

# Owner's Manual

## Professional Stereo Compact Mixer

**M1224FX**

**M1424**

**M1624FX**

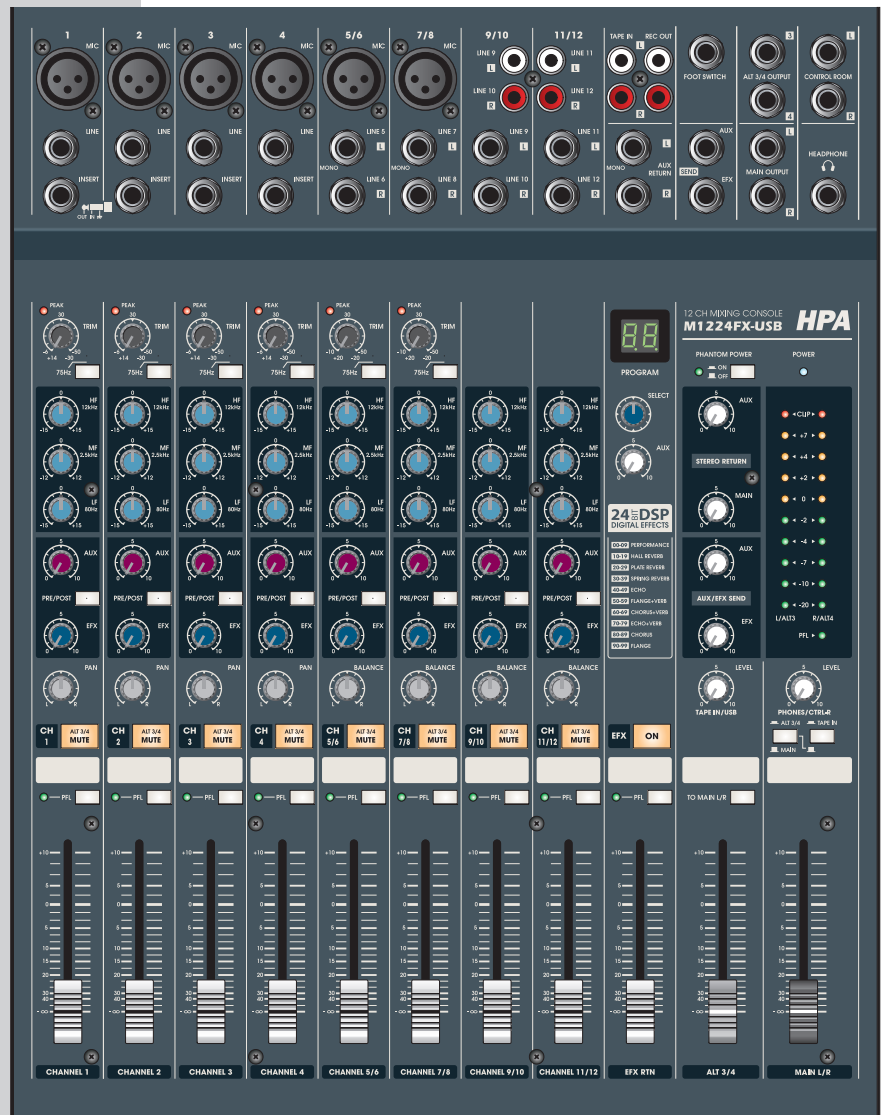
**M1824**

**M1224FX-USB**

**M1424-USB**

**M1624FX-USB**

**M1824-USB**



**HPA**

## WARNING

1. Read these instructions - All the safety and operating instructions should be read before this product is operated.
2. Retain these instructions - The safety and operating instructions should be retained for future reference.
3. Heed all warnings - All warnings on the appliance and in the operating instructions should be adhered to.
4. Follow all instructions - All operating and use instructions should be followed.
5. Do not use this apparatus near water - The appliance should not be used near water or moisture - for example, in a wet basement or near a swimming pool, and the like.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding plug. A polarized plug has two blades with one wider than the other. A grounding plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at the plugs, convenience receptacles, and at the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart or rack is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13. Unplug the apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified personnel. Servicing is required when



- the apparatus has been damaged in any way, such as power supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. Please keep the unit in a good ventilation environment.
16. **WARNING:** To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture. The apparatus shall not be exposed to dripping or splashing and that no objects filled with liquids, such as vases, shall not be placed on apparatus.
17. **WARNING:** The mains plug or appliance inlet is used as disconnect device, the disconnect device shall remain readily operable.
18. **Power Sources** – This product should be operated only from the type of power source indicated on the rating label. If you are not sure of the type of power supply to your home, consult your product dealer or local power company. For products intended to operate from battery power, or other sources, refer the operating instructions.
19. **Safety Check** – Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in proper operating condition.
20. Don't touch conductive parts of output terminals to prevent hazardous electrical shock. The external wiring connected to the terminals requires installation by an instructed person or the use of ready-made leads or cords.
21. This equipment is for commercial & professional use only.
22. This product is in compliance with EU WEEE regulations. Disposal of end of life product should not be treated as municipal waste. Please refer to your local regulations for instructions on proper disposal of this product.
23. To prevent hazardous electrical shock, do not touch the conductive parts of the output terminals. The external wiring connected to the terminals requires installation by an qualified technician or the use of ready made leads or cords.
24. Please locate the apparatus at places nearby power socket for quick power disconnection in emergency.



Protective earthing terminal. The apparatus should be connected to a mains socket outlet with a protective earthing connection.



This lightning flash is intended to alert the user to the presence of non-insulated "dangerous voltage" on the output terminals that may be of sufficient magnitude to constitute a risk of electric shock. The external wiring connected to the terminals requires installation by an instructed person or the use of ready-made leads or cords.



### CAUTION

**RISK OF ELECTRIC SHOCK  
DO NOT OPEN**



**CAUTION:** To reduce the risk of electric shock, do not remove any cover. No user-serviceable parts inside. Refer servicing to qualified service personnel only.



The lightning flash with arrowhead symbol within the equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock.



The exclamation point within the equilateral triangle is intended to alert the user to the presence of important operation and maintenance (servicing) instructions in the literature accompanying this appliance.

**CAUTION:** To prevent electric shock, do not use this polarized plug with an extension cord, receptacle or other outlet unless the blades can be fully inserted to prevent blade exposure.

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## Introduction



### **M1224FX/M1424/M1624FX/M1824 M1224FX-USB/M1424-USB/M1624FX-USB/M1824-USB**

#### Professional Stereo Compact Mixer

##### Welcome

Thank you for purchasing M 4-Bus SERIES Mixing Console. The M 4-Bus Series provides an excellent balance of operability, functionally and ease of use. In order to take full advantage of the M 4-Bus Series capabilities and enjoy years of trouble - free use, please read this manual carefully.

##### Unpacking

Although it is neither complicated to install nor difficult to operate your set, a few minutes of your time is required to read this manual for a properly wired installation and becoming familiar with its many features and how to use them. Please take a great care in unpacking your set and do not discard the carton and other packing materials. They may be needed when moving your set and are required if it ever becomes necessary to return your set for service. Never place the unit near radiators, in front of heating vents, to direct sun light, in excessive humid or dusty location to avoid early damage and for your years of quality entertainment. Connect your complementary components as illustrated in the following pages.

## Features

**-4 MONO(M1224FX/M1224FX-USB/M1424/M1424-USB),8 MONO(M1624FX/M1624FX-USB/M1824/M1824-USB) INPUT AND 4 STEREO(M1224FX/M1224FX-USB/M1624FX/M1624FX-USB), 5STEREO(M1424/M1424-USB/M1824/M1824-USB)INPUT**

Any sound source of microphones, cassette decks, electronic guitars, organs can be applied to the channel input.

**- 4 MONO(M1224FX/M1224FX-USB/M1424/M1424-USB),8 MONO(M1624FX/M1624FX-USB/M1824/M1824-USB) CHANNEL INSERT**

**- MAIN L/R AND ALT 3/4 OUTPUT**

Main L/R and ALT 3/4 are provided for convenient use.

