

User's Manual

AMX-220/ AMX-220FX

22-CHANNEL MIXING CONSOLE/
WITH DIGITAL EFFECTS



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 placed in a 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.

PREFACE

Dear Customer:

Thank you for choosing the ▲LTO AMX-220 22-Channel Mixing Console (AMX-220FX 22-Channel Mixing Console with Digital Effects), which is the result of our ▲LTO AUDIO TEAM's endeavours.

For the ▲LTO AUDIO TEAM, music and audio are more than a profession, it is a passion and an obsession!

We have, in fact, been designing professional audio products for a number of years in cooperation with many of the world's major brands.

The ▲LTO line represents unparalleled analogue and digital products made by musicians, for musicians. With our design centres in Italy, the Netherlands, and the United Kingdom we provide you with world-class designs, while our software development teams continue to develop an impressive range of audio specific algorithms.

By purchasing our ▲LTO products you become the most important member of our ▲LTO AUDIO TEAM. We would like to share with you our passion for what we design and invite you to make suggestions, which will aid us in developing future products for you. We guarantee you our commitment for quality, continual research and development, and of course the best prices.

The ▲LTO AMX-220/AMX-220FX mixing console is equipped with 8 mono input channels (these are provided with ultra low noise microphone pre-amplifiers and phantom power at +48 Volt), 4 stereo input channels, 2 stereo aux returns and 2TK IN. So, in total you have 22 input channels on your AMX-220/AMX-220FX. It is specifically designed for professional application. Seeing is believing, let's meet the ▲LTO AMX-220/AMX-220FX.

We would like to thank all the people who made the ▲LTO AMX-220/AMX-220FX 22-Channel Mixing Console possible, especially to our designers and ▲LTO staff. It is their passion for music and professional audio that has made it possible for us to offer you, our most important team member, our continued support.

Thank you very much
▲LTO AUDIO TEAM

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1. INTRODUCTION

Thank you very much for expressing your confidence in ▲LTO products by purchasing AMX-220/AMX-220FX mixing console, The AMX-220/AMX-220FX is a professional compact mixer. You will get the smooth, accurate more natural and open sound open sound from this apparatus, and it is really ideal for gigs, recording and fixed PA installations.

The AMX-220/AMX-220FX mixing console is packed with some key features that can not be found in other consoles of its size: 8 mono (these are provided with ultra low noise microphone preamplifiers and phantom power at +48 Volt) and 4 stereo input channels, and each of them is provided with warm, natural EQ (mono channels 1~8 are equipped with 3-band MID sweep EQ, stereo channels 9~16 are equipped with 4-band fixed frequency EQ); highly accurate 12-segment bar graphic meters; 2-Track inputs assignable to Main Mix, Phones/Control Room outputs etc. Besides, the 24-bit effect processor with 256 effects (16 presets×16 variations) is supplied specifically for AMX-220FX.

Your AMX-220/AMX-220FX is very easy to operate but we advise you to go through each section of this manual carefully. In this way you will get the best out of your AMX-220/AMX-220FX.

2. FEATURES

The AMX-220/AMX-220FX mixing console is designed for professional application. It will provide the following features:

The common features:

- 8 MIC input channels with gold plated XLR and balanced LINE inputs
- 4 stereo input channels with balanced TRS jacks
- Ultra-low noise discrete MIC pre-amps with +48V Phantom power
- Extremely high headroom offering more dynamic range
- Insert on each of mono input channels
- Switchable Low-cut filter on each mono channel
- +4dBu/-10dBV selector on each stereo channel
- Warm, natural 4-band fixed frequency EQ on each stereo channel
- 3-band EQ with mid sweep(100Hz~8KHz) on each mono channel
- Peak LED on each channel
- Mute/ALT 3-4, SOLO function on each channel
- 2 AUX Returns for additional functionality
- Control Room and Phone outputs
- 2-Track inputs assignable to Main Mix, Control Room / Phones outputs
- Highly accurate 12-segment bar graph meters

Additionally, the AMX-220FX is also equipped with following features:

