



User's Manual

PBM4D SISTEMA

PORTABLE PA SYSTEM



www.altoproaudio.com
Version 1.3 NOV. 2007

English

IMPORTANT SAFETY INSTRUCTION



CAUTION

RISK OF ELECTRIC SHOCK
DO NOT OPEN



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.

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1. INTRODUCTION

Thank you for purchasing the amazing portable PA system PBM4D SISTEMA.

This system is small enough to fit into any airplane's overhead storage compartment yet being flexible and powerful enough to be used for small gigs and professional multimedia presentations. PBM4D SISTEMA includes a 45+45 watt stereo amplifier, a 5-channel mixer, and 2x5" full range speakers. The chassis is made by moulded polypropylene for shock and moisture protection. Your PBM4D SISTEMA also includes a 24 Bit digital multieffect with 16 Factory Presets. Your PBM4D SISTEMA is the ideal tool for: Multimedia Presentations, Weddings, Small Church Functions, Gym, Music Rehearsal, Small Gigs, School Functions, and more...

Enjoy your PBM4D SISTEMA and make sure to read this Manual carefully before operation!

2. FEATURES

- ▲ Compact moulded polypropylene case
- ▲ Modern design & Lightweight
- ▲ 2x5" full range speakers
- ▲ 3-band equalizer on input channels
- ▲ 5 Input channels with individual Volume control and 2 bands EQ
- ▲ 3 bands Master EQ
- ▲ 3 XLR microphone Inputs with phantom power(+15V)
- ▲ 2 RCA Line Inputs
- ▲ 2 RCA Line Outputs
- ▲ Monitor/Headphone output
- ▲ Monitor/Headphone level control
- ▲ 2 powered output (45+45 watt) for optional external speakers
- ▲ 16-preset digital effect processor

3. QUICK START

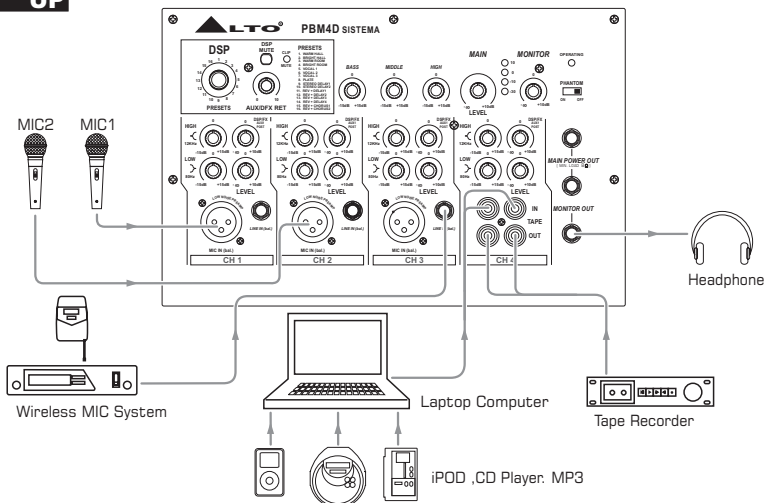
This is the fastest way to get something out from your PBM4D SISTEMA, if you have a keyboard and a microphone.

- a. Well, there is not really much to say before starting to operate the PBM4D SISTEMA. It includes Mixer, Amplifiers and Speakers, so just put it on a clean table first and make sure that the Power switch on the back panel is on OFF position.
- b. Turn down the Input Channel Gain Controls and the MAIN and MONITOR controls.
- c. Keep Input Channel EQ and Master EQ controls in center position.
- d. Only at this point you can connect the AC cable into an AC socket and you can switch the system ON.
- e. Now connect a microphone into Channel 1-3 or a Line Instrument into Channel 4.
- f. Slowly turn up the Input Channel LEVEL Control and then the MAIN Control.
- g. For an optimal sound reproduction make sure that the -10 and 0 LEDs on the Master LED Meter are blinking.

Here you are. It is your first gig with your PBM4D SISTEMA..