**- AUX RETURN AND 2 AUX SEND**

For convenient use of external equipment, AUX SEND and AUX RETURN function are provided.

**- CHANNEL EQUALIZER**

The 3 band equalizer are designed for  $\pm 15\text{dB}$ (HF,LF),  $\pm 12\text{dB}$ (MF) control on input channel.

**- PFL FUNCTION OF ALL CHs**

The PFL function allows you to monitor any input channel before the channel fader through headphone outputs and control room outputs .

**- DSP FUNCTION : 100 SELECTABLE PRESETS (ONLY M1224FX/M1224FX-USB/M1624FX/M1624FX-USB)**

A built-in 24bit DSP(Digital Signal Processor ) with 100 selectable presets including Reverb, Delay and Chorus, offers dazzling studio quality effects..

**- FOOT SWITCH (ONLY M1224FX/M1224FX-USB/M1624FX/M1624FX-USB)**

**- PHANTOM POWER(+48V)**

Phantom power is provided for easy connection of condenser microphones requiring an external power supply.

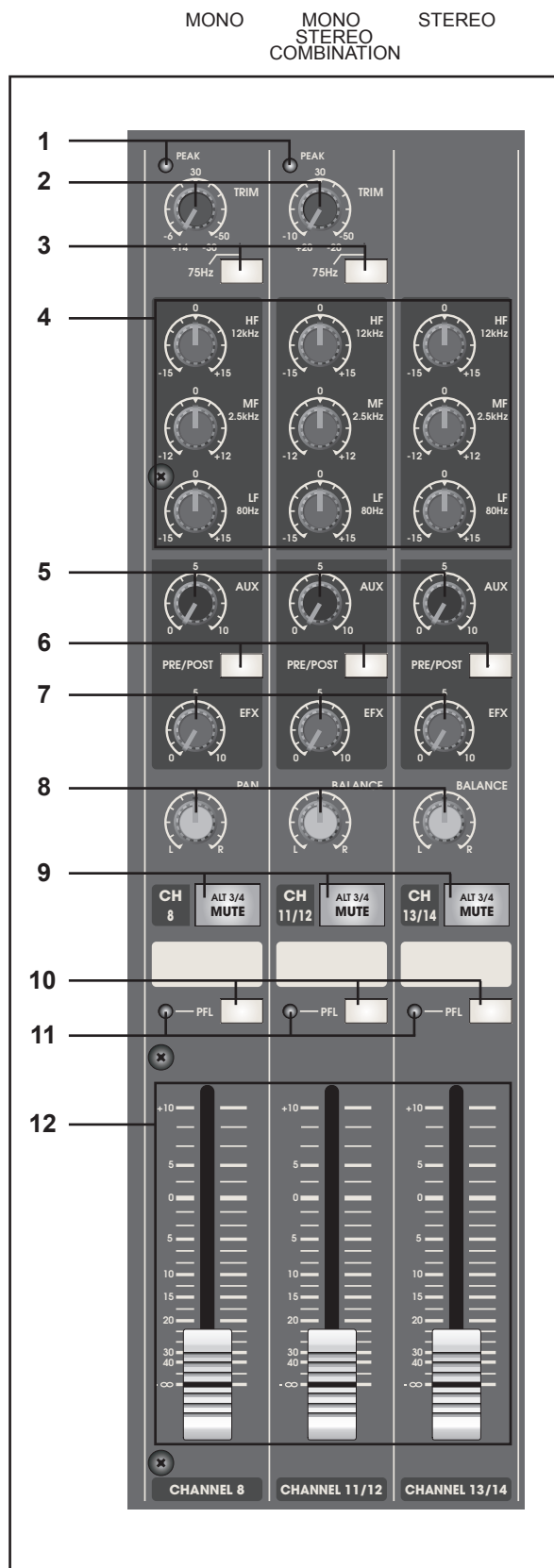
**- RACK MOUNTING**

Detachable rack ears for mounting in a standard 19" rack enclosure.

**- EXTERNAL AC POWER**

## Front Panels Controls

### 1.CHANNEL CONTROL SECTION



#### (1). PEAK LED INDICATOR

This LED indicators let you check the level of the signal input to the channel. The peak indicator lights when the input signal reaches 5dB below the channel's clipping point. This indicator show the level of the Post-EQ/ pre-fader signal. If the PEAK indicator lights more than briefly on high-level transients, you should use the TRIM control to decrease the input sensitivity of the channel. If this dose not work, reduce the output level of the connected source.

#### (2). TRIM CONTROL

According to the level of the input signal, use this knob to adjust the input to an appropriate level. The best balance of S/N and dynamic range will be achieved if you adjust the TRIM control so that the peak indicator lights occasionally. This control adjusts the channel's mic input sensitivity between -50dB and -6dB and the line input sensitivity between -30dB and +14dB. The mono/stereo combination input channel have a sensitivity of +20dB to-20dB

#### (3). HPF(High-Pass Filter)

This switch toggles the HPF on or off. To turn the HPF on, press the switch In (■). The HPF cut frequencies below 75Hz

#### (4). 3BAND EQUALIZER CONTROLS

This is a 3-band equalizer with center frequencies, range and type as shown below. The frequency response is flat when the knob is in the "0" position.

CONTROL	MAX. BOOST/CUT	FREQUENCY	TYPE
HIGH	±15dB	12kHz	Shelving
MID	±12dB	2.5kHz	Peaking
LOW	±15dB	80Hz	Shelving

#### (5). AUX CONTROLS

This knobs control the level of the signals sent to AUX bus.

#### (6). PRE/POST SWITCH

This button determines whether the AUX signal is Pre or Post fader. Pre means not affected by the position of the channel fader. Post means is affected by the position of the channel fader.

## Front Panels Controls

### (7). EFX CONTROLS

This knobs control the level of the signals sent to EFX bus. The channel signals mixed by this bus have their overall level set by the EFX SEND Control to the EFX SEND jack on the front panel. The EFX bus signal is also fed into the internal digital signal processor(only M1224FX/M1224FX-USB/1624FX/M1624FX-USB).

Since this control is placed after the channel fader, the signal level will be affected by the channel fader setting.

### (8). PAN /BAL CONTROL

#### *PAN (Mono Channel)*

This control pans the channel signal across the master L and R buses, thus determining the perceived position of the sound from that channel in the output stereo sound field. If a PAN control is set all the way to the left,for example, the sound from that channel will be heard from the left speaker system only.

If it is set all the way to the right, the sound will be heard from the right speaker system only. Intermediate settings will cause the sound to appear at corresponding locations in the stereo sound field.

#### *BALANCE (Stereo Channel)*

This control adjusts the balance or the L/R position of the stereo input signal.

Turning the BALANCE control to the left of center moves the apparent source toward the MAIN MIX L bus,turning it to the right moves the source toward the MAIN MIX R bus.

### (9). MUTE/ALT 3-4 SWITCH

When the Mute/ALT 3-4 switch is depressed, a channel output will be routed to the ALT 3-4 output instead of the main L/R out.

ALT 3-4 bus offers you a second independent stereo sub mix with its own sub master stereo fader.

### (10). PFL SWITCH

When these switch is depressed, the channel input signal can be routed to the PFL bus.

This switch allows you to monitor the pre-fader channel input signal through headphone outputs and control room outputs.

### (11). PFL INDICATOR

This indicator lights when the PFL switch is turned on.