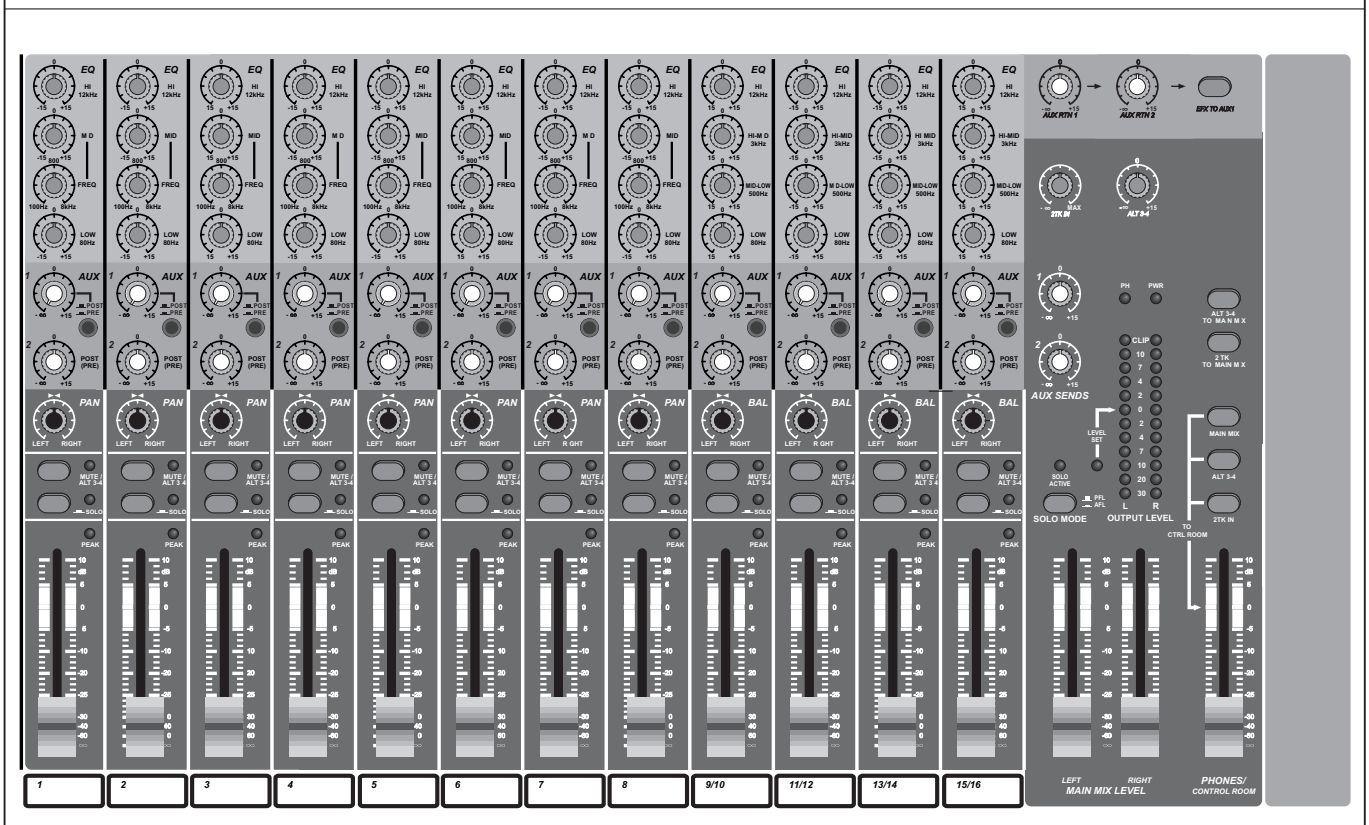
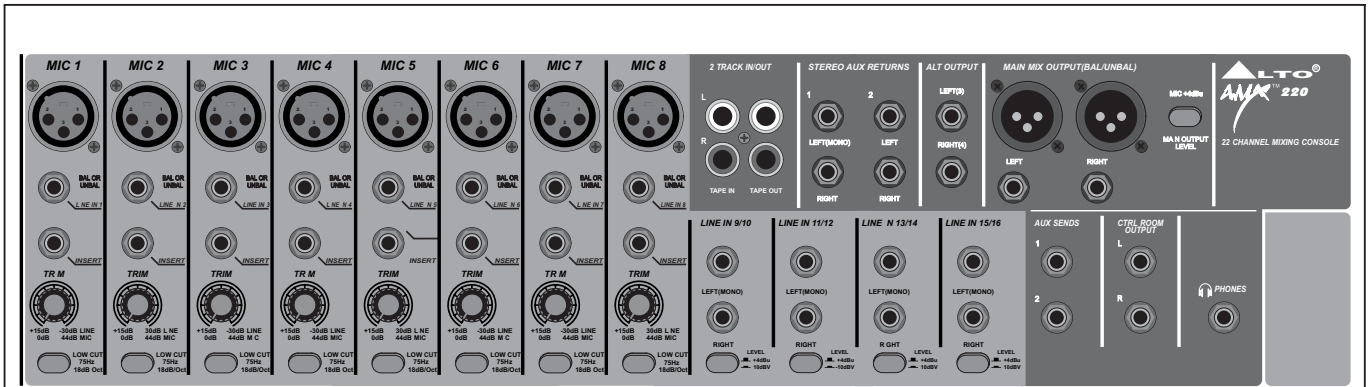
- 24 bit digital effect processor
- 256 effects (16 presets ×16 variations)
- Effect on/off by means of MUTE switch or a footswitch connected to the DFX FOOTSWITCH jack.

3. READY TO START?

- 3.1 Please check the AC voltage available in your country before connecting your AMX-220/AMX-220FX to the AC socket.
- 3.2 Be sure that the main power switch is turned off before connecting the mixer to the AC socket. Also, you should make sure that all input and output controls are turned down. This will avoid damage to your speakers and avoid excessive noise.
- 3.3 Before turning on the AMX-220/AMX-220FX you shall connect it to a power amplifier and turn-on the mixer BEFORE the power amplifier. Once you have finished your working session you shall turn the mixer off AFTER the power amplifier.
- 3.4 Before disconnecting the AMX-220/AMX-220FX always turn-off the power switch.
- 3.5 Do not use solvents to clean your AMX-220/AMX-220FX. A dry and clean cloth will be OK.