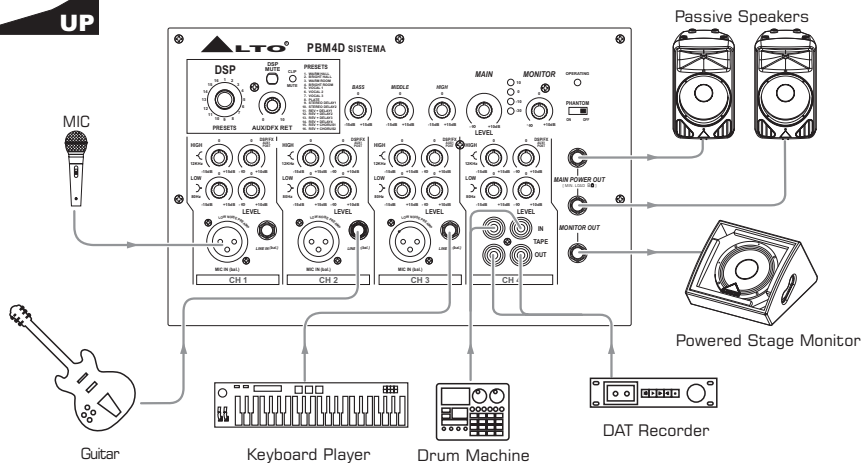
MULTIMEDIA PRESENTATION



This will be typical setting for a Business Presentation making use of PowerPoint slides and background music/effects generated by CD player, iPod or other sources such as Mp3 Players. The Presenter has up to 2 microphones available and a wireless microphone can also be connected for the use of the audience. The entire presentation can be recorder via Tape or DAT Recorder.



SMALL GIG WITH EXTERNAL SPEAKERS



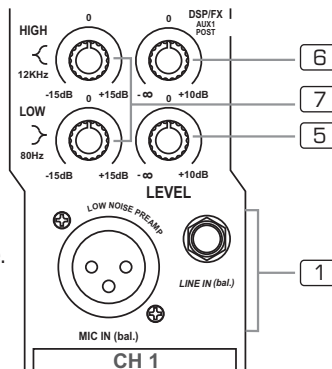
In this case up to three Musicians (Vocalist, Guitar Player and Keyboard Player) can hookup to the PBM4D SISTEMA and an additional Drum Machine can also be connected to the Stereo Channel. Two external passive speakers can be connected (the internal speakers will be automatically be disconnected) as well as a powered stage Monitor:



4. CONTROL ELEMENTS

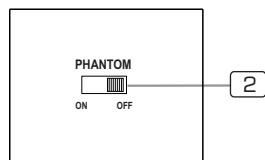
1 THE MONO INPUT CHANNELS

These are marked CH1 to CH3 and include a balanced XLR socket (MIC IN) and an unbalanced 1/4" socket (LINE IN). Use the XLR socket to connect a low impedance balanced dynamic microphone or a low level signal. You can also connect a Condenser microphone into the XLR socket (See following about Phantom Power). Use the LINE IN socket to connect a Line Level Instrument such as a keyboard or a drum machine. You can also connect an electric guitar or bass through an option DI Box (Direct Injection Box)



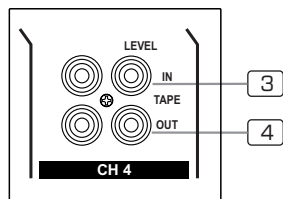
2 PHANTOM POWER SWITCH

When the (2) switch is at ON position, a +15V phantom power will be applied to CH1 through CH3. Only Condenser microphones need Phantom Power, so switch it OFF when you use dynamic microphones.



3 TAPE IN

Here you can connect a stereo Line Level via RCA sockets. Usually this stereo channel will be used to connect into the PBM4D SISTEMA with the audio output of a Computer, or a CD Player, iPOD, MP3 player, etc.



4 TAPE OUT

Via these two RCA sockets you can route out the Main Stereo signal usually to a Tape Recorder or DAT Recorder.

5 LEVEL CONTROL

It adjusts the LEVEL of individual channels with a range from $-\infty$ to +10dB.

6 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 multi-effect.