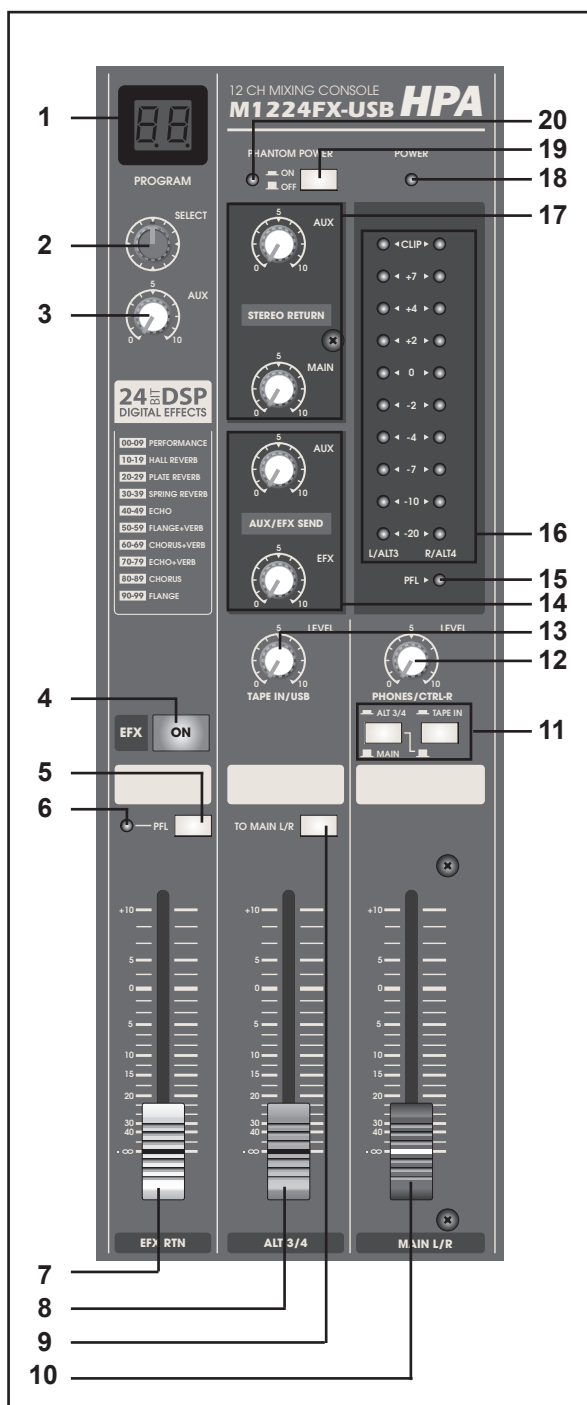
### (12). CHANNEL FADER

This is the channels main level control. It determines the level of the signal that is sent from the channel to the master mixing and effect buses. It is the settings of the input channel faders that determine the mix, or the balance of sound levels between the instruments or other sources connected to the inputs. When a channel is not being used, its fader should be set at the minimum position to prevent the addition of unwanted noise to the main program signal.

## Front Panels Controls

### 1.MAIN CONTROL SECTION

\* No. 1~7 are applied only to M1224FX/  
M1224FX-USB /M1624FX /M1624FX-USB



#### (1). DSP PROGRAM DISPLAY

The Program Number LED displays the number of the selected effects program.

#### (2). DSP PROGRAM SELECT SWITCH

The program knob selects one of the 100 built-in digital effects, for each number you select. 24 Bit Digital Effects processor with high quality, studio grade effects like Delay, Chorus and Reverb.

#### (3). AUX PRE CONTROL

Adjust the level of the signal sent from the internal digital effect to the aux1 bus.

#### (4). DSP ON/ OFF SWITCH

This switch turns the internal digital effect on/off.

#### (5). PFL SWITCH

Set this switch on if you wish to output the effect signal to the PFL bus.

#### (6). PFL INDICATOR

This indicator lights when the PFL switch is turned on.

#### (7). EFX RTN Fader

Adjust the level of the signal sent from the internal digital effect to the main bus.

#### (8). ALT 3/4 OUTPUT FADER

This fader adjusts the final level of the combined stereo signal and send the ALT 3/4 output jacks.

#### (9). TO MAIN SWITCH

When this switch is on, the signal of each ALT 3/4 will be sent to the MAIN L/R buses.

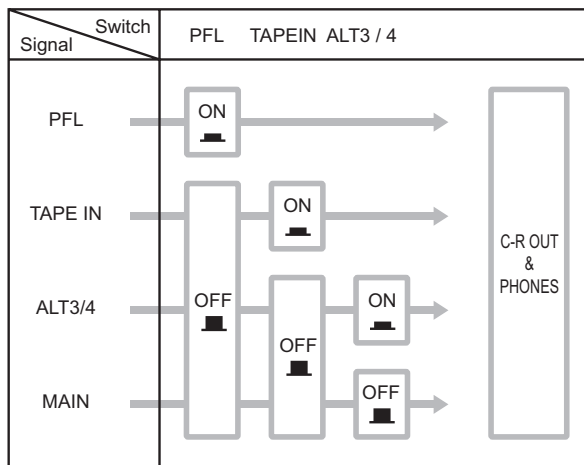
#### (10). MAIN L/R MASTER FADER

These faders adjust the final level of the combined signals from all channels.

## Front Panels Controls

### 11. Level-Meter Signal Switches (MAIN-ALT3/4 Toggle Switch and TAPE IN Switch)

These level-meter switches, together with the channel PFL switches, select the signal that is sent through the CTRL ROOM/PHONES control to the CTRL ROOM OUT jacks, the PHONES jack, and the level meter. The following illustration shows how the switch settings correspond to the signal selection.



### (12). CTRL ROOM /PHONES CONTROL

Controls the level of the signal output to the PHONES jack and the CTRL ROOM L and R jacks.

### (13). TAPE IN CONTROL

This control adjusts the level of the playback signal that is inserted to the master mixing bus from the TAPE IN RCA jacks on the top panel.

### 14. MASTER SEND

\* Master AUX Control

Adjust the level of the signal on the AUX bus to the corresponding AUX SEND jack.

\* Master EFX Control

Adjust the level of the signal on the EFX bus. This is the signal that is output through the EFX SEND jack.

### 15. PFL INDICATOR

This indicator lights when the PFL switch is turned on.

### 16. OUTPUT LEVEL METER

A vertical row of ten LED show the continuous output level of main Output L/R or monitor 1/2 by signal select switch.

This type of display is free from over shoot problem of mechanical meters and is highly visible under poor lighting conditions. The 0 LED means an output level of +4dB, for +4dB output-that's the rated level.

### 17. STEREO RETURN CONTROL

\* AUX CONTROL

Adjust the level of the mixed L/R signal sent from the RETURN jack (L (MONO) and R) to the AUX bus.

\* MAIN CONTROL

Adjust the level of the mixed L/R signal sent from the RETURN jack (L (MONO) and R) to the Main L/R bus.

### 18. POWER INDICATOR

This indicator lights when the power switch is turned on.

### 19. PHANTOM POWER SWITCH

This switch toggles phantom power on/off. If you set the switch on, the mixer supplies power to all channels that provide XLR mic input jacks. Set this switch on when using one or more condenser microphones.

**NOTE:** When this switch is on, the mixer supplies DC +48V power to pins 2 and 3 of all XLR-type MIC INPUT jacks.



\* Be sure to leave this switch off (■) if you do not need phantom power.

\* When tuning the switch on (■), be sure that only condenser mics are connected to the XLR input jacks.

Devices other than condenser mics may be damaged if connected to the phantom power supply. Note, however, that the switch may be left on without problem when connecting to balanced dynamic microphones.