4. CONTROL ELEMENTS

AMX-220



AMX-220FX

MIC 1 **MIC 2** **MIC 3** **MIC 4** **MIC 5** **MIC 6** **MIC 7** **MIC 8**

2 TRACK IN/OUT: L, R, TAPE IN, TAPE OUT

STEREO AUX RETURNS: 1 (LEFT(MONO)), 2 (LEFT), LEFT, RIGHT, RIGHT

ALT OUTPUT: LEFT, RIGHT

MAIN MIX OUTPUT(BAL UNBAL): LEFT, RIGHT

MID +48dB, MAIN OUTPUT LEVEL

LINE IN 9/10, LINE IN 11/12, LINE IN 13/14, LINE IN 15/16

AUX SENDS: 1, 2

CTRL ROOM OUTPUT: L, R

PHONES

DSP FOOTSWITCH

ALTO[®] AMX[™] 220 FX
22 CHANNEL MIXING CONSOLE WITH DIGITAL EFFECTS

EQ: HI 12kHz, MID, FREQ, LOW 80Hz

AUX: 1, 2, POST (PRE), POST (PRE)

PAN: LEFT, RIGHT

BAL: LEFT, RIGHT

MUTE: MUTE, ALT 3-4, SOLO

PEAK

1 2 3 4 5 6 7 8 9/10 11/12 13/14 15/16

AUX SENDS: 1, 2, PH, PWR, CLIP, TO MAIN MIX, TO CTRL ROOM

SOLO MODE: SOLO, MUTE, PFL, AFL, L, R

OUTPUT LEVEL: LEVEL SET, TO CTRL ROOM

PHONES/CONTROL ROOM

PRESETS: 1-16

VARIATIONS: 1-16

PEAK: PEAK, OFF MUTE

1 VOCAL 1
2 VOCAL 2
3 LARGE HALL
4 SMALL HALL
5 LARGE ROOM
6 SMALL ROOM
7 PLATE
8 AUX RETURNS
9 SPRING REVERB
10 REVERB
11 FLANGER
12 CHORUS
13 REV + DELAY
14 REV + FLANGER
15 REV + CHORUS

4.1 MONO MIC/LINE CHANNELS 1

These are channel 1 through channel 8. You can connect balanced, low impedance microphones or a low level signal to the XLR socket. On the 1/4" line jack you can connect either a microphone or a line level instrument such as synthesizers, drum machines, effect processors or any other line level signal.

Note: You shall never connect an unbalanced microphone to the XLR socket if you do not want to damage both the microphone and mixer. Also, it is not possible to simultaneously use both the MIC & LINE inputs on the same channel, use only one of them for the appropriate source.

PHANTOM POWER +48 VOLT

It is available only to the XLR MIC sockets. Never connect a microphone when phantom power is already on.

4.2 MONO CHANNEL INSERT 2

Insert sockets are provided for all mono MIC channels. It can allow you patch external signal processing devices into signal path via a TRS connector, the signal will be taken out after the input gain control (TRIM), and sent to an external processor such as a compressor-limiter, then returned into the same channel immediately before the EQ section.

Note: Usually, insert connections require a special stereo-splitting Y-cord to be connected, known as TRS connector (Tip Send/Ring Return).

4.3 INPUT LEVEL SETTING 3

This control is provided with 2 different indication rings: one is for the microphone and the other for the line level. When you use a microphone you shall read the OUTSIDE ring (0 ~ 44dB), when you use a line level instrument you shall read the INSIDE ring (+15 ~ -30dB). For optimum operation you shall set this control in a way that the peak LED will blink also occasionally in order to avoid distortion on the input channel.

4.4 LOW CUT SWITCH 4

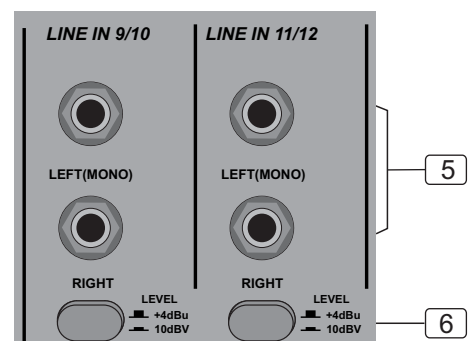
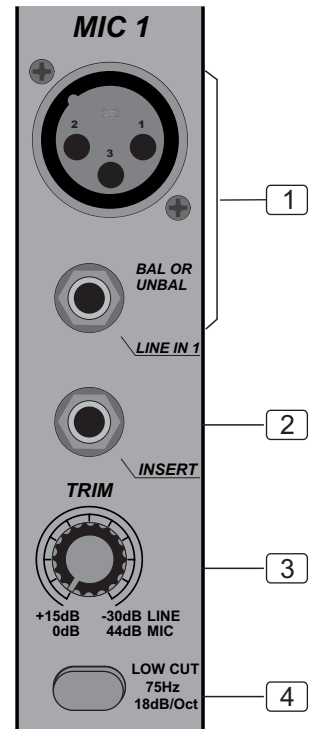
By pressing this button you will activate a 75Hz low frequency filter with a slope of 18 dB per octave. You can use this facility to reduce the hum noise caused by the mains power supply, or the stage rumble while using a microphone.

