

# User's Manual

## OEX-400



[www.altoproaudio.com](http://www.altoproaudio.com)

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— 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.



Disposing of this product should not be placed in municipal waste and should be Separate collection.

### 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.

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## 1. INTRODUCTION

Congratulations! Now you are the owner of the OEX-400. The OEX-400 is a plastic reinforced trolley that includes a versatile mixer with DSP effects, L&R full range speaker cabinets. Besides, this package also includes some essential accessories such as power cord, signal cables, speaker cables. In order to ensure high versatility and excellent audio performances, the OEX-400 adopts optimal crossover frequency and advanced power amplifier technologies.

The L&R speaker cabinets are tightly hooked on the trolley. When you operate the OEX-400, first of all take care of the setting of the L&R cabinets. It is the development of ALTO's experience and knowledge in speakers field, in order to faithfully reproduce sound for each kind of applications.

Inlaid in OEX-400 panel there's a compact extractable 7-channel mixer, which adopts 24-bit A/D&D/A converters and 24-bit DSP effects with accurate algorithms (16 presets). It also provides 4 MIC inputs with ultra low noise microphone pre-amplifiers, natural 2-band EQ; AUX send/return and 2TK in/out and so on.

In a word, it is ideally suited for live sound applications, small venues applications, live recording and many other musical purposes.

In order to get the best performances from your OEX-400, we recommend you to thoroughly read this owner's manual before installation and operation.



## 2. FEATURES

- Trolley appearance
- 2 (two-SPEAKER) + 1 (7-channel mixer super combination)
- One-way full-range speaker system
- 4 XLR MIC input with ultra low noise microphone pre-amplifiers
- 1 stereo LINE input
- Warm, natural 2-band EQ for each channel
- Precision level control
- 24-bit DSP effects with powerful algorithms (16 presets)
- Extremely high headroom offering excellent dynamic range
- Plastic reinforced cabinet (polypropylene)
- 350W (EIAJ) of Power
- Two 10m speaker cables
- Two folding speaker
- Compartment for store following accessories



### Accessory List:

- ① Power cord
- ② Customized Speaker Cable
- ③ MIC
- ④ F-8 stands (optional)
- ⑤ F-3 stands (optional)
- ⑥ F-8 stand adaptor (optional)

- 1 x IEC power cord
- 2 x 10m
- 2 x 5m



①



②



③



### 3. CONTROL ELEMENTS



### 3.1 MONO INPUT CHANNELS

1

You can connect balanced, low impedance microphones or a low level signal to the XLR socket. In addition, for CH4/5 you can connect a stereo input signal with RCA jack.

### 3.2 STEREO INPUT CHANNEL

2

There is CH1 through CH3, which comes with balanced MIC IN and LINE IN connectors. Use the XLR (MIC IN) socket to connect low impedance microphone or low level signal. Use the 1/4" TRS (LINE IN) jack to connect either a microphone or a line level instrument such as synthesizers, drum machines, effect processors or any other line level signal.

### 3.3 LEVEL CONTROL

3

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

### 3.4 DSP/FX AUX1 POST CONTROL

4

This control is configured as POST-FADER, so the audio signal will be affected by channel level control. Via the FX SEND socket, the AUX1 signal can be sent to an external effect device.

### 3.5 EQUALIZER

Your OEX-400 features a 2-band equalizer allowing you to adjust the high and low frequencies separately on each mono channel. Both bands provide up to +15dB of boost or cut.

#### HIGH

5

This is the treble control. You can use it to get rid of high frequency noises or to boost the sound of cymbals or the high harmonics of the human voice. The gain range goes from -15dB to +15dB with a center frequency of 12kHz.

#### LOW

6

This is the bass control. It is used to boost male voice or kick-drum and bass guitar. Your system will sound much bigger than what it is. The gain range goes from -15dB to +15dB and the center frequency is 80Hz.