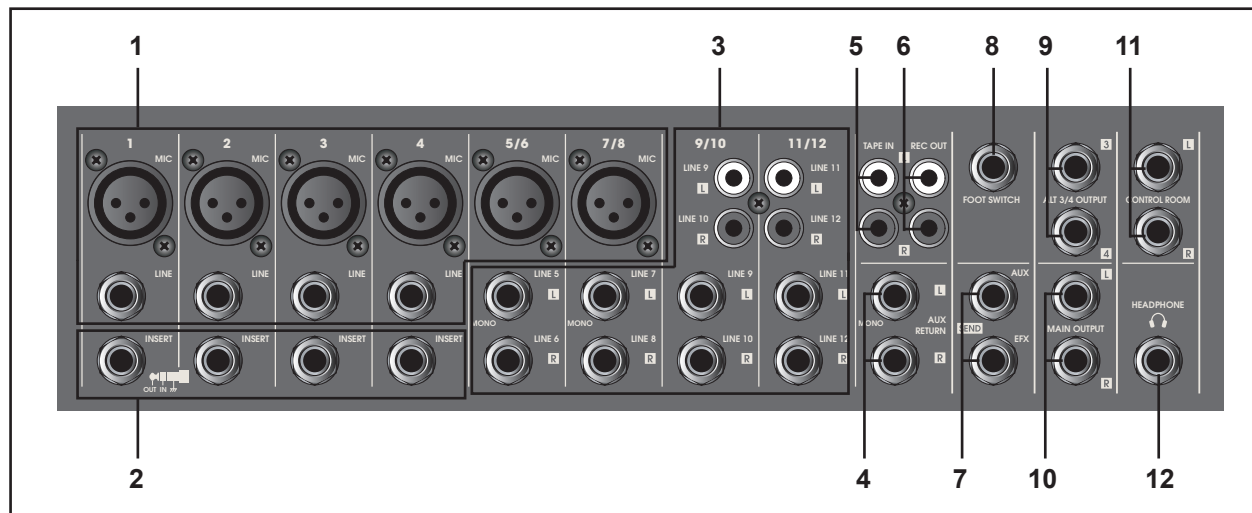
\* To avoid damage to speakers, be sure to turn off amplifier (on powered speakers) before turning this switch on or off. We also recommend that you turn all out controls (MAIN master fader, ALT3/4 fader, etc.) to minimum settings before operating the switch, to avoid risk of loud noises that could cause hearing loss or device damage.

### (20).PHANTOM POWER INDICATOR

This indicator lights when the phantom power switch is turned on.

## Front Panels Controls

### 1. INPUT/OUTPUT CONNECTORS



#### (1). Channel Input Jacks

##### MIC JACKS

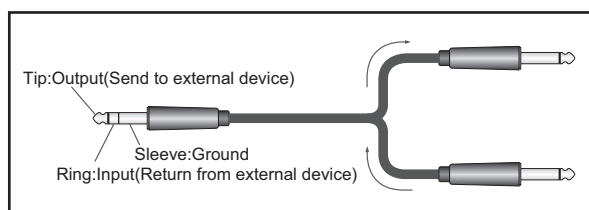
A 3-pin XLR-type connector is used for balanced low impedance microphone inputs.(1: sleeve, 2: hot, 3:cold)

##### BALANCED LINE IN JACKS.

A standard 1/4" phone jack is used for balanced or unbalanced line level signals. Examples of line level signals include most electronic keyboards, synthesizers, turn-tables(with appropriate pre-amps), tape decks and the line outputs from other mixers.

#### (2). CHANNEL INSERT I/O JACK

These are input/output jacks located between the head-amplifier and the high pass filter. These jacks allow you to own graphic equalizers, compressors, noise filters, or other devices.



#### (3). CHANNEL INPUT JACKS

These are unbalanced stereo line input jacks. Two jack types are provided, phone type and RCA pin type.

#### (4). STEREO RETURN L (MONO), R Jack

These are unbalanced 1/4" phone-type line input jacks. The signal received by these jacks is sent to the MAIN bus and AUX bus. These jacks are typically used to receive a return signal from an external effect (reverb, delay, etc.)

**NOTE:** These jacks can also be used as an auxiliary stereo input. If you connect to the L (MONO) jack only, the mixer will recognize the signal as monaural and will propagate the identical signal on both L and R jacks

#### (5). TAPE IN JACKS

These RCA pin jacks input a stereo sound source. Use these jacks when you want to connect a CD or DAT directly to the mixer for monitoring.

**NOTE:** You can adjust the signal level using the TAPE IN control the Master control section.

#### (6). REC OUT JACKS

The REC OUT jacks send the pre-fader signal from the master bus for recording by the tape deck.

#### (7). SEND JACKS

\* AUX

These are unbalanced phone jacks-type output jack.

This jack output the signal form AUX bus, respectively. You use this jack, for example, to connect

## Front Panels Controls

to an effector or to a cue box or other such monitoring system.

### \* EFX

These are unbalanced phone jacks-type output jack that output the signal from the EFX bus.

You use this jack, for example, to connect to an external effector

### (8). FOOT SWITCH JACK (Applied only to M1224FX/M1224FX-USB / M1624FX/M1624FX-USB)

This phone input jack can connect to the foot switch.

With the foot switch connected, you can use your foot to toggle the digital effects ON and OFF

### (9). ALT 3/4 OUTPUT JACKS

These are unbalanced 1/4" phone type output jacks which output the signals of ALT 3/4 bus. Use these jacks to connect to the input jack of an MTR, external mixer, or other such device.

### (10). MAIN L/R OUTPUT JACKS

These jacks deliver stereo output of the mixer signal. You use these jacks, for example, to connect to the power amplifier driving your main speakers. You also use these jacks when you wish to record the signal utilizing the level control applied by the main fader in the Master Control section.

TRS phone-type balanced output jack.

### (11). CONTROL ROOM OUTPUT JACKS

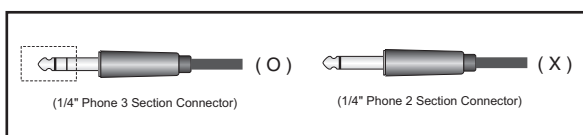
Use these stereo phone-type output jacks to connect to your monitor system.

**NOTE:** The signal monitored by these jacks is selected by the settings of the MAIN-ALT3/4 toggle switch, the TAPE IN switch, and the PFL switches on the input channels.

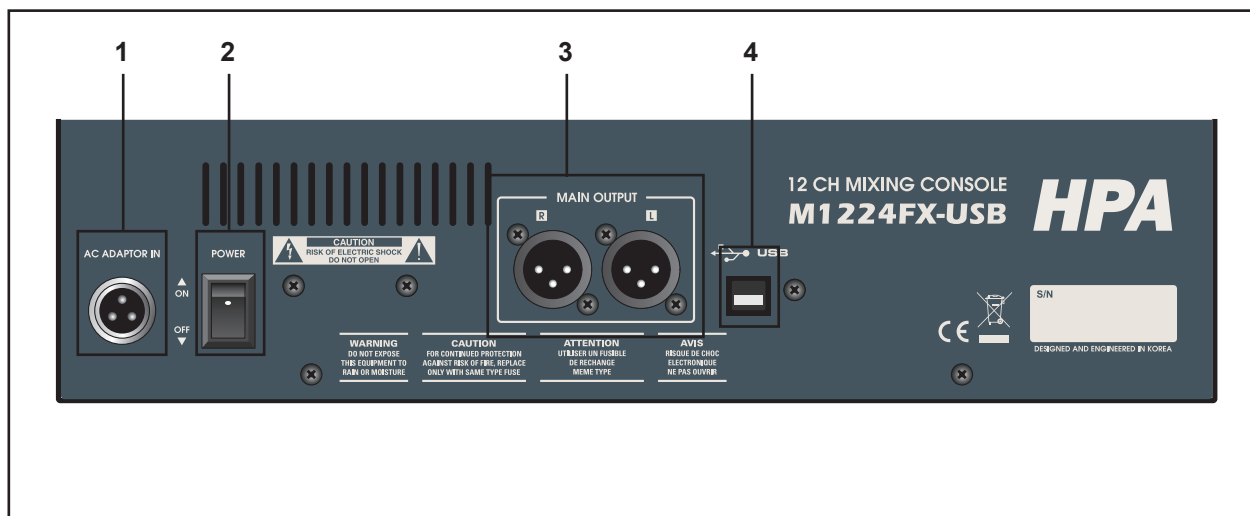
### (12). PHONES JACK

Connect for headphones. This is stereo phone-type output jack.