4.5 STEREO INPUTS 5

These are channel 9 through channel 16. They are organized in stereo pair and provided with 1/4" TRS sockets. Use the left input if connect a mono input signal to the STEREO INPUT.

4.6 +4dBu/-10dBV 6

These switches select the input sensitivity of the line inputs on the stereo channels CH9 ~ CH16. +4dBu is suitable for professional audio devices, -10dBV is suitable for general HI-FI devices. If not sure to use which setting, try +4dBu first, or change it to -10dBV if the volume is too small to be satisfied.



4.7 EQUALIZER

The mono input channels (channel 1~8) are equipped with 3-band MID sweep EQ: HI band, MID band and LOW band. And the stereo channels (channel 9~16) are equipped with 4-band fixed frequency EQ: HI band, HI-MID band, MID-LOW band and LOW band. All bands provide up to 15dB boost or cut.

- HI 7

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.

- MID 8

This is the midrange control. It provides 15dB boost or cut, flat at the center detent and the FREQ knob sets the center frequency, the adjustable range goes from 100Hz to 8KHz. It can affect most fundamental frequencies of all musical instruments and human voice.

- HI-MID 9

This control provides you up to 15dB boost or cut at 3KHz. It is useful to control voice. It can accurately polish your performance via adjusting this knob.

- MID-LOW 10

This control provides you up to 15dB boost or cut at 500Hz.

- LOW 11

This is the bass control. It is used to boost male voice, kickdrum or 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.

4.8 AUX SENDS CONTROL 12

These two controls are used to adjust the level of signal sent to AUX bus1&2, and this adjustment doesn't effect the main mix output signal at all.

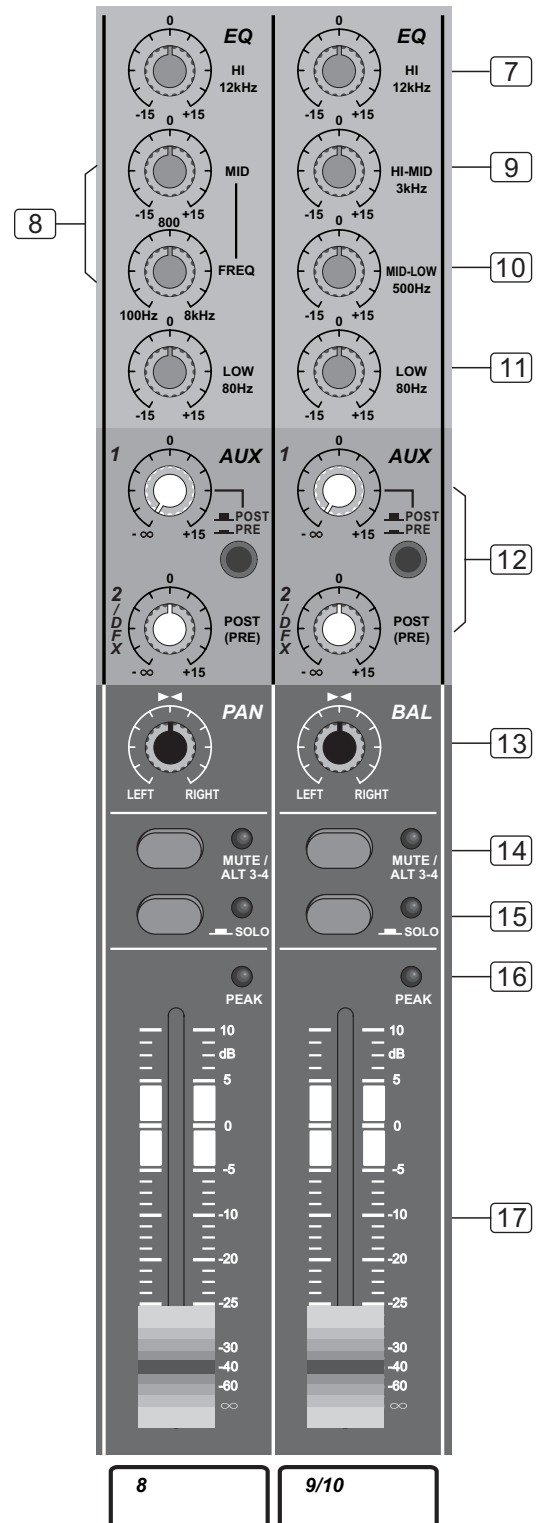
AUX1 can be configured as PRE/POST fader via the PRE/POST switch. Up for POST fader, the signal is sent out after the channel fader and will be affected by the channel fader. Down for PRE fader, the signal is sent out before the channel fader and will not be affected by the channel fader. AUX2 is configured as POST fader, however, it can also be configured as PRE fader through internal modification. (For more detail, please refer to chapter 6)

4.9 PAN/BAL CONTROL 13

Abbreviation of PANORAMA control for mono channels, for the stereo channels, always says, BALANCE control. You can adjust the stereo image of the signal via this control. Keep this control in center position and your signal will be positioned in the middle of stage. Turn this control fully counterclockwise and the signal will be present only on the left speaker and vice-versa.