### 3.6 TPAE IN

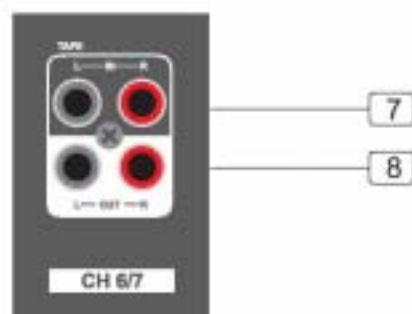
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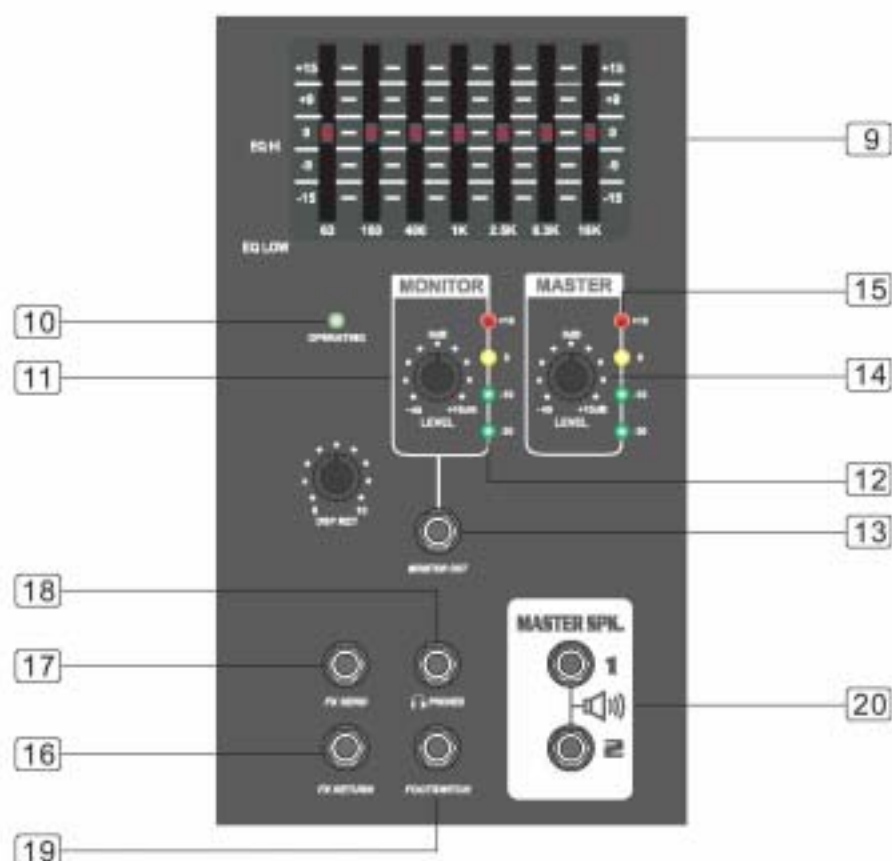
The signal input of CH6/7 is used to connect to dual RCA jacks (left and right). If you wish to listen to your monitor from a tape recorder, DAT or cassette, please use these tape input jacks.

### 3.7 TAPE OUT

8

Via these jacks, you can route the main out signal into a tape recorder or DAT for recording.





### 3.8 GRAPHIC EQ

9

Your OEX-400 is equipped with a graphic equalizer, and provides 7-band fader controls. Via these faders, you can boost or attenuate the selected frequency by 15dB at a preset bandwidth. When all faders are at the center position, the output of the equalizer is flat response. They are used to modify the frequency "contour" of a sound. The EQ function will be activated automatically as soon as you operate your OEX-400.

### 3.9 OPERATING LED

10

This LED indicates when the power is switched on in your OEX-400.

### 3.10 MONITOR LEVEL CONTROL

11

This control is used to adjust the level of monitor output.

### 3.11 MONITOR LEVEL LED

12

The 4-segment LED meter is used to indicate the monitor output level.

### 3.12 MONITOR OUTPUT

13

This jack is used to connect the output of stereo monitor signal.

### 3.13 MASTER LEVEL CONTROL

14

This control is used to adjust the overall volume of main mix output, and the signal also input to the preamplifier.

### 3.14 MASTER LEVEL LED

15

The 4-segment LED meter is used to indicate the master output level.



### 3.15 FX RETURN 16

This jack is used to return the sound of an effect unit to the main mix. You can also use it as the extra auxiliary inputs.

### 3.16 FX SEND 17

This jack is used to send out the signals from AUX bus.

### 3.17 PHONE 18

This 1/4" stereo phone jack is used to connect the stereo phone.

