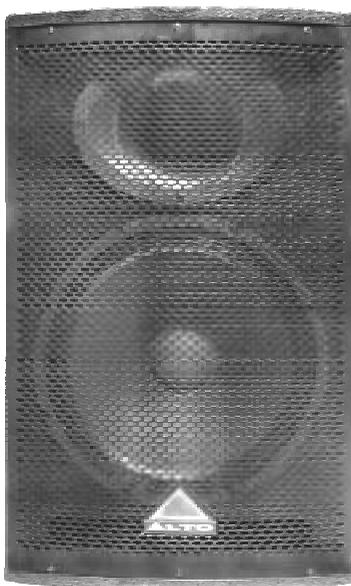




OWNER'S MANUAL

MS SPEAKER ENCLOSURES
PASSIVE MODELS



www.altoproaudio.com
Version 1.3 SEPTEMBER 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. QUICK START - PASSIVE SPEAKER CABINETS..... | 2 |
| 3. ▲LTO MS1 SPEAKER MODELLER | 5 |
| 4. PANEL DESCRIPTIONS | 6 |
| 5. WIRE CONNECTIONS..... | 7 |
| 6. TECHNICAL SPECIFICATION..... | 8 |
| 7. WARRANTY | 11 |

1. INTRODUCTION

Thank you for your purchasing ▲LTO MS series passive speaker system. This series includes MS series cabinet and ▲LTO MS1 speaker modeller.

The MS series speaker cabinets are specifically designed for using in hi-quality performance site and the precise sound reinforcement commercial place. It includes five full-range cabinets (MS12, MS15, MS152, MS153, and MS154) and two subwoofers (MS15S, MS18S). This series uses trapezium configuration which greatly decreases the resonance of the standing wave in the cabinet. The cabinets use hi-density matrix spray-paint technics and the bottom bracket design which makes mounting quickly and flexibly. HF compression driver and vented LF for fully professional performance.

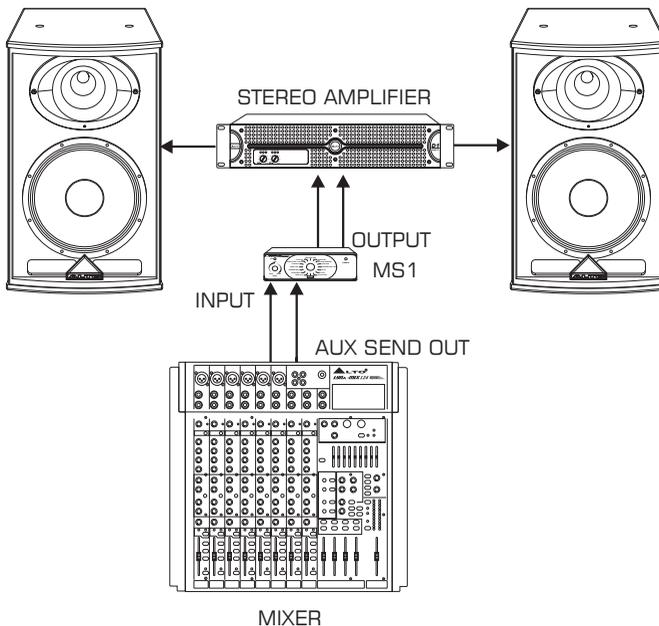
The ▲LTO MS1 speaker modeller is designed for using together with MS series passive speaker cabinet. It has built-in 16 EQ curves which are suitable for different applications and are convenient for users to select the presets as need. When the nonprofessionals use it, they also can obtain optimal effects. It uses external power which can effectively decrease the power noise. Not only can it be used with the MS series cabinet, but also can be used as a EQ together with the other sound equipments.

Enjoy your MS passive speaker and make sure to read this Manual carefully before operation!

2. QUICK START - PASSIVE SPEAKER CABINET

Passive, Full-range, two speakers. This is the simplest set-up. You just need a mixer and a stereo amplifier. It is good for small club gigs, disco, etc. Make all initial connections with all the equipment powered off, and ensure that all the main volume controls are turned down completely.