4.10 MUTE/ALT3-4 SWITCH & LED INDICATOR 14

Each channel is equipped with the MUTE/ALT3-4 switch. This switch is used to route the channel signal to ALT3-4 output instead of the main mix and the LED beside MUTE/ALT3-4 will illuminate when the switch is Depressed.



4.11 SOLO SWITCH & LED INDICATOR 15

When pressing this button, the SOLO signal will replace other signals and reach to the CONTROL ROOM / PHONES, also the LED beside it will illuminate. Usually use the SOLO function to preview each channel signal before they are let into the mix.

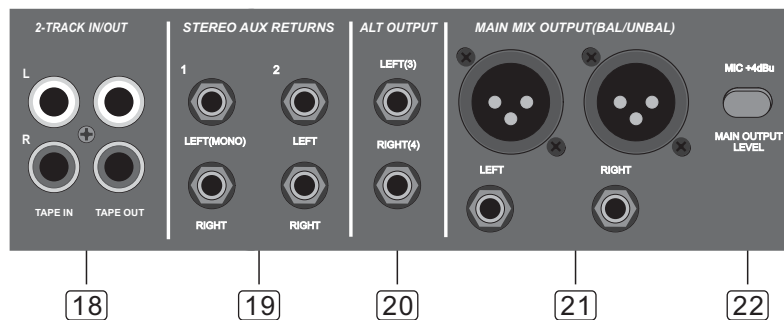
It is useful to set an instrument's input level and EQ, and you can "solo" any channel that you want to. However, The SOLO switch never affects any mix other than the PHONES/CONTROL ROOM mix.

4.12 PEAK LED 16

Inside your AMX-220/AMX-220FX the audio signal is monitored in several different stages and then sent to the PEAK LED, when this LED blinks, it warns you that you are reaching signal saturation and possible distortion. The PEAK LED will blink with a level that is 6dB before actual clipping.

4.13 FADER 17

This control will adjust the overall level of this channel and set the amount of signal sent to the main output.



4.14 2-TRACK IN/OUT 18

TAPE IN

Use the Tape input if you wish to listen to your mixer from a Taper Recorder or DAT. You can assign the signal coming from the Taper Recorder either to CONTROL ROOM/PHONES output using the 2TK IN button on the front panel or to the MAIN MIX output using the 2TK TO MAIN MIX button.

TAPE OUT

These RCA sockets will route the main mix into a tape recorder.

4.15 STEREO AUX RETURNS 19

Use these stereo 1/4" sockets to return the sound of an effect unit to the main mix. You can also use them as the extra auxiliary inputs, but they are primarily used to connect the output of external effect processors.

Note: in AMX-220FX, the returned signal of AUX RETURN1 will also be routed to AUX RETURN if there is no signal feeding to AUX RETURN 2 sockets. The signal is summed, on mixed in to the main L/R mix bus.

4.16 ALT OUTPUT 20

These 1/4" sockets are unbalanced outputs, the signal level to the ALT OUTPUT is adjusted by ALT 3-4 rotary on the front panel.

4.17 MAIN MIX OUTPUT 21

The stereo output is supplied both with XLR and 1/4" TRS sockets, which are used to send the audio signal to an amplifier. Through the main mix level control, you can adjust the output level from $-\infty$ to +10dB.

4.18 MIC +4dB 22

When the switch is depressed, the output level from MAIN MIX OUTPUT will be reduced 30dB.

4.19 AUX SENDS 23

These 1/4" sockets are used to send out the signal from the AUX bus to external device such as effects equipment, they also can be used as monitoring outputs by connecting a power amplifier and monitor speaker.

4.20 CTRL ROOM OUTPUT 24

These 1/4" sockets are used to send the control room signal to the studio monitor speakers or a second set of PA.

4.21 PHONES 25

This socket will send out the mix signal to a pair of headphones.

4.22 DSP FOOTSWITCH (for AMX-220FX model only) 26

This socket is used to connect external footswitch for your convenient operation, it will activate/deactivate the DSP module in this unit and function same as DFX MUTE switch 43.

4.23 AUX RETURN CONTROL 27

These two controls adjust the level of the signal present at the AUX RETURNS 1&2 jacks. The signal is summed, or mixed in to the main L/R mix bus.

4.24 EFX TO AUX1 28

This switch will routes the signal that is present at the AUX RETURN 2 jacks to AUX 1 output so that the effects can be heard in the monitor mix.

4.25 ALT 3-4 CONTROL 29

This control is used to adjust the level of the ALT output, and the adjustable range is from $-\infty$ to +15dB, this is another way to offer you extra independent stereo submix with its own level adjustment knob.

4.26 2TK IN CONTROL 30

This control is used to adjust the level of 2TK IN signal, which can be varied from $-\infty$ to MAX.