**NOTE:** The signal monitored by these jacks is selected by the settings of the MAIN-ALT3/4 toggle switch, the TAPE IN switch, and the PFL switches on the input channels.



## Rear Panels Controls



### 1. AC ADAPTOR IN CONNECTOR

Connects to the included PA-M1224 power adaptor.

**NOTE:** Use only the PA-M1224 adaptor included with this mixer. Use of a different adaptor may result in fire or electric shock.

### 2. POWER SWITCH

Use this switch to power mixer to ON or OFF.

### 3. MAIN L/R OUTPUT XLR JACK.

### 4. USB PORT CONNECT STANDARD USB CABLE HERE

**NOTE:** USB only the M1224FX-USB / M1424-USB / M1624FX-USB / M1824-USB

## Using the USB I/O (For only the USB Compatible)

The M series consoles have a built-in stereo USB audio interface allowing you to record and playback from a PC using virtually any digital recording software. In addition, the M series consoles feature powerful routing options that let you route your USB digital recording and playback.

Connecting the M series to your computer is a simple procedure that takes just a few minutes. Since the M Series consoles are USB compliant, you can use either a MAC or PC, connect USB cable and plug IN and play. You will be able to control your M series using the standard audio interface controls in the MAC or Windows operating system. You will find detailed instructions on setting up with MAC OS and Windows in the following sections of this manual.

### Getting Started with Windows XP

1. The first time you plug the M series into a USB port, Windows will install the universal drivers for that port. A balloon tip will pop up, telling you it has found the USB Audio codec (figure 1).

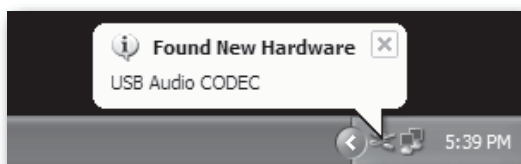


Figure 1

2. When it is finished installing the drivers, it will say "Your new hardware is installed and ready to use" (figure 2).

**Note:** This balloon will not pop up again for the same USB port.

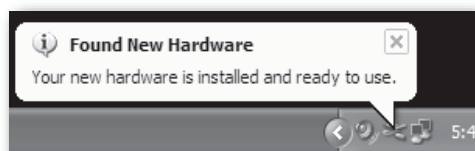


Figure 2

3. Most of the time, you'll want the output volume from the computer at the maximum position, but sometimes it defaults to the middle of the slider, making the output very quiet. The volume can be increased in several ways. The simplest is to click the loudspeaker icon (figure 3) in the system tray and drag the slider to the top (figure 4).



Figure 3



Figure 4

4. If the icon is not there, the volume can be changed by going to Control Panel and opening Sounds and Audio Devices (figure 5).

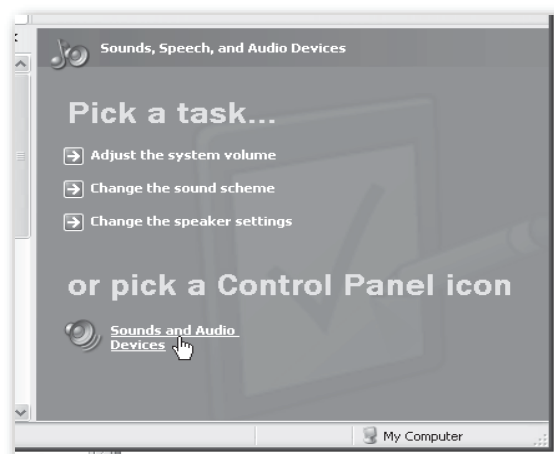


Figure 5

## Using the USB I/O (For only the USB Compatible)

### Getting Started with Windows XP - continued

5. To use the M Series as your default input/output device (for system sounds and programs like Sound Recorder), ensure that it is set for playback and recording in the Audio tab (figure 6).

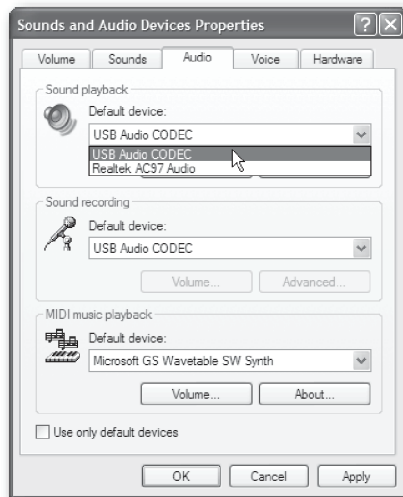


Figure 6

6. The volume can then be set by pressing the Volume button (figure 7).

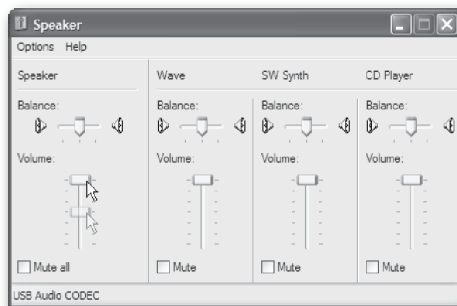


Figure 7

7. To prevent system sounds from coming through the M Series, select a different sound card for the system default, and then choose the M Series manually within your DAW software.

### Getting Started with MAC OS X

1. Connect the M Series console to your mac using a standard USB cable. The LED will light to indicate it is receiving USB power. The MAC will recognize the USB audio device and automatically install a universal driver.

2. To select the M SERIES as the computer's audio input, open the System Preferences from the dock or the main Apple Menu (figure 8).



Figure 8

3. Next open the Sound preference (figure 9).

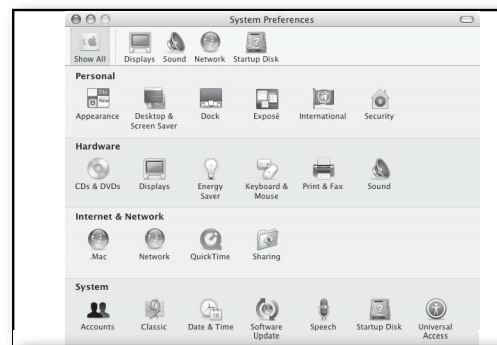


Figure 9

4. Now, click in the Input tab and select USB Audio Codec (figure 10). You may notice that the Volume slider sets itself to the full level. This will allow you to have full range using M Series's hardware input level controls.

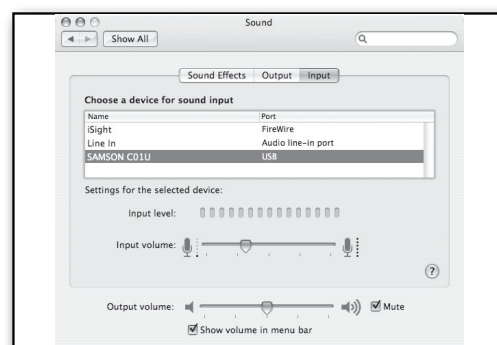


Figure 10

## Using the USB I/O (For only the USB Compatible)

### Getting Started with MAC OS X - continued

5. Next, click in the Output tab and select USB Audio Codec (figure 11). You may notice that the Volume slider sets itself to the full level. This will allow you to have full range using M Series' hardware MAIN Volume control.

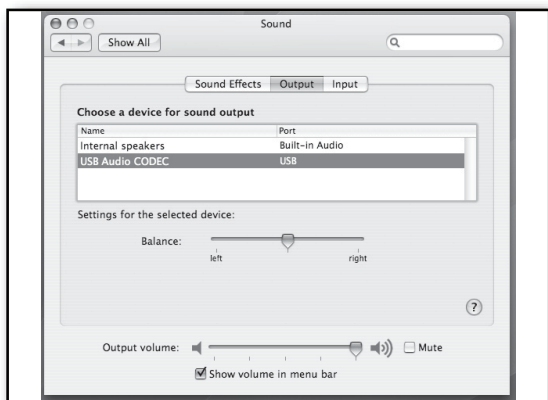


Figure 11

*At this point you can begin using your M Series console with most any audio recording software, but you need to select it as an input and output device within the DAW. When selecting the inputs and outputs just look for and select the USB Audio Codec.*

### Recording from the M Series' USB I/O

For recording a live performance, you can send the Be sure that the each channel input volume proper level is set to to send the MAIN Left and Right mix to the USB input. The USB I/O is always active and signal, the signal sent to the computer will be comprised of the input channels that are assigned to the MAIN Left and Right Bus. The mix level follows the channel FADER and the stereo image set by the channel's PAN control.

