.....	3
4. CONTROL ELEMENTS.....	5
5. INSTALLATION & CONNECTION.....	10
6. PRESET LIST.....	12
7. BLOCK DIAGRAM.....	13
8. TECHNICAL SPECIFICATIONS.....	14
9. WARRANTY.....	15

1. INTRODUCTION

Thank you for your purchasing of the ▲LTO PBM4 compact mixer with digital multieffect and 140 watt amplifier built in. It is just one of the many ▲LTO products that a talented, multinational Team of Audio Engineers and Musicians have developed with their great passion for music. Your PBM4 is a remarkable and unique equipment that doesn't find equals in the market of compact powered mixing consoles. With enough microphone and Line-level inputs for serious, small live performances, your PBM4 also includes a 24 Bit digital multieffect with 16 Factory Presets. The built-in amplifier is capable to deliver 200 watt in total.

Enjoy your PBM4 and make sure to read this Manual carefully before operation!

2. FEATURES

- ▲ 70W x 2@4 ohm, offering high power and high dynamic range
- ▲ 7-band graphic EQ on Master
- ▲ 4 MIC/line input channels with balanced XLR and TRS inputs
- ▲ Ultra-low noise discrete MIC pre-amps with +15V phantom power
- ▲ 2-band EQ on mono input channels
- ▲ FX send for built-in or external effects
- ▲ Separate output for stage monitor
- ▲ Tape in/out with level control
- ▲ 16-preset digital effect processor



LTO PBM4

MAIN

OPERATING

LEVEL

-∞ 0 -10 -30 +10dB

63 180 400 1K 2.5K 6.3K 16K

DSP

CLIP MUTE

PRESETS

1. WARM HALL
2. WARM ROOM
3. WARM STUDIO
4. VOCAL FROM
5. VOCAL TO
6. VOCAL 2
7. VOCAL 3
8. STEREO DELAY
9. STEREO DELAY 2
10. STEREO DELAY 3
11. REVERB + DELAY 1
12. REVERB + DELAY 2
13. REVERB + DELAY 3
14. REVERB + DELAY 4
15. REVERB + DELAY 5

MONITOR

-∞ 0 +10dB

PHANTOM

ON OFF

TAPES

TAPES IN

TAPES OUT

FX SEND

FX RETURN

MONITOR OUT

POWER AMPLIFIER OUTPUT

FOOTSWITCH

HIGH 120kHz

LOW 80Hz

DSP FX AUX1 POST

-∞ 0 +10dB

LEVEL

LINE IN (Bal) LOW NOISE PROGRAM

MIC IN (Bal)

CH 1

HIGH 120kHz

LOW 80Hz

DSP FX AUX1 POST

-∞ 0 +10dB

LEVEL

LINE IN (Bal) LOW NOISE PROGRAM

MIC IN (Bal)

CH 2

HIGH 120kHz

LOW 80Hz

DSP FX AUX1 POST

-∞ 0 +10dB

LEVEL

LINE IN (Bal) LOW NOISE PROGRAM

MIC IN (Bal)

CH 3

HIGH 120kHz

LOW 80Hz

DSP FX AUX1 POST

-∞ 0 +10dB

LEVEL

LINE IN (Bal) LOW NOISE PROGRAM

MIC IN (Bal)

CH 4

HIGH 120kHz

LOW 80Hz

DSP FX AUX1 POST

-∞ 0 +10dB

LEVEL

LINE IN (Bal) LOW NOISE PROGRAM

MIC IN (Bal)

CH 5-6

3. QUICK START

This is the fastest way to get something out from your PBM4, if you have a keyboard and a microphone.