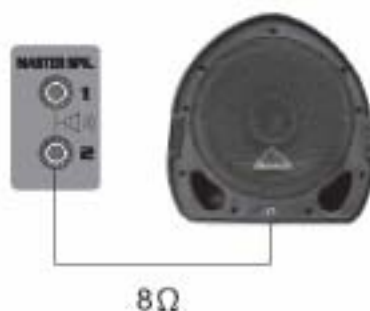
### 3.18 FOOTSWITCH 19

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

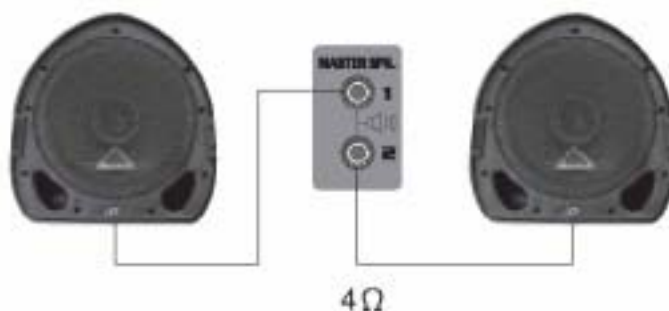
### 3.19 MASTER SPK 20

The SPEAKER 1&2 phone jacks output the main signal from the internal power amplifier and are used to connect speakers. They are internally connected in parallel and output the same signal.

Connecting one speaker



Connecting two speakers



Note : The total impedance of the connected speaker system must be between 4 and 8 ohms. This means that you can connect one speaker system with an impedance of between 4 and 8 ohms to one SPEAKER jack, or two speaker systems each with an impedance of between 8 and 16 ohms to each SPEAKER jack. Do not connect anything other than speakers to these jacks.



### 3.20 DSP SECTION

Your OEX-400 features the special 16-preset digital effect, further details please refer to following content.

#### - DSP RET 21

This control is used to adjust the volume of DSP RETURN.



#### - DSP EFFECT ON 22

This switch is used to activate/deactivate the effect facility. Sometimes, you can also use the FOOTSWITCH jack for convenient operation.

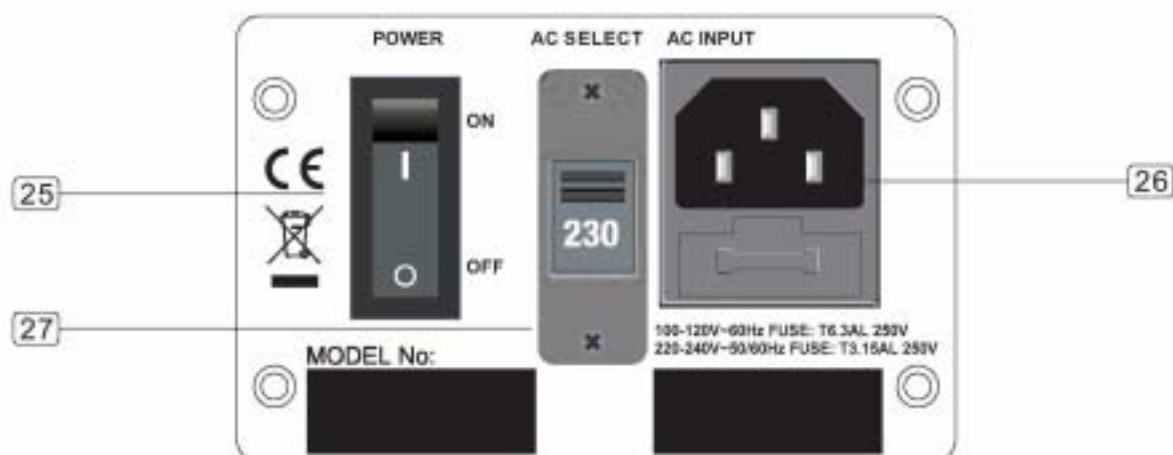
#### - PRESETS 23

Adjust this knob to select the right effect you wish to perform. There are total 16 options for you: WARM HALL, BRIGHT HALL, WARM ROOM, BRIGHT ROOM, VOCAL 1, VOCAL 2, VOCAL 3, PLATE, STEREO DELAY1, STEREO DELAY2, REV + DELAY1, REV + DELAY2, REV + DELAY3, REV + DELAY4, REV + CHORUS1 and REV + CHORUS2.