- 1). Connect one side of the speaker cable to the Output CHA/CHB or Binding Post of your stereo power amplifier and the other side to the Input socket of your MS speaker cabinet.
- 2). Connect the input terminals of ▲LTO MS1 with the AUX SEND OUT (L&R) of a mixer (or the similar terminals). Connect its output terminals with the inputs of a power amplifier. Then select the preset as need.
- 3). Complete other connections as illustrated.
- 4). Turn on your mixer and MS1 first, then the stereo power amplifier.
- 5). Turn up the volume controls of your amplifier to about 70%.
- 6). Use PFL function to get the proper input level for the mixer, and adjust the Main Mix Level control to manipulate the output level.
- 7). After using, turn off your stereo power amplifier first, then the mixer and the MS1.

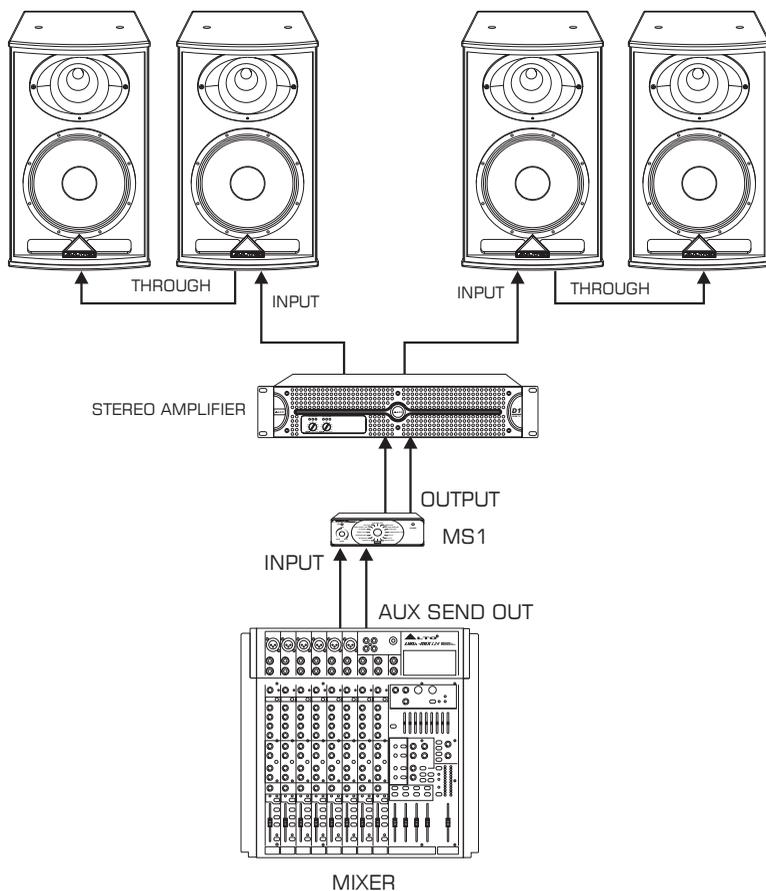


2. QUICK START - PASSIVE SPEAKER CABINETS

Passive, Full-range, four speakers. It is similar to the previous set-up but four speakers are connected instead of two.