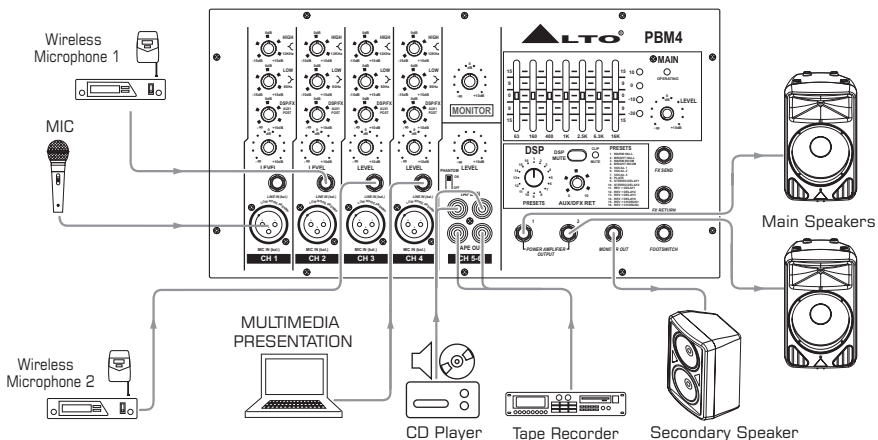
- Before connecting microphones or instruments, make sure that the power of all your systems components including your PBM4 is turned off. Also, make sure that all input and output controls are turned down. This will avoid damage to your speakers and excessive noise.
- Properly connect all external equipments such as microphone, processors, speakers etc.
- Now, turn on the power of any peripheral devices, and then connect your PBM4 to the AC socket.

Note: Powered monitors or power amplifiers shall be turned ON after the PBM4 is on and OFF before turned the PBM4 off.

- Set the output level of your PBM4 at no more than 75%.
- Set HI, and LOW EQ controls on center position.
- Set the Master EQ slider on center position .
- Set panoramic (PAN/BAL) control on center position.
- While speaking into the microphone (or playing the instrument) at normal volume, adjust the channel Level control so that you wouldn't hear any distortion.
- You can shape the tone of each channel by adjusting the equalizer controls as desired.
- Now repeat the same sequence for all input channels. The Main LED Meter could move up into the red section. In this case you can adjust the overall output level through the main LEVEL control.