#### - CLIP/MUTE LED 24

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.

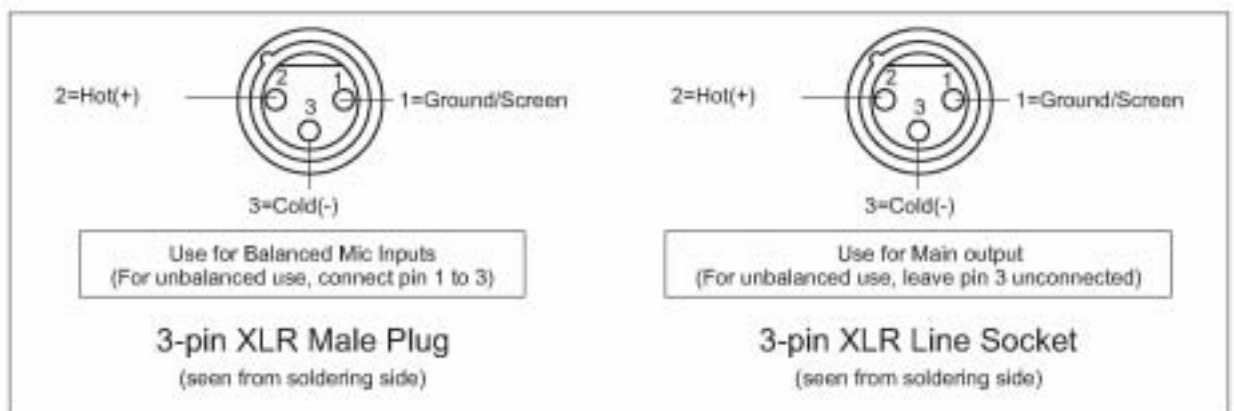
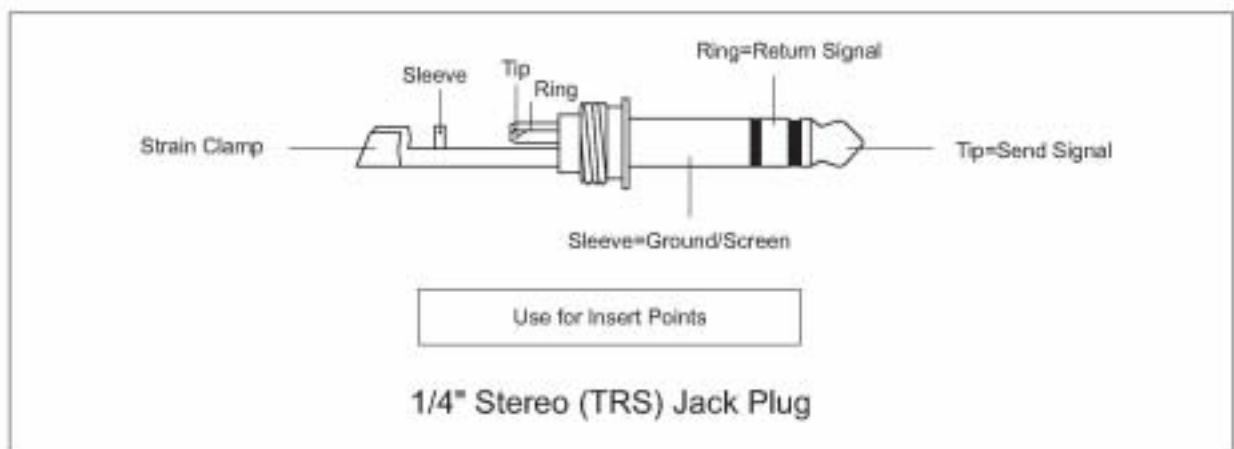
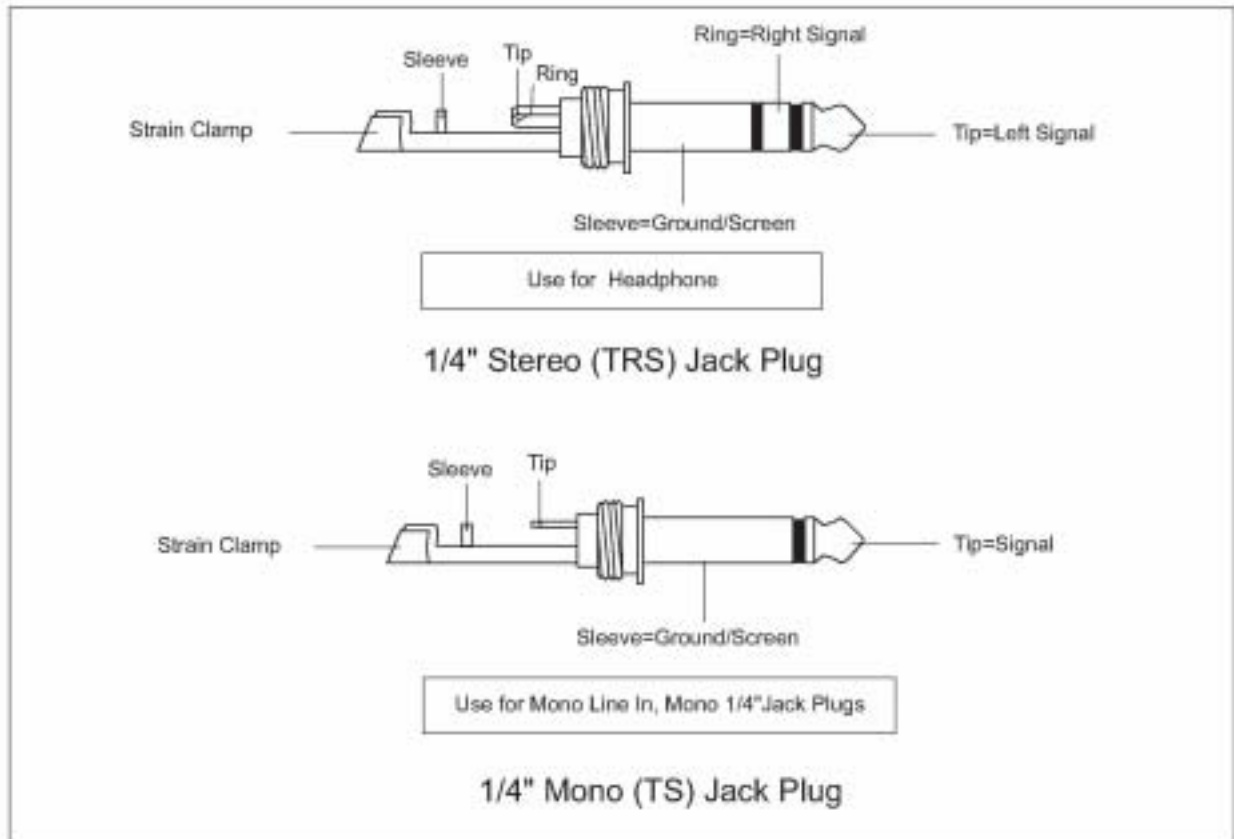
### 3. 21 REAR PANEL