You can also assign the USB out to feed from the AUX1 and AUX2 outputs enabling you to build a stereo mix for recording that's independent from the house sound system. Press the USB SEND switch down to send the AUX1 and AUX2 mix to the USB input.

### Playing Back From the M Series' USB I/O

For playback, you can return the USB stereo signal directly into the TAPE IN left and right mix bus so that the playback from the PC sums with the MAIN mix on the console.

To hear the USB playback in the MAIN mix, be sure that the TAPE/USB volume is set to proper level.

## Points to Remember

- In all cases, use good quality twin screened audio cable. Check for instability at the output.
- Always connect both conductors at both ends, and ensure that the screen is only connected at one end.
- Do not disconnect the mains earth from each piece of equipment. This is needed to provide both safety and screen returns to the system star point.
- Equipment which has balanced inputs and outputs may need to be electrically isolated from the equipment rack and/or other equipment, to avoid earth loops.

It is important to remember that all equipment which is connected to the mains is a potential source of hum and interference and may radiate both electrostatic or electromagnetic radiation. In addition, the mains will also act as a carrier for many forms of RF interference generated by electric motors, air-conditioning units, thyristor light dimmers etc. Unless the earth system is clean, all attempts to improve hum noise levels will be futile. In extreme cases there will be no alternative but to provide a completely separate and independent 'technical earth' to replace the incoming 'noisy earth'. However, always consult your local electricity supply authority to ensure that safety regulations are not being infringed.

## Connections

HPA products are wired to reflect accepted wiring practices used throughout the world.

Balanced XLR connectors are wired as described:

Pin #1 Shield

Pin #2 Positive

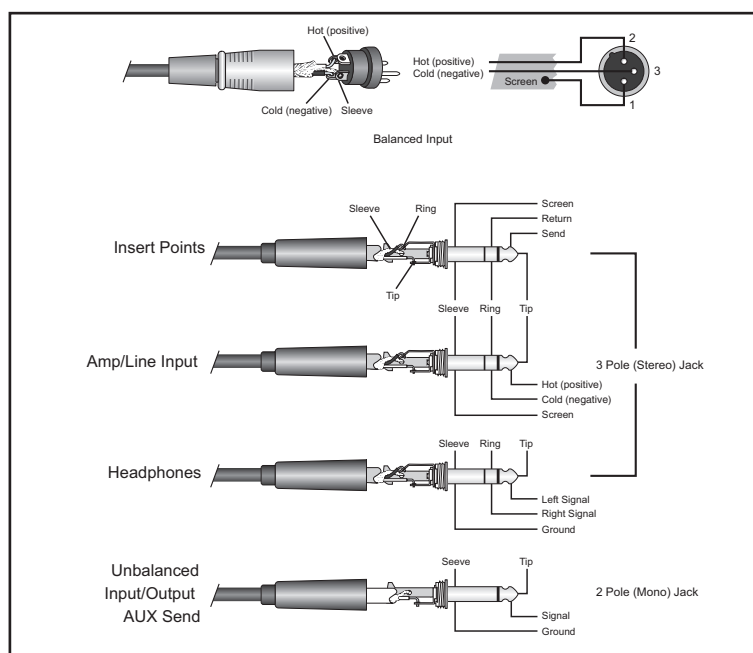
Pin #3 Negative

Balanced 1/4" TRS connectors are wired as described:

Tip is Positive

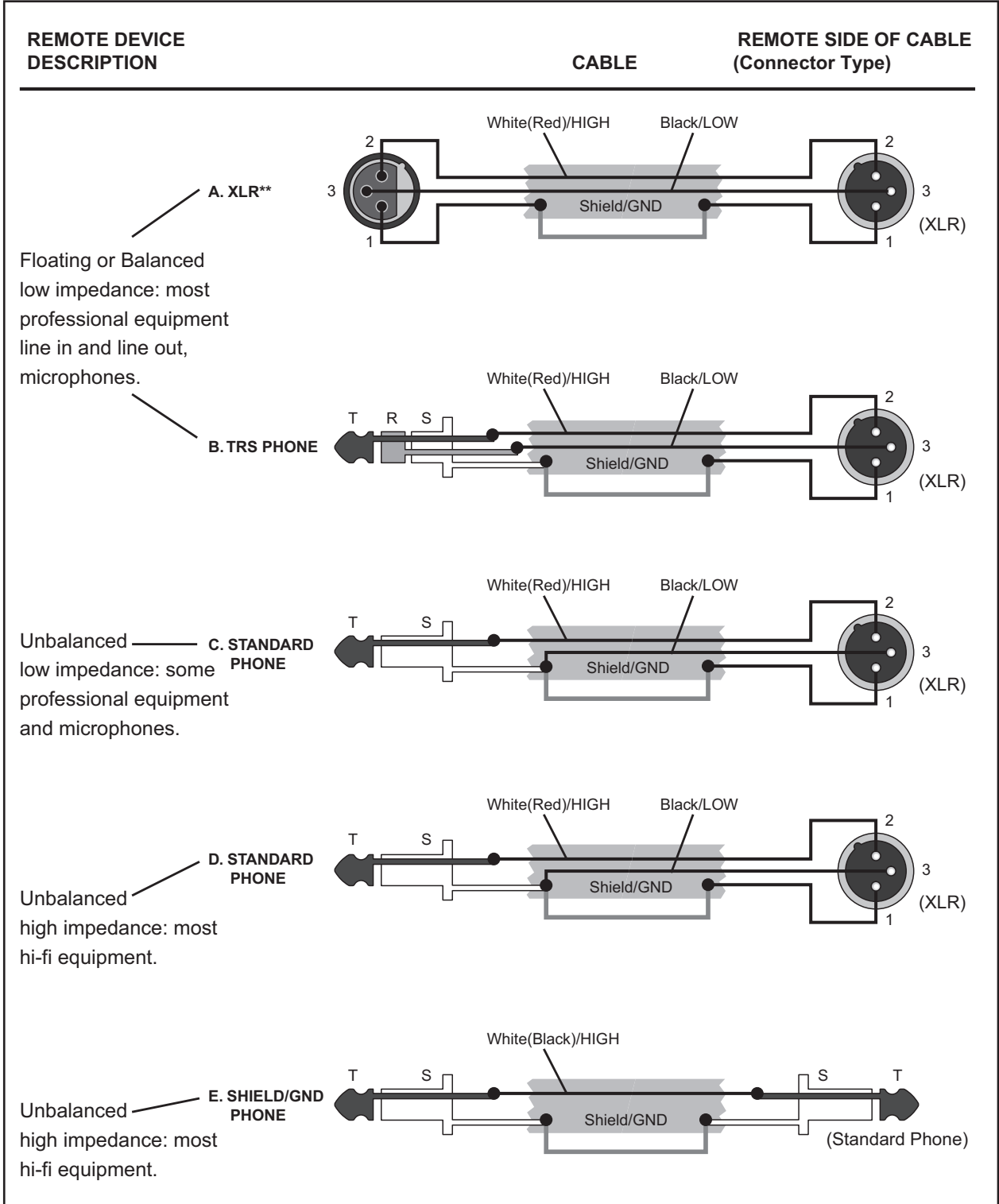
Ring is Negative

Sleeve is Shield



# Connections

## CONNECTOR AND CABLE CONFIGURATIONS



Connector and cable configurations recommended for use with the M 4 Bus Series.  
These cables are based on the use of auxiliary equipment that is isolated from the AC power mains.