4.27 AUX SENDS CONTROL 31

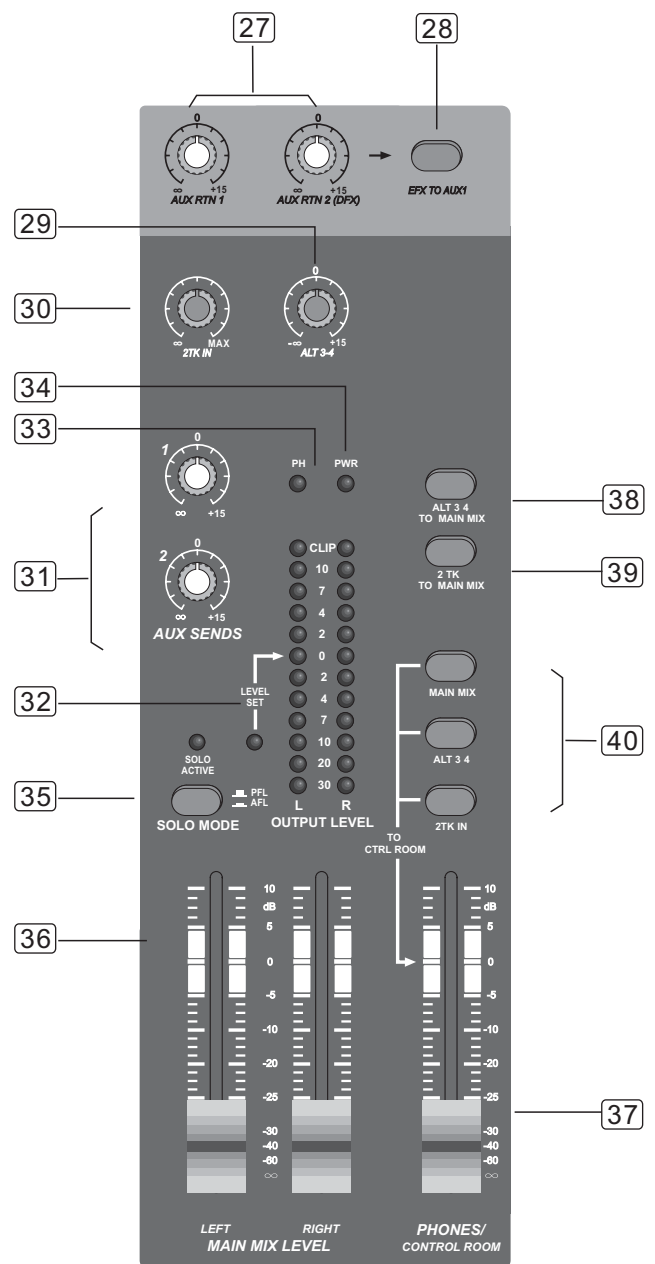
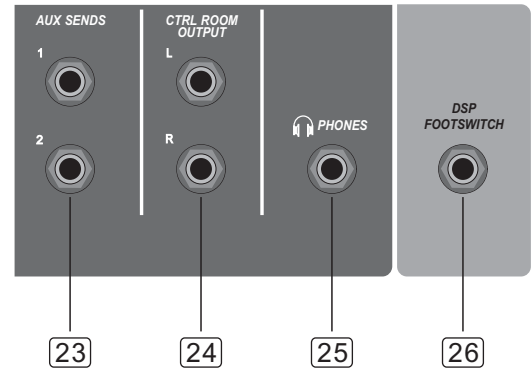
These controls are used to determine the master AUX SENDS levels. The adjustable range is from $-\infty$ to +15dB. When the effect unit connected to mixer has no input gain control, you can get a further +15dB gain available from these AUX SENDS outputs.

4.28 OUTPUT LEVEL LED DISPLAY 32

This stereo 12 segments LED meter will indicate the level of the overall output signal.

4.29 PHANTOM LED 33

This LED indicates when the phantom power is switched on.



4.30 POWER LED 34

This LED indicates when the power is on in your AMX-220/AMX-220FX.

4.31 SOLO MODE SWITCH 35

This button provides two modes: up for PFL (Pre-Fader-Listen) mode, down for AFL (After-Fader-Listen) mode. Engage the button, the output signal of soloed channel will be sent out after its channel fader. Release the button to enter into PFL mode, the signal of soloed channel will be sent out before its channel fader and not affected by the PAN/BAL and fader control.

Note: The SOLO MODE switch is usable only when one or more channel SOLO switches have been pressed down.

4.32 MAIN MIX LEVEL 36

These two faders set the amount of signal sent both to the Main Output and the Tape Output.

4.33 PHONES/CONTROL ROOM 37

This fader sets the amount of signal sent to Control Room and Headphone.

4.34 ALT 3-4 TO MAIN MIX 38

Engaging this switch allows you to combine the ALT 3-4 output with the MAIN MIX, and feeds ALT 3-4 signal into Main output.

4.35 2TK TO MAIN MIX 39

Engaging this button to route the 2TK IN signal into the Main Mix output.

4.36 CONTROL ROOM SOURCE 40

You can choose to monitor any combination of MAIN MIX, ALT 3-4 and 2TK IN via these matrix switches. The ALT 3-4 is additional stereo mix bus, 2TK IN is the stereo signal coming from the TAPE IN jacks. These stereo signals will be delivered to the PHONES/CONTROL ROOM by engaging these switches.

Note: when the channel's SOLO switch was engaged, then the SOLO signal will replace other signals, and also be sent to the CONTROL ROOM/PHONES.