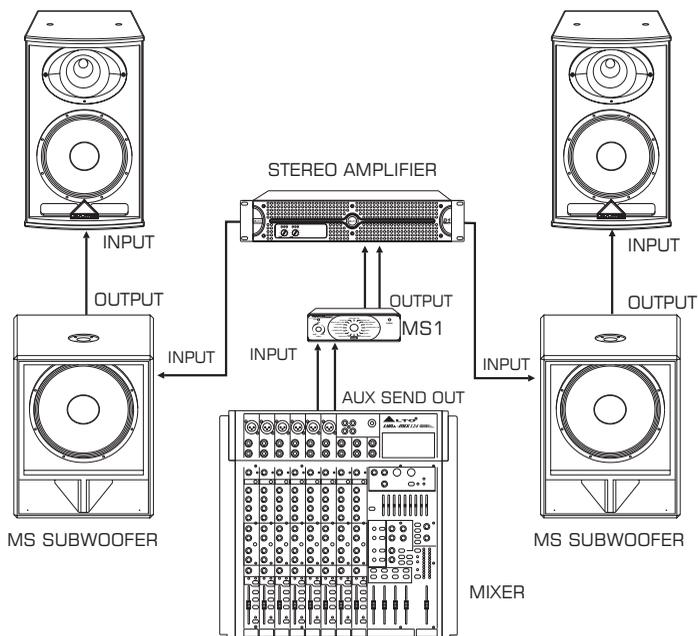
- 1). Follow the same steps as described above.
- 2). Connect the THROUGH socket of the first MS cabinet to the INPUT socket of the second MS cabinet.

NOTE: Every time you connect MS cabinets this way, you parallel them to the output of the amplifier that will read half of the impedance of one speaker.

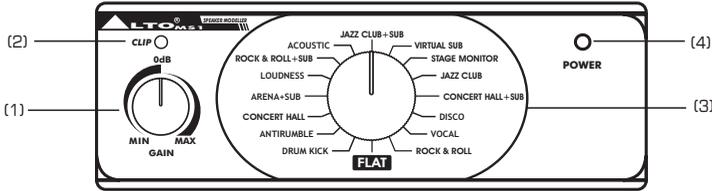


Passive two subwoofers and two satellite speakers. With this example, the stereo amplifier drives both the subwoofers and the satellites. In this case we do not call them full-range anymore because they receive a signal from the subwoofer that is already covered at 125 Hz. In this way, the high energetic content of the low frequencies is limited to the subwoofer and the satellite's woofer act like a mid-woofer.

- 1). Connect one side of speaker cable to the Output CHA/CHB or Binding Post of your stereo power amplifier and the other side to the Input socket of your subwoofer, with the second speaker cable connect the Output of the subwoofer to the Input of satellite.
- 2) Connect the input terminals of ▲LTO MS1 with the AUX SEND OUT(L&R) of a mixer (or the similar terminal). Connect its output terminals with the inputs of a power amplifier. Then select the preset as need.
- 3). Complete other connections as illustrated.
- 4). Turn on your mixer and MS1 first, then the stereo power amplifier.
- 5). Turn up the volume controls of your amplifier to about 70%.
- 6). Use PFL function to get the proper input level for the mixer, and adjust the Main Mix Level control to manipulate the output level.
- 7). After using, turn off your stereo power amplifier first, then the mixer and the MS1.



- THE FRONT PANEL



1. Gain Control

This control adjusts the input gain by a range of -20 dB to +20 dB.

2. Clip LED

This LED lights up when the input signal is too strong. It warns that the output signal may cause distortion. Please attenuate the level of the input signal.

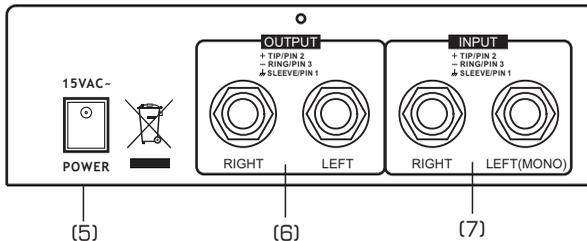
3. Presets Selector

Via this knob, you can select the right effect you wish to perform. There are total 16 options for you, JAZZ CLUB+SUB, VIRTUAL SUB, STAGE MONITOR, JAZZ CLUB, CONCERT HALL+SUB, DISCO, VOCAL, ROCK & ROLL, FLAT, DRUM KICK, ANTI RUMBLE, CONCERT HALL, ARENA+SUB, LOUDNESS, ROCK & ROLL+SUB and ACOUSTIC.

4. Power LED

This LED lights up when the unit is powered on.

- THE REAR PANEL



5. AC Inlet

This jack is used to connect the AC power supply with the supplied 15V AC adapter.