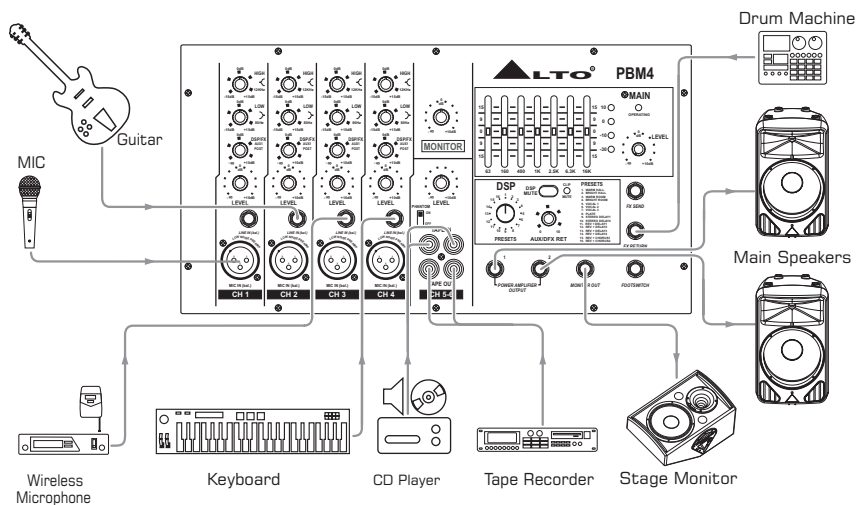


PBM4 IN CONFERENCE

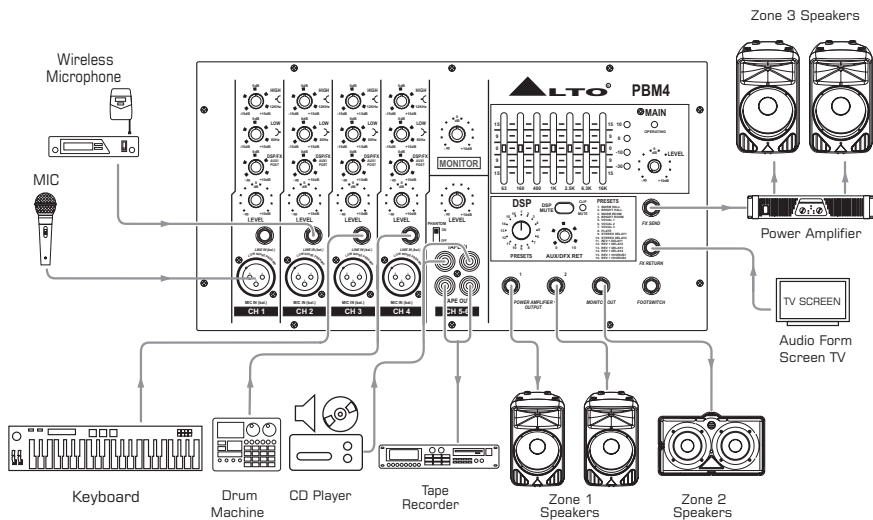




PBM4 IN SMALL GIG



PBM4 IN BAR-PUB





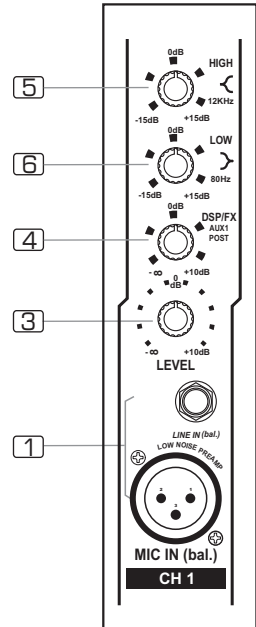
4. CONTROL ELEMENTS

INPUT SECTION

1 MONO MIC/LINE CHANNELS

Your PBM4 is equipped with 4 low-noise, microphone preamplifiers with optional phantom power supplying +15 Volt. You can connect almost any type of microphone. Dynamic microphones do not need phantom power. Use phantom power only with condenser microphones but make sure that the phantom power button is disengaged before connecting the microphone. Phantom power will not damage your dynamic microphones but it may damage tube or ribbon microphones so make sure to read the microphone instructions manual before engage phantom power. Use switch (2) to activate/deactivate phantom power. These two channels are also equipped with 1/4" TRS balanced/unbalanced plugs to connect line-level instruments such as keyboards, drum machines and effect devices.

NOTE: Never try to connect a line-level signal to the XLR MIC input when the phantom power is engaged or you may seriously damage your equipment.



2 +15V PHANTOM POWER SWITCH

This switch will apply +15 Volt Phantom Power only to the 4 XLR inputs sockets.

3 LEVEL CONTROL

This control is used to adjust the overall level of respective channel. The adjustable range goes from $-\infty$ to +10dB. .

4 DSP/FX-AUX

This control is used to adjust the level of respective channel signal sent to the Auxiliary Bus. The configuration is post-fader so the signal sent to the AUX Bus will be affected by the LEVEL control of that particular channel. In this typical compact unit, the channel signal is not only assigned to external effect or processor equipment directly but also to internal digital multieffect.

EQUALIZATION

You have two EQ controls for each mono input channel each providing +/-15 dB of boost and cut. The signal will be unaffected when the controls are on center position.



4. CONTROL ELEMENTS

5 HI

If you turn this control up, you will boost all the frequencies above 12 kHz (shelving filter). You will add transparency to vocals and guitar and also make cymbals crispier. Turn the control down to cut all frequencies above 12 KHz. In such way, you can reduce sibilances of human voice or reduce the hiss of a Tape player.

6 LOW

If you turn this control up, you will boost all frequencies below 80 Hz. You will give more punch to bass drums and bass guitar; and you will make the male vocalist more "macho". Turn it down and you will cut all the frequencies below 80 Hz. In this way, you can avoid low-frequency vibrations and resonance thus preserving the life of your woofers.