4.37 24 BIT DIGITAL EFFECTS (For AMX-220FX Model)

- PRESETS CONTROL 41

Adjust this knob to select the right effect you wish to perform. There are total 16 options for you: several kinds of reverb, mono and stereo delay, modulation effects, and versatile two-effect combination.

- VARIATIONS CONTROL 42

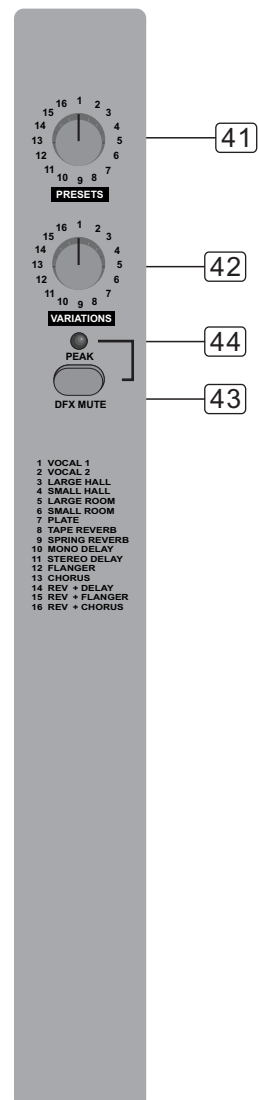
Since you have selected the preferable effect, the next step, please go with the fine consideration, there are also total 16 variations for each preset. Each variation has been designed modifying several parameter.

- DFX MUTE SWITCH 43

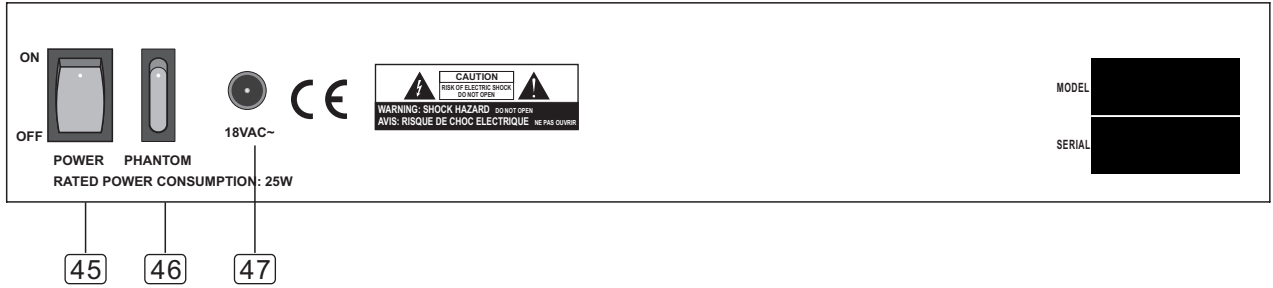
This switch is used to activate/deactivate the effect facility. Sometimes, you can also use the DFX FOOTSWITCH for convenient operation.

- PEAK LED 44

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.



4.38 REAR PANEL DESCRIPTION



- POWER ON/OFF SWITCH

45

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

- PHANTOM ON/OFF SWITCH

46

This switch will apply +48 Volt Phantom Power only to the 8 XLR microphone inputs. Never connect microphones When the phantom power is on already.

- AC INPUT CONNECTOR

47

This connector is used to connect the 18VAC adapter supplied by ▲LTO company only.

5. INSTALLATION AND CONNECTION

Ok, you have got to this point and you are now in the position to successfully operate your AMX-220/AMX-220FX. However, we advise you to read carefully the following section to be the real master of your own mixer. 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 these procedures for every single channel:

- Before connecting mics or instruments, make sure that the power of all your systems components including the mixer is turned off. Also, make sure that all input and output controls of your mixer are turned down. This will avoid damage to your speakers and avoid excessive noise.
- Properly connect all external devices such as mics, power amplifiers, speakers, effects processor etc.
- Now, turn on the power of any peripheral devices, then power up the mixer.
Note: the power amplifier or powered monitors shall be turned on after the mixer and turned off before the mixer.
- Set the output level of your mixer or the connected power amplifier at no more than 75%.
- Set the CONTROL ROOM/PHONE level at no more than 50%.
- Position HI, MID and LOW EQ controls on middle position.
- Position panoramic (PAN/BAL) control on center position.
- While speaking into the mic (or playing the instrument), adjust the channel Level control so that the channel PEAK LED will blink occasionally, in this way you will maintain good headroom and idea dynamic range.
- You can shape the tone of each channel by adjusting the equalizer controls as desired.
- Now repeat the same sequence for all other input channels. The main LED could move up into the red section, in this case yo can adjust the overall output level through the MAIN MIX control.
- For AMX-220FX, you can select desired DSP sound effects via PRESET and VARIATION controls.

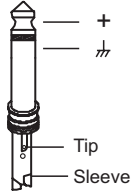
5.1 Audio Connection

Both XLR and 1/4" TRS connectors are available on the unit. In this way you can interface the unit in several different ways without experiencing any noise or signal loss. You can use the unit with single instruments using The mixer's main insert or on "in-line" between a mixing console's output and a power amplifier.