- POWER ON/OFF 25  
This switch is used to turn the main power ON/OFF.
- AC inlet 26  
This jack is used to connect the unit to the mains with the enclosed power cord. (Depends on applicable country regulations)
- AC SELECT 27  
Before connecting the OEX-400 to the mains supply first check that the Voltage Selector is showing the correct voltage for your country.

## 4. AUDIO CONNECTIONS

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





## 5. PRESET LIST

No.	Preset	Description	parameter
1	WARM HALL	Simulate a small acoustic space of the sound.	Rev. Decay time: 360ms Pre-delay: 45ms
2	BRIGHT HALL	Simulate a large acoustic space of the sound.	Rev. decay time: 290ms Pre-delay: 23ms
3	WARM ROOM	Simulate a small acoustic space of the sound.	Rev. decay time: 210ms Pre-delay: 45ms
4	BRIGHT ROOM	Simulate a studio room with many early reflections.	Rev. Decay time: 210ms Pre-delay: 23ms
5	VOCAL 1	Simulate a room with without delay time.	Rev. decay time: 450ms
6	VOCAL 2	Simulate a room with small delay time.	Rev. decay time: 240ms Pre-delay: 25ms
7	VOCAL 3	Simulate a small space with slight decay time.	Rev. decay time: 100ms Pre-delay: 114ms
8	PLATE	Simulate the transducers sound like classic bright vocal plate.	Pre-delay: 10ms Rev. decay time: 290ms
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: 326ms Rev. decay time: 290ms
12	REV + DELAY 2	Delay with room effect.	Delay period: 211ms Rev. decay time: 240ms
13	REV + DELAY 3	Delay with room effect.	Delay period: 375ms Rev. decay time: 210ms
14	REV + DELAY 4	Delay with room effect.	Delay period: 277ms Rev. decay time: 150ms
15	REV + CHORUS1	Simulate the sound effect achieved by rotating horn speakers and a bass cylinder.	Chorus rate: 3.67Hz Rev. decay time: 290ms
16	REV + CHORUS2	Simulate the sound effect achieved by rotating horn speakers and a bass cylinder.	Chorus rate: 3.02Hz Rev. decay time: 150ms