7 TAPE IN

Your PBM4 features dual RCA jacks (left and right). If you wish to listen to your monitor from a tape recorder, DAT or cassette, please use these tape input jacks. You can connect the outputs of a CD Player, MP3 Player, iPOD or another line-level stereo source to these RCA sockets and adjust the level control. It is a very useful extra stereo channel.

8 TAPE OUT

Via these jacks, you can route the main out signal into a tape recorder or DAT to record your event.

9 LEVEL

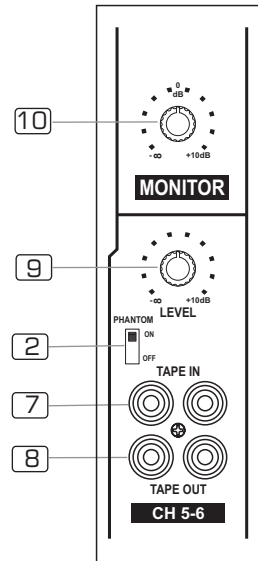
This knob will control the level of the signal applied to TAPE IN RCA input.

10 MONITOR

This knob will control the level of the signal sent to the monitor output

11 GRAPHIC EQ

Your PBM4 is equipped with a 7-bands graphic equalizer. Via these faders, you can boost or attenuate the selected frequency by 15dB at a preset bandwidth. When all faders are on center position, the signal will be unaffected.

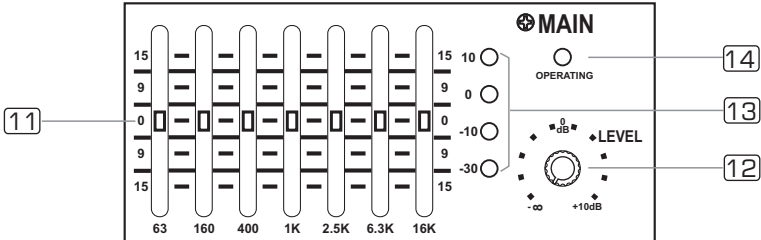




4. CONTROL ELEMENTS

12 MAIN LEVEL

This control sets the amount of signal simultaneously sent to the MAIN MIX OUTPUT and TAPE OUT.



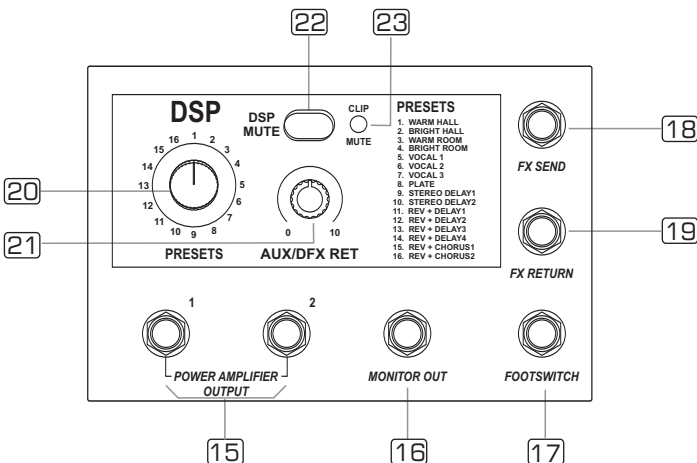
13 LED METER

This meter has 4 leds with range of -30 dB to $+10$ dB (CLIP). The 0 led corresponds to a level output of 0 dBu. The $+10$ led comes to life when the output reaches $+10$ dBu. Set the MAIN LEVEL control so that the Meter leds operates in the range -10 to 0. If you exceed 0, you will get distortion. If even -30 leds are sleeping your signal-to-noise ratio will suffer.

14 OPERATING

This LED indicates when your PBM4 is switched-on.

MASTER SECTION AND CONNECTIONS





4. CONTROL ELEMENTS

15 POWER AMPLIFIER OUTPUT

The TWO jacks are used to output the main mix signal into external passive speakers.