6. Output Connector

This is a balanced 1/4" TRS jack, which is used to connect devices such as the effects returns on a mixing console or power amplifier inputs.

7. Input Connector

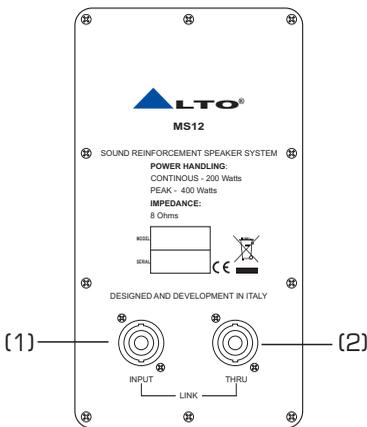
This is a balanced 1/4" TRS jack, which connects to sources such as the effect sends of mixing console.



4. PANEL DESCRIPTIONS

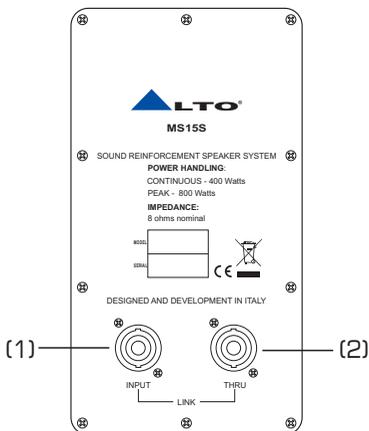
- PASSIVE FULL-RANGE: MS12/MS15/MS152/MS153/MS154

- (1) INPUT: Receive the power coming from an external power amplifier (SPK +1/-1 connected; +2/-2 not connected).
- (2) THRU: Direct LINK for connect in parallel a second speaker cabinet (SPK +1/-1 connected; +2/-2 not connected).



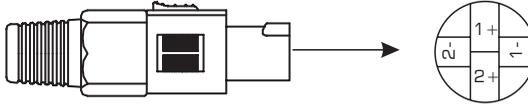
- PASSIVE SUBWOOFER: MS15S/MS18S

- (1) INPUT: Receive the power coming from an external power amplifier. (SPK +1/-1 connected; +2/-2 not connected).
- (2) OUTPUT: Power output for satellite speaker, under passive crossover filtered at 125 Hz. (SPK +1/-1 connected; +2/-2 not connected).



-For Passive Speaker Cabinets

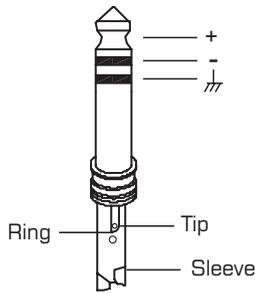
Please only use the power connectors to make connections with other signal source equipment for the passive speaker cabinets. The power connector has four terminals: 1+, 1-, 2+, 2-.



In our cabinets, only 1+ / 1- are used to connect the Speaker+ / Speaker-, and 2+ / 2- are not used.

- For ▲LTO MS1 SPEAKER MODELLER

Please use shielded twisting pair which can reduce noise and signal loss. The wiring of the connector is as follow:



TRS Type balanced

6. TECHNICAL SPECIFICATION

| | |
|------------------------|---|
| Model Item | MS12 |
| Passive System Type | 2-Way Vented Box |
| Continuous Power | 200 Watt AES Standard |
| Peak Power | 400 Watt Peak |
| Max SPL at 1m | 119 dB Nominal/122 dB Peak |
| Frequency Response | 65 Hz/20 kHz at -10 dB |
| Impedance | 8 Ohms |
| Crossover Frequency | 2k5Hz/12 dB/Oct |
| Protection | Electronic Dynamic Protection |
| Low Frequency Device | 12" Woofer/2" voice coil |
| High Frequency Device | 1" Neodymium Driver/1" Voice Coil |
| Coverage (H° x V°) | 90°H x 60°V Elliptical Wave Guide |
| Connectors | 2 x SPK4 @ Power Input/Link |
| Cabinet | Trapezoidal Shape/Composite Wood/Metal Handle/Black Paint finishing |
| Dimensions (H x W x D) | 650 x 400 x 365 (mm) |
| Net Weight (lbs/kg) | 43.87 lbs/19.90 kg |