## 6. TECHNICAL SPECIFICATIONS

- Mixer Section

Mono input channels (CH1~3)	Microphone input	Electronically balanced, discrete input configuration
	Frequency response	10Hz to 50KHZ, +/- 3dB
	Distortion (THD&N)	0.04% at 0dBu, 1KHz
	Input level	-15dBu
	SNR(Signal to Noise Ratio)	> 94dB
	Line input	Electronically balanced/unbalanced
	Frequency response	10Hz to 50KHZ, +/- 3dB
	Distortion (THD&N)	0.015% at 0dBu, 1KHz(DSP EFFECT OFF, TAPE OUT)
Stereo input channels (CH4~7)	Input level	0dBu
	Line input	Balanced/Unbalanced
	TAPE input	Unbalanced, RCA phone
	Frequency response	10Hz to 50KHZ, +/- 3dB
	Distortion (THD&N)	0.015% at 0dBu, 1KHz(DSP EFFECT OFF, TAPE OUT)
Impedances	Microphone input	3.9K $\Omega$
	All other inputs	10K $\Omega$ or greater
	Tape out	2.2K $\Omega$
	All other outputs	120 $\Omega$
Equalization	Hi shelving	+/- 15dB@12KHz
	Low shelving	+/- 15dB@80KHz
	7-band graphic (Main Mix)	+/- 15dB@63Hz, 160Hz, 400Hz, 1KHz, 2.5KHz, 6.3KHz, 16KHz
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: -85dB (ref.: +4dBu) Fader 0 dB, all input channels assigned and set to UNITY gain: -81dB (ref.: +4dBu)
	MONITOR out	Output level:0dB Max out +22dBu unbalanced, 1/4" stereo jacks 4 element LED display:-30/-10/0/+10dB
	MASTER	Output level:0dB (AMP INPUT LEVEL) 4 element LED display:-30/-10/0/+10dB
	FX Sends output	Output level:0dB Max out +22dBu unbalanced, 1/4" jacks
	Aux return	Input level:0dBu, 1/4" stereo jacks
	Tape out	Output level:0dBu
	Headphones output	Min impedance:32 $\Omega$
		Output level:2×150mW

- **Speaker Section**

Passive System Type	2-way Coax vented box
Continuous Power	150Watt AES Standard
Peak Power	300Watt Peak
Max SPL at 1M	117.5dB SPL calculated
Frequency Response	65Hz / 20kHz at -10dB
Impedance	8 $\Omega$ nominal
Crossover Frequency	2.3kHz / 12dB/Oct
Protection	Electronic on the Driver
Coaxial Type Low Frequency Device	10" Woofer / 2" Voice Coil
High Frequency Device	1" Neodymium Driver / 1" Voice Coil
Coverage HxV	70° Hx70° V Spherical horn
Connectors	Power Input with mono Jack