16 MONITOR OUTPUT

This jack is used to connect the input of external active monitor speaker or power amplifier. If you connect a stereo amplifier you can use it in PARALLEL MONO Mode. In this way you will use only one input channel of the amplifier but you still have available 2 separate output channels each one with its own volume control.

17 FOOTSWITCH

You can connect an optional external footswitch to turn on/off the onboard multieffects module. It is a 1/4 " phone jack.

18 FX SEND

This 1/4" phone socket is used to send out the signal from the AUX bus of the input channels into external devices such as effect units.

19 FX RETURNS

You can use this stereo 1/4" phone socket to return the signal of an effect unit to the Main Mix. Alternatively you can use IT as an extra auxiliary input using the AUX RETURN level control as volume control.

DSP SECTION

Your PBM4 features a 24-bit, 16-presets digital multieffects including reverbs, chorus, vocal and delay, etc.

20 PRESETS

Adjust this knob to select the desired effect.

21 AUX/DFX RET

This control is used to adjust the level of the return signal coming from external/internal multieffect effect. The signal of the AUX RETURN will be sent to MAIN MIX OUTPUT. If you connect a sound source to the FX RETURN input such as CD Players, etc, you can use this knob to control the input level of such source.

22 DSP MUTE

This switch is used to activate/deactivate the resident multieffect. Alternatively, you can also use the FOOTSWITCH jack.



4. CONTROL ELEMENTS

23 CLIP/MUTE

This LED lights up when the input signal is too strong. In case of the digital effect module being muted, this LED also lights up.

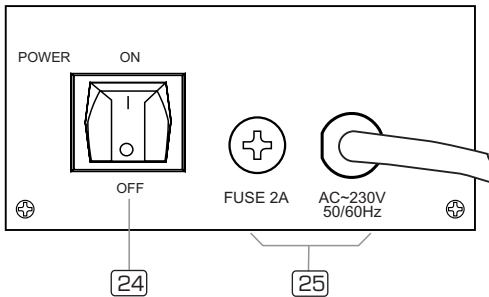
REAR PANEL

24 POWER ON/OFF

This switch is used to turn the main power ON/OFF.

25 AC INLET with FUSE 2A

Use it to connect your PBM4 to the main AC with the supplied AC cord. Please check the voltage available in your country and how the voltage for your PBM4 is configured before attempting to connect your PBM4 to the main AC.





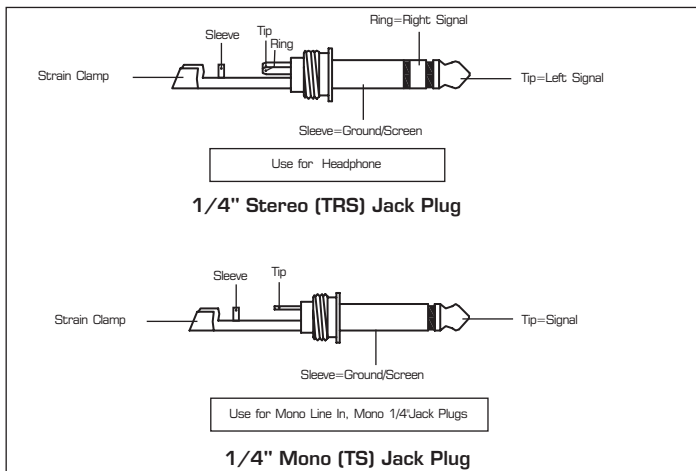
5. INSTALLATION AND CONNECTION

Ok, you have got to this point and you are now in the position to successfully operate your PBM4. However, we advise you to read carefully the following section to be the real master of your own mix. Not paying attention enough to the input signal level, to the routing of the signal and the assignment of the signal will result in unwanted distortion, a corrupted signal or no sound at all. So you should follow this procedure for every single channel:

1. Turn down all Input and output gain controls.
2. Connect phantom powered microphones before switching on the +15 Volt phantom power switch.
3. Set the output level of your PBM4 or the connected power amplifier at no more than 75%.
4. Now, set the MONITOR level at no more than 50%. In this way you will be able to hear later what you are doing connecting a pair of headphones or a pair of powered studio monitor speakers.
5. Position EQ controls on middle position.
6. Increase the input gain properly for maintaining the good headroom and ideal dynamic range.
7. Depending on the actual application, turn slowly the input and output level controls for obtaining the maximum gain before distortion.
8. Now repeat the same sequence for all input channels. The main LED meter could move up into the red section. In this case you can adjust the overall output level through the MAIN MIX control.

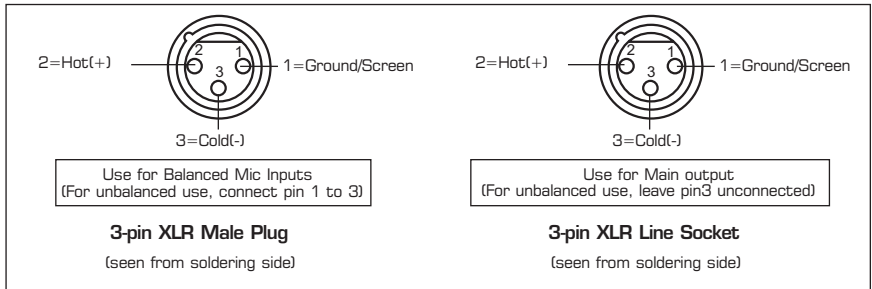
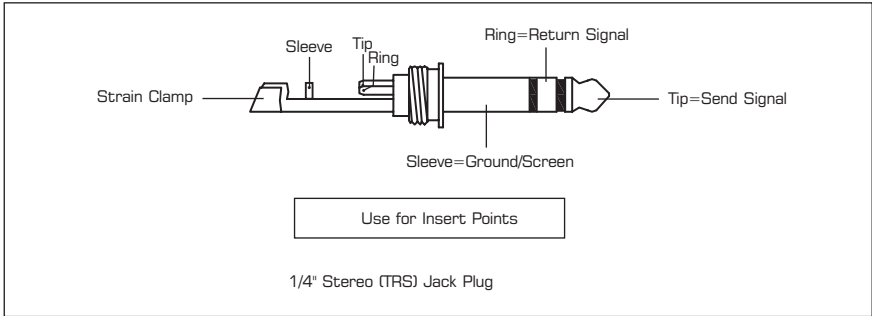
Audio Connections

You can connect unbalanced equipment to balanced inputs and outputs. Simply follow these schematics.



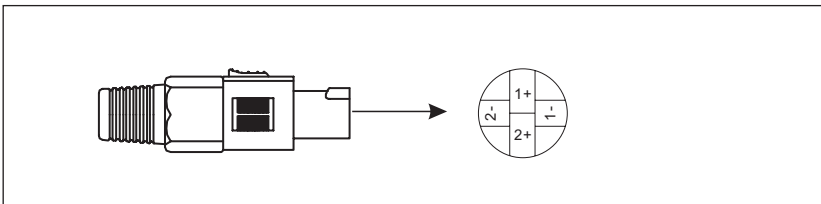


5. INSTALLATION AND CONNECTION



MAIN SPEAKERS CONNECTION

Please use only the power connectors to make connections with other signal source equipment for the passive speaker cabinets. The power connector has four terminals: 1+, 1-, 2+, 2-.