4. CONTROL ELEMENTS

7 CHANNEL EQ

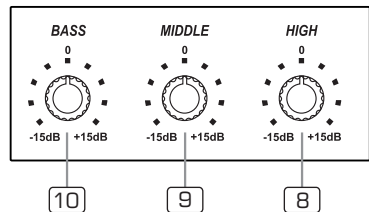
Each Input channel has its own 2 bands equalizer with an adjustable range of $\pm 15\text{dB}$. The HIGH control creates a shelving filter that will boost/cut all frequencies above 12kHz. You can use it to eliminate high frequency noise and hiss (such as those produced by Tape Recorders) or to boost and make crispier the cymbals or certain harmonics of the human voice. The LOW control will create a shelving filter that will boost/cut frequencies below 80Hz. Use the LOW control to put in evidence Kick Drum or enhance male voice.

THREE BANDS MASTER EQ

This equalization circuit is inserted before the MAIN level control. You have available 3 controls: BASS, MIDDLE and HIGH.

8 HIGH

Use it as a further boost to the overall MIX to get more colour from your program or turn the control down if you want to avoid high frequency noise.



9 MIDDLE

This is a unique control designed for a wide variation of middle frequencies. Turn the control down (from center position) and you will make the human voice more warm and smooth while turning the control up will enhance vocal intelligibility. Be careful not to boost these frequencies too much to avoid feedback on microphone inputs.

10 LOW

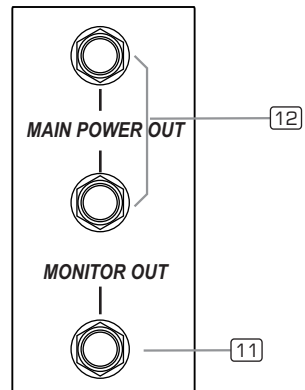
Turn the control down (from center position) if you experience rumble or low frequency noise or turn it up to make the PBM4D SISTEMA sound much bigger than what it is.

11 MONITOR OUT

Connect a powered Monitor to this socket or an external Amplifier + Monitor Speaker. You can also use it to connect a pair of Headphones.

12 MAIN POWER OUT

You can connect a pair of passive speakers to these Output sockets. In this case, the internal speakers will be disconnected and the 45 watt x 2 internal amplifier signal will be assigned to these sockets.





4. CONTROL ELEMENTS

13 MAIN

There is the Main Mix Control adjusting the overall volume assigned to the 2 internal speakers or to the MAIN POWER OUT speakers.

14 MAIN LED METER

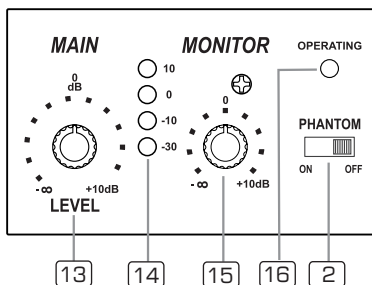
This 4 segments LED Meter will monitor the volume assigned by the MAIN level control. If the +10 LED flashes, you have reached the limit of the internal 45+45W amplifier and the outgoing signal is approaching distortion. +10 LED should flash only occasionally. If no LED is blinking, it means that the output level is too low, so either you do not hear any music or the signal is too low to the noise level. For optimal functioning LEDs marked -10 and 0 should always be blinking.

15 MONITOR

Via this Control, you can adjust the signal Level applied to the MONITOR OUT sockets.

16 OPERATING

This LED will blink when your PBM4D SISTEMA is switched ON.



DSP SECTION

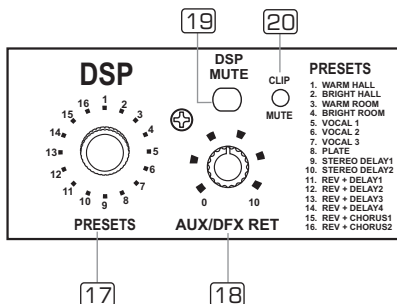
Your PBM4D SISTEMA features a 24-bit, 16-presets digital multi-effects including reverbs, chorus, vocal and delay, ect.

17 PRESETS

Adjust this knob to select the desired effect.