## Applications

### Setup Procedure

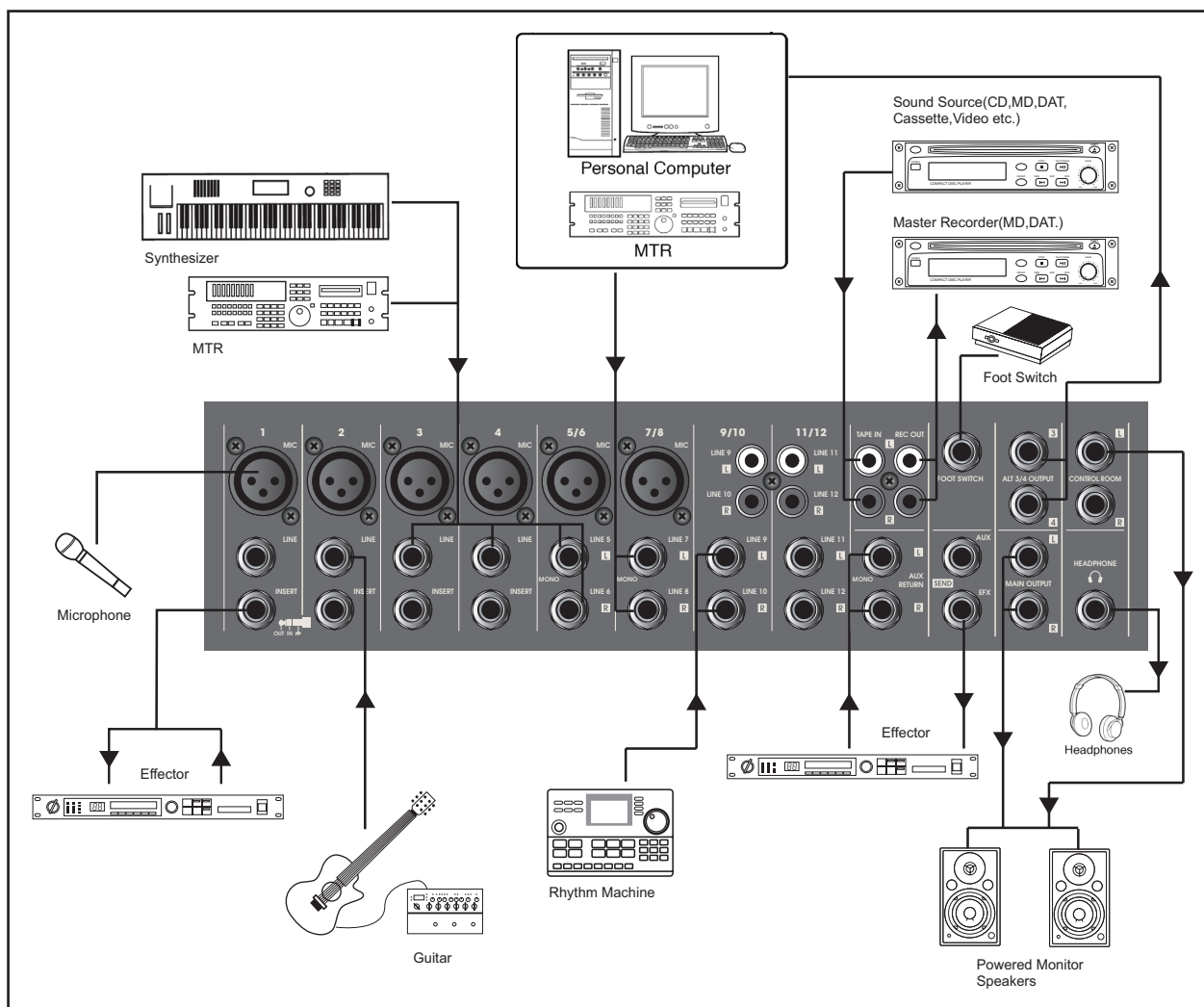
1. Before connecting to microphones and instruments, be sure that all devices are turned off. Also be sure that all of the mixer's channel fader and master control faders are set all the way down.
2. For each connection, connect one end of the cable to the relevant microphone or instrument and connect the other end to the appropriate input jack on the mixer.

**NOTE:** Where an input channel provides both a MIC INPUT jack and a LINE INPUT jack, you may use either one of these jack but you may not use both at the same time. Please connect to only one of these jacks on each channel.

3. To avoid causing damage to speaker, power up the devices in the following order: Peripheral devices → mixer → power amps (or powered speakers).

**NOTE:** When shutting the system down, turn off the power in the opposite order: Power amps (powered speakers) → mixer → Peripheral devices.

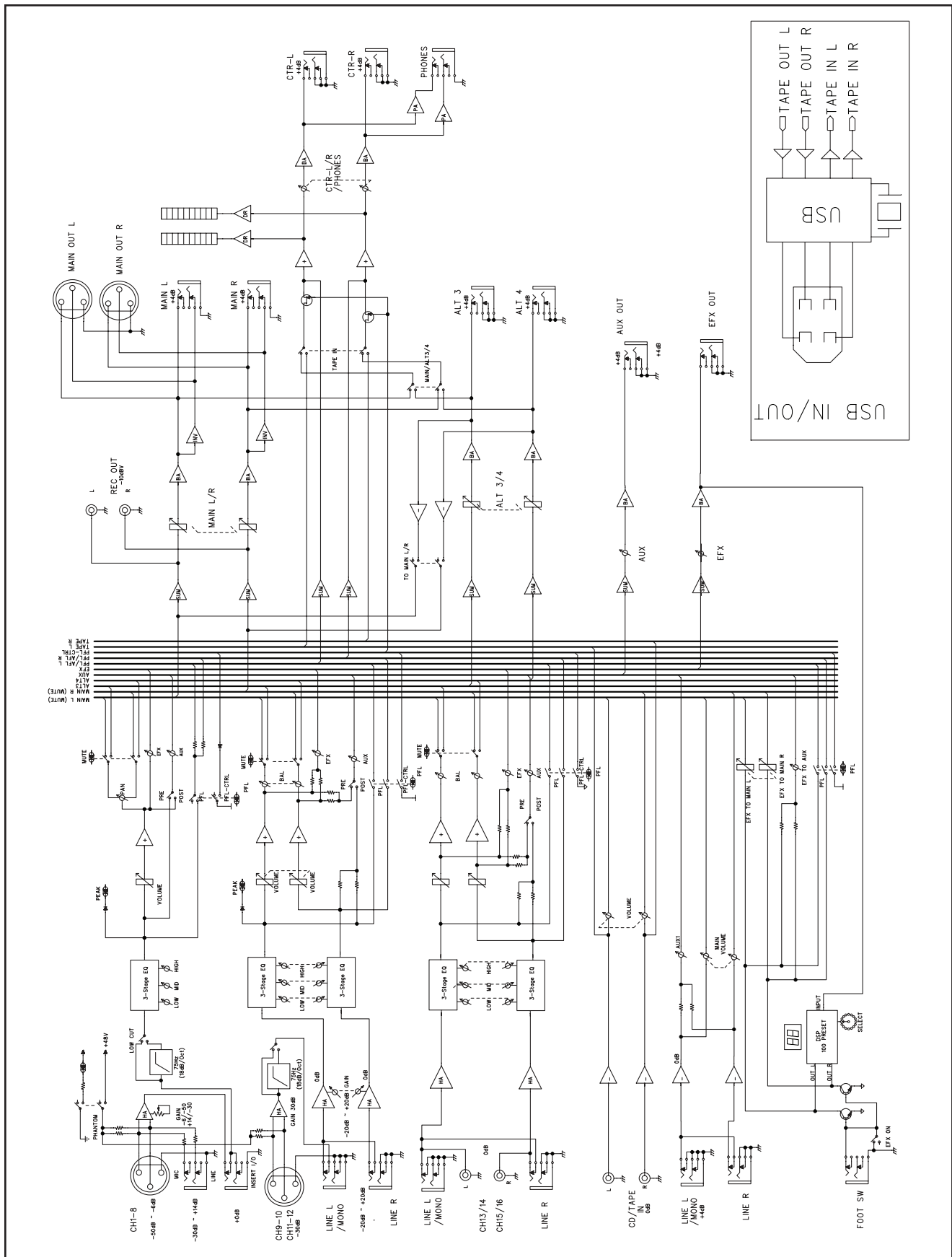
### Home Recording



The diagram illustrates a live sound reinforcement system setup. At the center is a mixing console with multiple input channels and output sections. The inputs include MIC (Microphone), LINE, MONO, and INSERT. The outputs include LINE, MONO, AUX, SEND, EFX, MAIN OUTPUT, and HEADPHONE. The system is connected to various instruments and equipment:

- Inputs:**
  - Microphones:** Connected to MIC inputs (1, 2, 3, 4, 5, 6, 7, 8).
  - Guitar:** Connected to LINE input 1.
  - Drums:** Connected to MIC inputs 4, 5, 6, and 7.
  - CD Player:** Connected to LINE input 9.
  - CD, Cassette, or DAT Recorder:** Connected to LINE input 11.
  - Foot Switch:** Connected to the FOOT SWITCH input.
  - PRE:** Connected to the PRE input.
  - Effector:** Connected to the EFFECTOR input.
  - Synthesizer:** Connected to LINE input 11.
  - Bass:** Connected to the DI (Direct Injection) input.
- Outputs:**
  - Monitor Speakers (Internal):** Connected to the MONITOR output.
  - Power Amp:** Connected to the MAIN OUTPUT.
  - Headphones:** Connected to the HEADPHONE output.
  - Stage (Internal):** Connected to the STAGE output.
  - Main Speakers (External):** Connected to the MAIN OUTPUT.

## Block diagrams



## Specifications

**\*0dB=0.775Vrms, 0dBV=1Vrms**

### -GENERAL

Maximum Output Level (0.5% T.H.D at 1kHz)	+26dB(MAIN L/R) ,+20dB(ALT 3/4, AUX/EFX, CTRL ROOM) +20dB(INSERT) , More than 100mW(HEADPHONES) @33Ω
T.H.D	<0.1% @+14dB 20Hz ~ 20kHz (MIX L/R, ALT 3/4, AUX /EFX SEND, CTRL ROOM)
Frequency Response	20Hz ~ 20kHz, +1/-2dB (MIX L/R, ALT 3/4, AUX /EFX SEND, CTRL ROOM)
Hum and Noise (Average, Rs=150Ω)	-127dB equivalent input noise, -95dB residual noise (MIX L/R, ALT 3/4, AUX/EFX SEND CTRL ROOM OUT), -88dB (MIX L/R, ALT 3/4, AUX/EFX SEND, CTRL ROOM OUT) * Master fader at nominal level and all channel fader Minimum.
Maximum Voltage Gain	74dB MIC IN TO Main L/R, 74dB MIC IN TO ALT3/4, 66dB MIC IN TO AUX (PRE) , 76dB MIC IN TO AUX (POST), 76dB MIC IN TO EFX(REV), 80dB MIC IN TO CON- TROL ROOM L/R, 52.2dB MIC IN TO REC L/R, 54dB LINE IN TO MAIN L/R 54dB, LINE IN TO ALT3/4, 46dB LINE IN TO AUX (PRE), 56dB LINE IN TO AUX (POST), 56dB LINE IN TO EFX(REV), 60dB LINE IN TO CONTROL ROOM L/R, 44dB ST IN TO MAIN L/R, 44dB ST IN TO ALT3/4, 16dB AUX RETURN IN TO MAIN L/R, 20dB TAPE IN TO MAIN L/R
Crosstalk (at 1kHz)	-70dB between input channels, -70dB between input/output channels
Gain Control(mono Input Channel)	44dB Variable (-50dB ~ -6dB), (-30dB ~ +14dB)
Gain Control(mono/stereo combination Input ch)	40dB Variable (-20dB ~ +20dB)
Input Channel Equalization	HIGH: 12kHz shelving, MID : 2.5kHz peaking LOW: 80Hz shelving * Turnover/roll off frequencies: located 3dB below maximum boost/cut
LED Meters	10-Segment LEDx2 MAIN L/R, ALT 3/4,PFL,TAPE IN.
Internal Digital Effect	100 selectable presets FOOT switch (ON/OFF)
Channel Indicators	Peak: An indicator for each channel turns on when the pre-channel fader signal is 5dB below clipping.
Phantom +48V DC Power (Balanced input)	Supplied when Phantom +48V switch is ON
Included Accessory	Power adaptor (PA-M1224)
Power Supply	USA and Canada: 120V AC 60Hz
	Europe: 230V AC 50Hz
	Australia: 240V AC 50Hz
Power Consumption	36W
Weight	M1224FX/M1224FX-USB/M1424/M1424-USB : 4.6kg M1624FX/M1624FX-USB/M1824/M1824-USB : 5.9kg
Dimensions(W x D x H)mm	M1224FX/M1224FX-USB/M1424/M1424-USB: 420 x 328 x 90mm M1624FX/M1624FX-USB/M1824/M1824-USB: 420 x 436 x 90mm

## Specifications

### -INPUT

Input Connector	Input Impedance	Nominal Impedance	Rated Input Level	Connector Type
CH Mic	4k $\Omega$	50 ~ 600 $\Omega$	-50dB	XLR 3-31 Type Balanced
CH Line	10k $\Omega$	600 $\Omega$	-30dB	Phone Jack (TRS) T = Hot R = Cold S = GND
Stereo Input Mic	3k $\Omega$	600 $\Omega$	-44dB	XLR 3-31 Type Balanced
Stereo Input	5k $\Omega$	600 $\Omega$	-20dB	Unbalanced Phone Jack
Mono Channel Insert Input	10k $\Omega$	600 $\Omega$	0dB	Phone Jack (TRS) T = Out R = In S = GND
Tape In	10k $\Omega$	600 $\Omega$	-10dBV	RCA pin Jack

### -OUTPUT

Output Connector	Output Impedance	Nominal Impedance	Rated Output Level	Connector type
MIX Out L/R	240 $\Omega$	20K $\Omega$	+4dB	Balanced Phone Jack
ALT 3/4	75 $\Omega$	10K $\Omega$	+4dB	Unbalanced Phone Jack
CTRL Room Out	75 $\Omega$	10K $\Omega$	+4dB	Unbalanced Phone Jack
Aux Send	75 $\Omega$	600 $\Omega$	+4dB	Unbalanced Phone Jack
Mono Channel Insert Input	600 $\Omega$	10k $\Omega$	0dB	Phone Jack (TRS) T = Out R = In S = GND
Rec Out	600 $\Omega$	10k $\Omega$	-10dBV	RCA pin Jack
Phones Out	100 $\Omega$	33 $\Omega$	3mW	Stereo Phone Jack

Specifications and design subject to change without notice for improvements.

## **Service**

### **Procedures**

Take steps to insure the problem is not related to operator error or other products within the system. Information provided in the troubleshooting portion of this manual may help with this process. Once it is certain that the problem is related to the product contact your warranty provider as described in the warranty section of this manual.

### **Schematic**

A Schematic is available by contacting your warranty provider.

### **Parts List**

A Parts List is available by contacting your warranty provider.

## **Variations and Options**

### **Variations**

Products supplied through legitimate sources are compatible with local AC power requirements.

### **Options**

No optional items are available for this product.

## **Warranty**

Warranty terms and conditions vary by country and may not be the same for all products. Terms and conditions of warranty for a given product may be determined first by locating the appropriate country which the product was purchased in, then by locating the product type.

To obtain specific warranty information and available service locations contact HPA directly or the authorized HPA Distributor for your specific country or region.

***HPA***