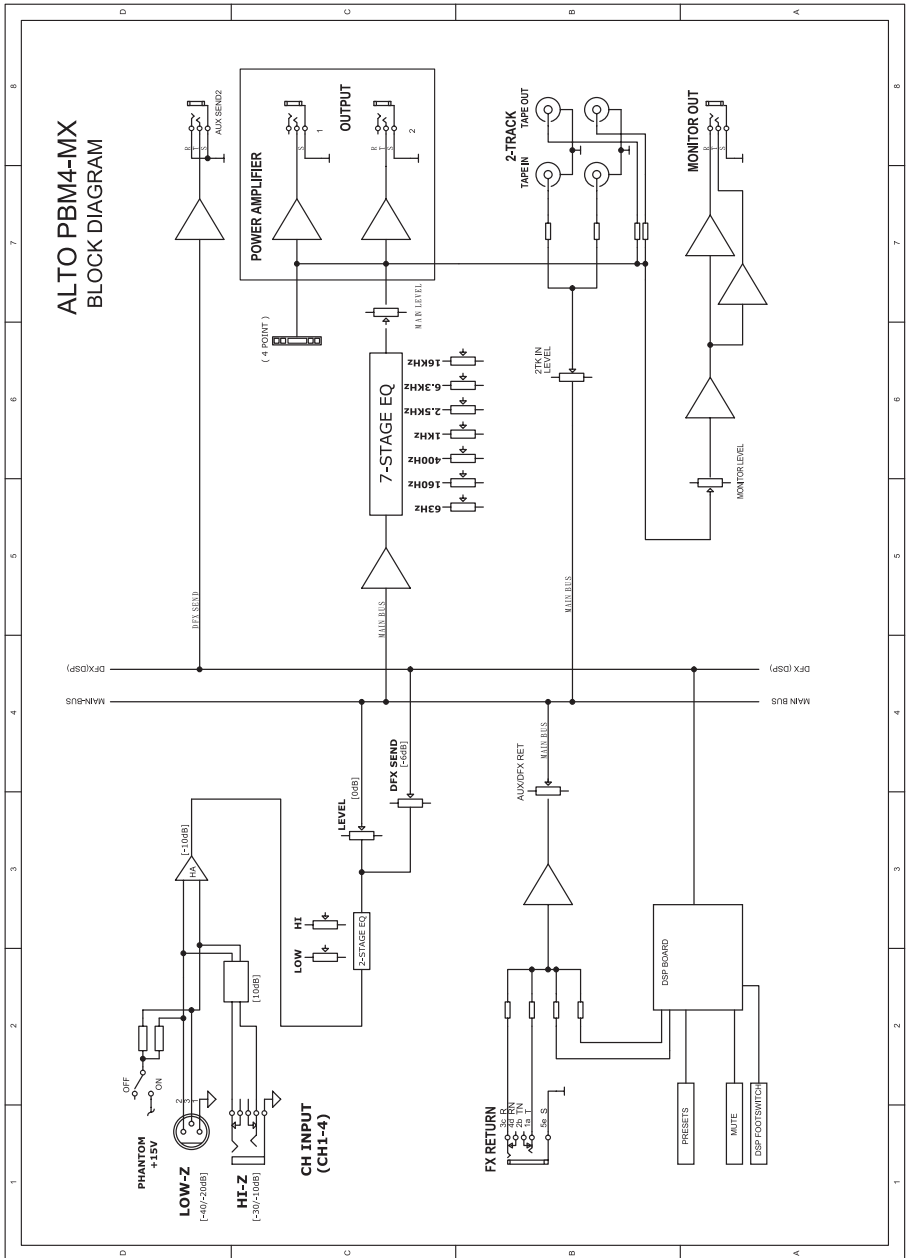


Speakon connector

6. PRESET LIST

NO.	Preset	Description	Controllable Parameter	
			Parameter	Variable range
1	WARM HALL	Simulate a small acoustic space of the sound.	Rev.decay time Pre-delay	360ms 45ms
2	BRIGHT HALL	Simulate a large acoustic space of the sound.	Rev.decay time Pre-delay	290ms 23ms
3	WARM ROOM	Simulate a small acoustic space of the sound.	Rev.decay time Pre-delay	210ms 45ms
4	BRIGHT ROOM	Simulate a studio room with many early reflections	Rev.decay time Pre-delay	210ms 23ms
5	VOCAL1	Simulate a room with delay time.	Rev.decay time	450ms
6	VOCAL2	Simulate a room with small delay time.	Rev.decay time Pre-delay	240ms 25ms
7	VOCAL3	Simulate a small space with slight decay time.	Rev.decay time Pre-delay	100ms 114ms
8	PLATE	Simulate the transducers sound like classic bright vocal plate.	Rev.decay time Pre-delay	290ms 10ms
9	STEREO DELAY 1	Recreate the input sound on the stereo output with different time.	Period	352ms
10	STEREO DELAY 2	Recreate the input sound on the stereo output with different time.	Period	238ms
11	REV + DELAY 1	Delay with room effect.	Delay period Rev.decay time	326ms 290ms
12	REV + DELAY 2	Delay with room effect.	Decay period Rev.decay time	211ms 240ms
13	REV + DELAY 3	Delay with room effect.	Decay period Rev.decay time	375ms 210ms
14	REV + DELAY 4	Delay with room effect.	Decay period Rev.decay time	277ms 150ms
15	REV + CHORUS1	Stereo chorus and large room reverb	Chorus rate Rev.decay time	3.67Hz 290ms
	REV + CHORUS2	Stereo chorus and large room reverb	Chorus rate Rev.decay time	3.02Hz 150ms

7. BLOCK DIAGRAM



8. TECHNICAL SPECIFICATION

Input channels

Microphone Input	Electronically balanced, discrete input configuration
Frequency response	10 Hz to 55 kHz, +/- 3 dB
Distortion(THD&N)	0.05% at +4 dBu, 1 kHz
Gain	30 dB