| | |
|------------------------|---|
| Model Item | MS15 |
| Passive System Type | 2-way Vented Box |
| Continuous Power | 300 Watt AES Standard |
| Peak Power | 600 Watt Peak |
| Max SPL at 1m | 122 dB Nominal/124.5 dB Peak |
| Frequency Response | 55 Hz/20 kHz at -10 dB |
| Impedance | 8 Ohms/4 Ohms |
| Crossover Frequency | 2 kHz/12 dB/Oct |
| Protection | Electronic Dynamic Protection |
| Low Frequency Device | 15" Woofer/2.5" Voice Coil |
| High Frequency Device | 1" Neodymium Driver/1" Voice Coil |
| Coverage (H° x V°) | 90°H x 60°V Elliptical Wave Guide |
| Connectors | 2 x SPK4 @ Power Input/Link |
| Cabinet | Trapezoidal Shape/Composite Wood/Metal Handle/Black Paint finishing |
| Dimensions (H x W x D) | 750 x 450 x 420 (mm) |
| Net Weight (lbs/kg) | 55.07 lbs/24.98 kg |

| | |
|------------------------|--|
| Model Item | MS152 |
| Passive System Type | 2-Way Vented Box |
| Continuous Power | 500 Watt AES Standard |
| Peak Power | 1000 Watt Peak |
| Max SPL at 1m | 127 dB Nominal/130 dB Peak |
| Frequency Response | 55 Hz/20 kHz at -10 dB |
| Impedance | 4 Ohms |
| Crossover Frequency | 250 Hz~2 kHz/12 dB/Oct |
| Protection | Electronic Dynamic Protection |
| Low Frequency Device | 2 x 15" Woofer/2.5" voice coil |
| High Frequency Device | 1" Driver/1.35" Voice coil |
| Coverage (H° x V°) | 90°H x 60°V Elliptical Wave Guide |
| Connectors | 2 x SPK4 @ Power Input/Link |
| Cabinet | Trapezoidal Shape/Multi-layer plywood/Metal Handle/Black Paint finishing |
| Dimensions (H x W x D) | 1100 x 450 x 443 (mm) |
| Net Weight (lbs/kg) | 78.66 lbs/35.68 kg |

6. TECHNICAL SPECIFICATION

| | |
|------------------------|--|
| Model Item | MS153 |
| Passive System Type | 3-way Vented Box |
| Continuous Power | 350 Watt AES Standard |
| Peak Power | 700 Watt Peak |
| Max SPL at 1m | 123 dB Nominal/126 dB Peak |
| Frequency Response | 50 Hz/20 kHz at -10 dB |
| Impedance | 8 Ohms/4 Ohms |
| Crossover Frequency | 700 Hz~3 kHz/12 dB/Oct |
| Protection | Electronic Dynamic Protection |
| Low Frequency Device | 15" Woofer/2.5" Voice Coil |
| Mid Frequency Device | 8" Midrange/2" Voice Coil |
| High Frequency Device | 1" Neodymium Driver/1" Voice Coil |
| Coverage (H° x V°) | 90°H x 60°V Dual Wave Guide |
| Connectors | 2 x SPK4 @ Power Input/Link |
| Cabinet | Trapezoidal Shape/Multi-layer Plywood/Metal Handle/Black Paint finishing |
| Dimensions (H x W x D) | 900 x 450 x 415 (mm) |
| Net Weight (lbs / kg) | 67.59 lbs/30.66 kg |