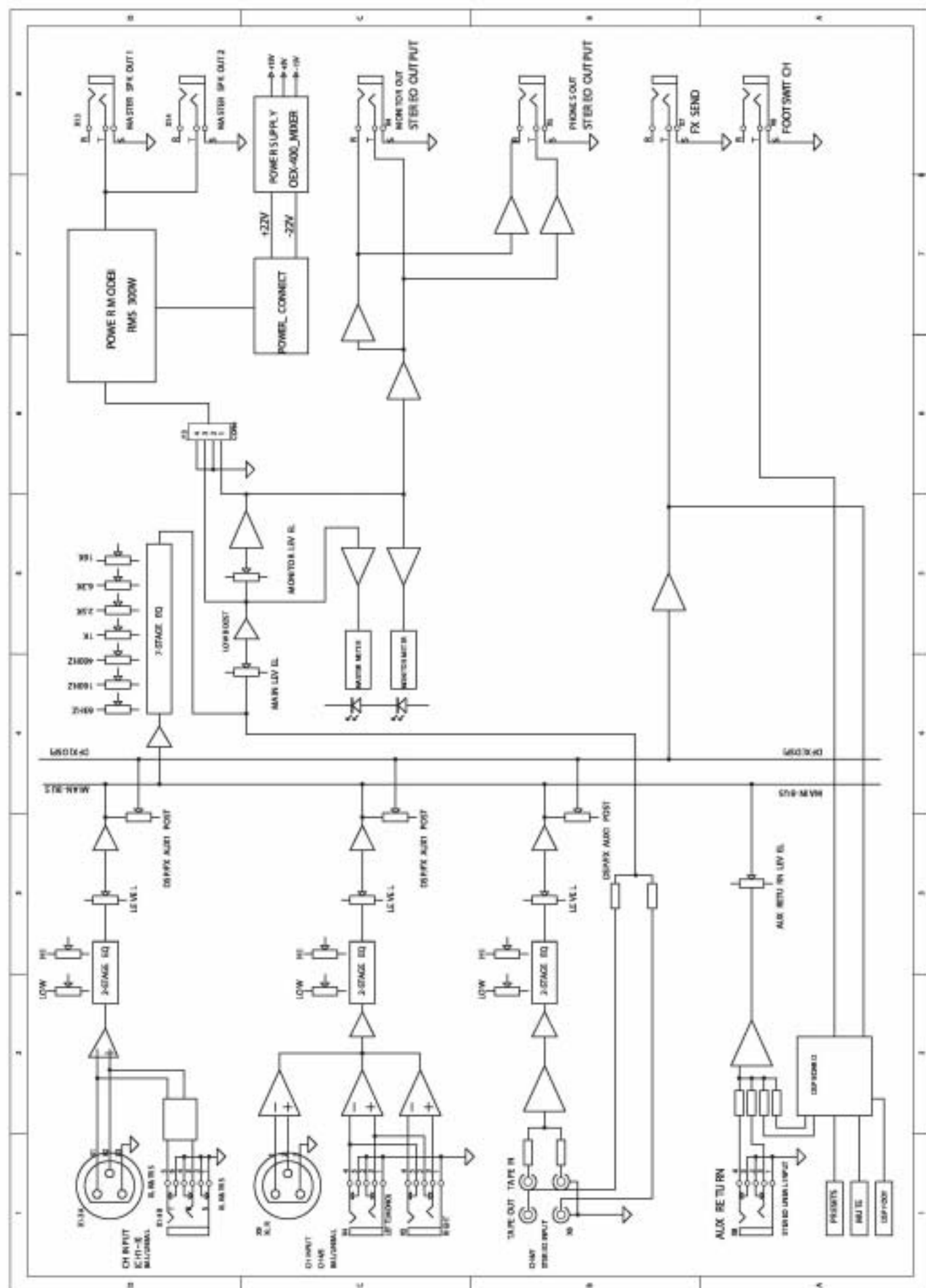
- **Power Section**

Cabinet	Plastic Reinforced Polypropylene /Metal Grille/Integrated Handle
Output Power	350WATT EIAJ (300WATT RMS)
Impedance	4 $\Omega$ Load
S/N ratio	>110 dB/A
Distortion	<0.05%(THD, DIM, SMPTE)
Gain	32dB
Bandwidth	10Hz to 50kHz
Protections	Overload / Short Circuit / Soft Clip Limiter / Thermal Protection Fan Cooling

- **Physical**

Dimensions HxWxD	984*440*460mm(38.7"x17.3"x18.1")
Net Weight (lbs/kg)	17.0kg
Cross Weight	27.0Kg

## 7. BLOCK DIAGRAM





## 8. WARRANTY

### 8.1 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.

### 8.2 RETURN NOTICE

- a. 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.
- b. 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.
- c. A brief description of the defect will be appreciated.
- d. Please prepay all the costs involved in the return shipping, handling and insurance.

## 3. TERMS AND CONDITIONS

- a. ▲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.
- b. 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.
- c. 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.
- d. 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.
- e. 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.
- f. 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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