SNR(Signal to Noise Ratio)	>94 dB
Line input	Electronically balanced
Frequency response	10 Hz to 55 kHz, +/- 3 dB
Distortion(THD&N)	0.05% at +4 dBu, 1 kHz
Gain	10 dB

Impedances

Microphone Input	1.4 kOhm
Channel Insert return	2.5 kOhm
All other inputs	10 kOhm or greater
Tape out	1 kOhm
All other outputs	120 Ohm

Equalization

Hi shelving	+/-15 dB@12 kHz
Low shelving	+/-15 dB@80 Hz

DSP Section

A/D and D/A converters	24bit
DSP resolution	24bit
Type of effects	HALL, ROOM, VOCAL, PLATE, STEREO DELAY REV+DELAY, and REV+CHORUS combinations
Presets	16
Controls	16-position PRESET selector CLIP LED MUTE SWITCH with LED indicator

Main Mix Section

Noise(Bus noise)	Fader 0 dB, channels muted: -85 dB _r (ref.: +4 dBu) Fader 0 dB, all input channels assigned and set to UNITY gain: -81 dB _r (ref.: +4 dBu)
Monitor max out	+22 dBu unbalanced, 1/4"jacks
FX Sends max out	+22dBu

Amplifier Section

Output Power	70W x 2 RMS (Nominal power) 82W x 2(EIAJ)
Frequency Response	25 Hz-20 kHz
Output Impedance	8 ohm

Power Supply

Main voltage	USA/Canada	100 - 120V~, 60 Hz
	Europe	210 - 240V~, 50 Hz
	U.K./Australia	240V~, 50Hz
Power Consumption	260 watts	
Fuse	100-120V~: T4A	
	210-240V~: T2A	

Physical

Dimension	216.5x143.5x152.5mm(LxWxH)(8.5"x5.6"x6")
Net Weight	9.5 Kg
Gross Weight	11.34 Kg

8. 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 provide 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.

SEIKAKU TECHNICAL GROUP LIMITED
NO. 1, Lane 17, Sec. 2, Han Shi West Road, Taichung 40151, Taiwan
<http://www.altoproaudio.com> Tel: 886-4-22313737
email: alto@altoproaudio.com Fax: 886-4-22346757

All rights reserved to ALTD. All features and content might be changed without prior notice. Any photocopy, translation, or reproduction of part of this manual without written permission is forbidden. Copyright ©2007 Seikaku Group

NF02055-1.2