| | |
|------------------------|--|
| Model Item | MS154 |
| Passive System Type | 3-Way Vented Box |
| Continuous Power | 700 Watt AES Standard |
| Peak Power | 1400 Watt Peak |
| Max SPL at 1m | 128 dB Nominal/131 dB Peak |
| Frequency Response | 45 Hz/20 kHz at -10 dB |
| Impedance | 4 Ohms |
| Crossover Frequency | 700 Hz~3 kHz/12 dB/Oct |
| Protection | Electronic Dynamic Protection |
| Low Frequency Device | 2 x 15" Woofer/2.5" Voice Coil |
| Mid Frequency Device | 8" Midrange/2" Voice Coil |
| High Frequency Device | 1" Driver/1.35" Voice Coil |
| Coverage (H° x V°) | 90°H x 45°V Dual Wave Guide |
| Connectors | 2 x SPK4 @ Power Input/Link |
| Cabinet | Trapezoidal Shape/Multi-layer Plywood/Metal Handle/Black Paint finishing |
| Dimensions (H x W x D) | 1250 x 450 x 443 (mm) |
| Net Weight (lbs / kg) | 95.22 lbs/43.19 kg |

6. TECHNICAL SPECIFICATION

| | |
|------------------------|--|
| Model Item | MS15S |
| Passive System Type | Band-Pass |
| Continuous Power | 400 Watt AES Standard |
| Peak Power | 800 Watt Peak |
| Max SPL at 1m | 123 dB SPL calculated |
| Frequency Response | 45 Hz/200 Hz at -10dB |
| Impedance Low-High | 4 Ohm |
| Crossover Frequency | 160 Hz/6dB/oct. |
| Low Frequency Device | 15" Woofer/3" Voice Coil |
| Connectors | 2 x SPK4 @ Power Input/Output |
| Cabinet | Multi-layer Plywood/Black painted/Metal handle |
| Dimensions (H x W x D) | 600 x 485 x 600 (mm) |
| Net Weight. (lbs / kg) | 75.84 lbs/34.40 kg |

| | |
|------------------------|--|
| Model Item | MS18S |
| Passive System Type | Band-Pass |
| Continuous Power | 400 Watt AES Standard |
| Peak Power | 800 Watt Peak |
| Max SPL at 1m | 124 dB SPL calculated |
| Frequency Response | 35 Hz/200 Hz at -10 dB |
| Impedance Low-High | 4 Ohm |
| Crossover Frequency | 160 Hz/6 dB/oct. |
| Low Frequency Device | 18" Woofer/ 3" Voice coil |
| Connectors | 2 x SPK4 @ Power Input/Output |
| Cabinet | Multi-layer Plywood/Black painted/Metal handle |
| Dimensions (H x W x D) | 730 x 600 x 600 (mm) |
| Net Weight. (lbs/kg) | 105.16 lbs/47.70 kg |

▲LTO MS1 TECHNICAL SPECIFICATION

| | | |
|-----------------------|-----------------------|---|
| AUDIO INPUT | Connectors | 1/4" jack |
| | Type | RF filtered, Servo balanced input |
| | Impedance | 30 kohms Balanced, 22 kohms Unbalanced |
| | Max. Input Level | +26 dBu Balanced and Unbalanced |
| AUDIO OUTPUT | CMRR | Typ.40 dB, >55 dB@1 kHz |
| | Connectors | 1/4" jack |
| | Type | Balanced |
| | Min. Output Impedance | 100 Ohm |
| SYSTEM SPECIFICATIONS | Max. Output Level | +26 dBu Balanced |
| | Frequency Response | 10 Hz to 30 kHz, +/- 1 dB(FLAT) |
| | S/N | > 110 dB, Unweighted, 22 Hz to 22 kHz |
| | THD | 0.005% typ. @ 0 dBu, 1 kHz,(unity gain), FLAT |
| POWER SUPPLY | Input Level | CLIP LED Display: +7 dBu |
| | AC Adaptor | USA/Canada 120V~, 60 Hz U.K./Australia 240V~, 50 Hz Europe 230V~, 50 Hz |
| | Power Consumption | 5 W |
| PHYSICAL | Dimension | 130(W)x117(D) x45(H) mm (5.1"x4.6"x1.7") |
| | Net Weight | 0.8 kg |

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 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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NF02424-1.3