18 AUX/DFX RET

This control is used to adjust the level of the signal coming from internal multi-effect .



19 DSP MUTE

This switch is used to activate/deactivate the resident multi-effect.



4. CONTROL ELEMENTS

20 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.

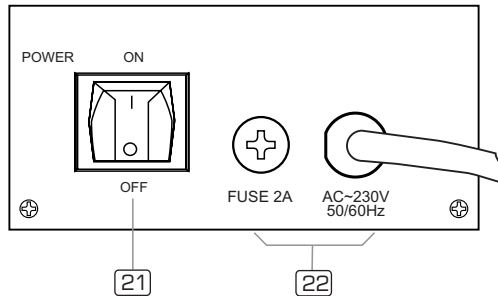
REAR PANEL

21 POWER ON/OFF

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

22 AC INLET

Use it to connect your PBM4D SISTEMA to the main AC with the supplied AC cord. Please check the voltage available in your country and how the voltage for your PBM4 SISTEMA is configured before attempting to connect your PBM4D SISTEMA to the main AC.





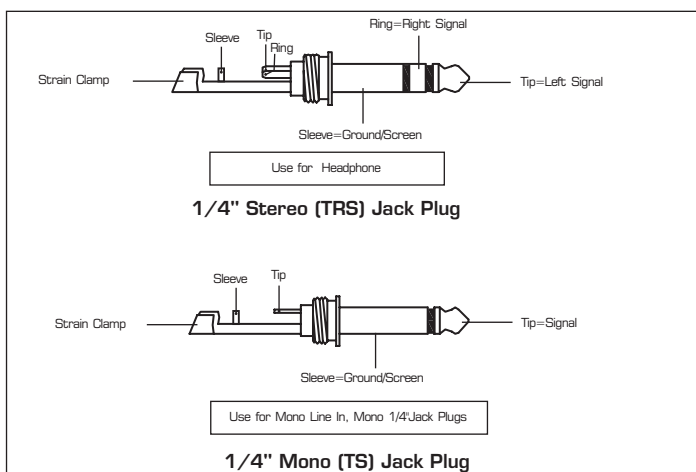
5. INSTALLATION AND CONNECTION

Ok, you have got to this point and you are now in the position to successfully operate your PBM4D SISTEMA. However, we advise you to read carefully the following section to be the real master of your own mix. Not paying enough attention 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 +15Volt phantom power switch.
3. Set the output level of your PBM4D SISTEMA 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.

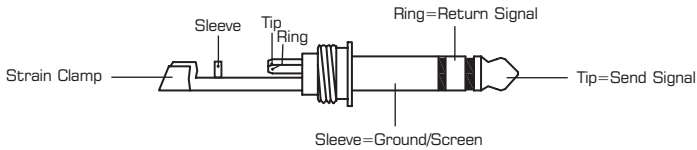
Audio Connections

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



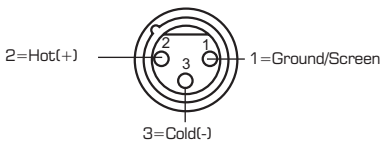


5. INSTALLATION AND CONNECTION



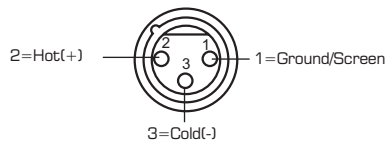
Use for Insert Points

1/4" Stereo (TRS) Jack Plug



Use for Balanced Mic Inputs
(For unbalanced use, connect pin 1 to 3)

3-pin XLR Male Plug
(seen from soldering side)

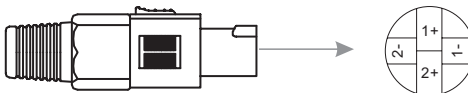


Use for Main output
(For unbalanced use, leave pin3 unconnected)

3-pin XLR Line Socket
(seen from soldering side)

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-.

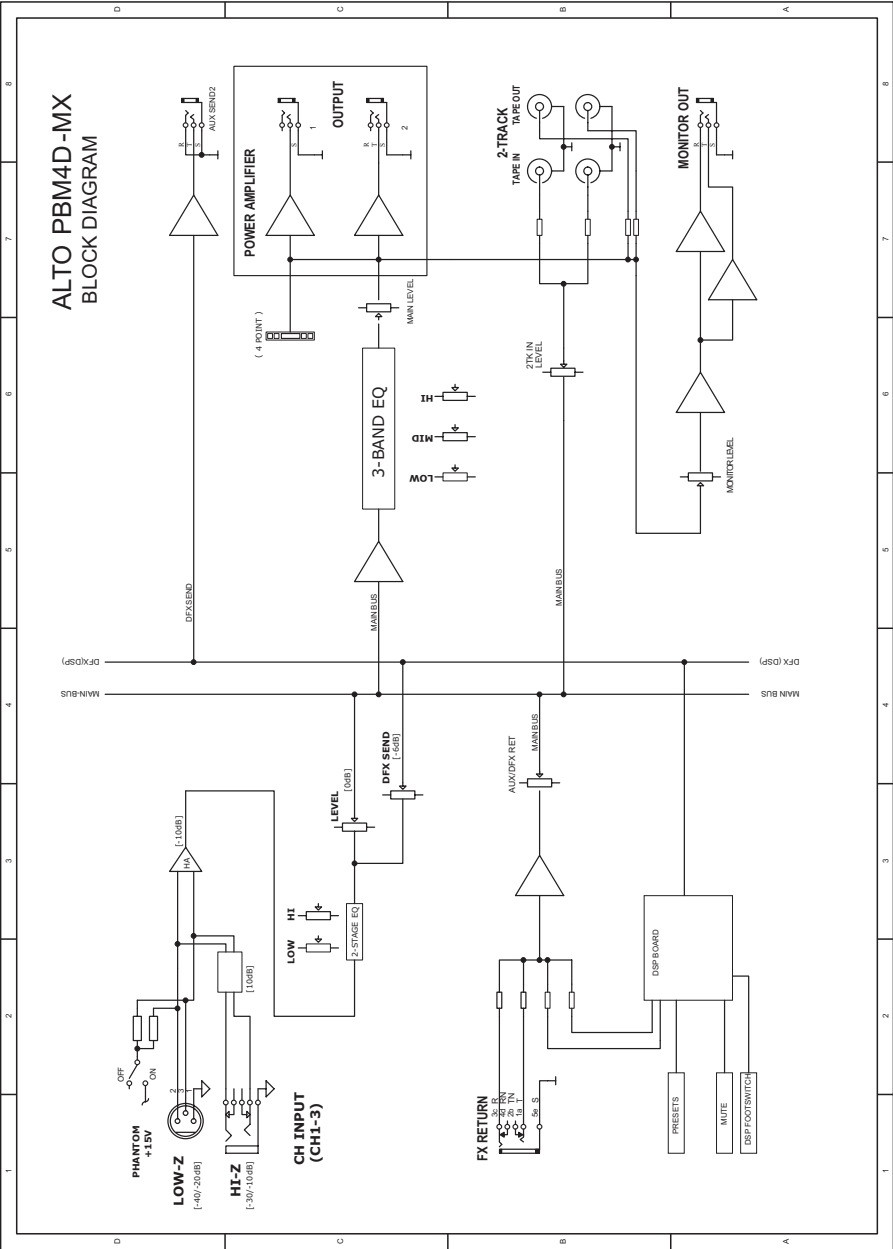


Speakon connector

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.	Decay 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
16	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 dBr (ref.: +4 dBu) Fader 0 dB, all input channels assigned and set to UNITY gain: -81 dBr(ref.: +4 dBu)
Monitor max out	+22 dBu unbalanced, 1/4"jacks
FX Sends max out	+22 dBu

Amplifier Section

Output Power	45W x 2 RMS (Nominal power) 66W 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	133 watts	
Fuse	100-120V~: T4A	
	210-240V~: T2A	

Physical

Dimension	216.5x143.5x152.5mm(LxWxH)(8.5"x5.6"x6")
Net Weight	12.6 Kg
Gross Weight	14.45 Kg

9. 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.

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