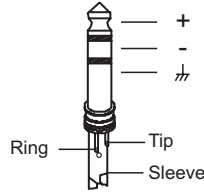
- Wiring Configuration

Either the 1/4" TRS phone jack or XLR connector can be wired in balanced and unbalanced modes, which will be determined by the actual application status, please wire your system as the following wiring examples:

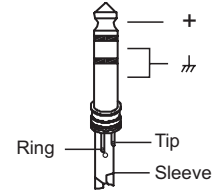
- For 1/4" Phone jack



TS Type Unbalanced

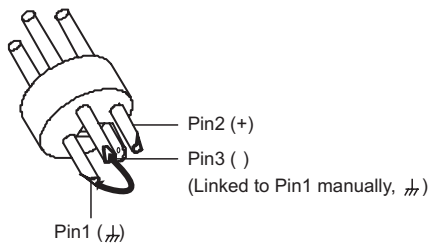


TRS Type Balanced

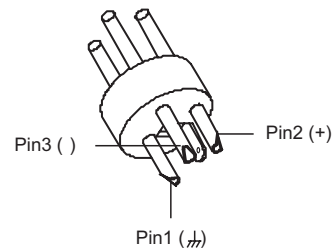


TRS Type Unbalanced

- For XLR connector



XLR Type Unbalanced

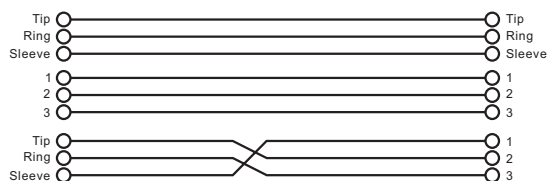
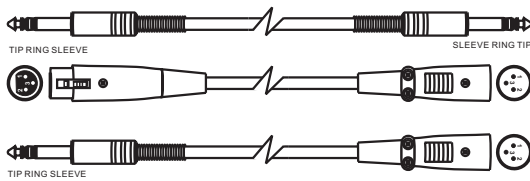


XLR Type Balanced

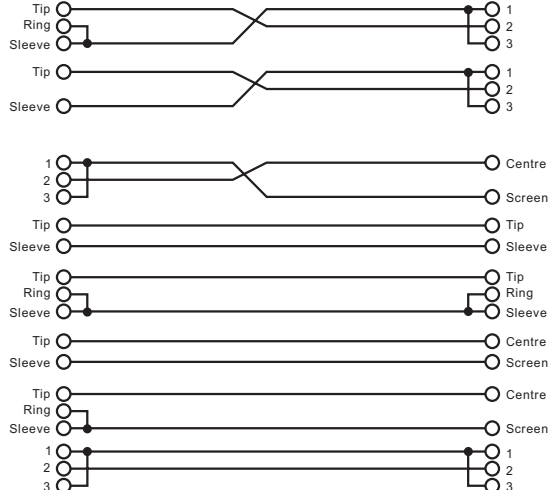
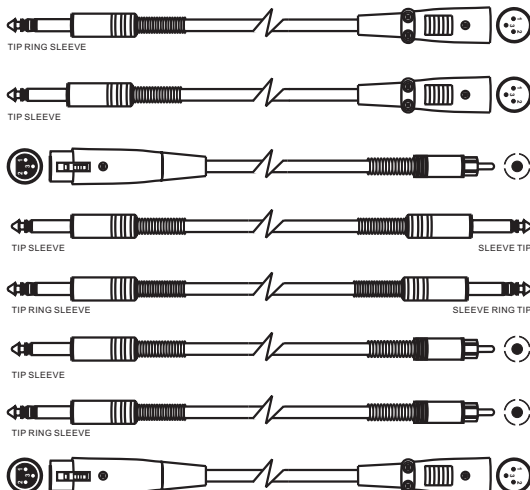
- In-line Connection

For these applications the unit provides 1/4" TRS and XLR connectors to easily interface with most professional audio devices. Follow the configuration examples below for your particular connection.

- Balanced



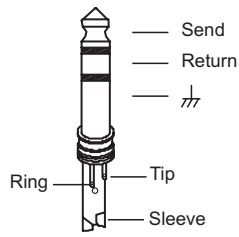
- Unbalanced



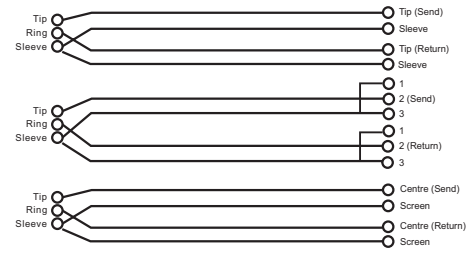
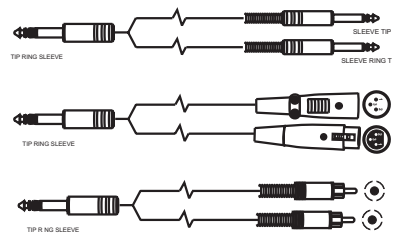
- Insert Points Connection

If you are connecting to a mixing console's main inserts, you may have a single TRS jack for Send and Return, in this case, use an insert "Y" cable that configured like the examples below.

• 1/4" TRS insert

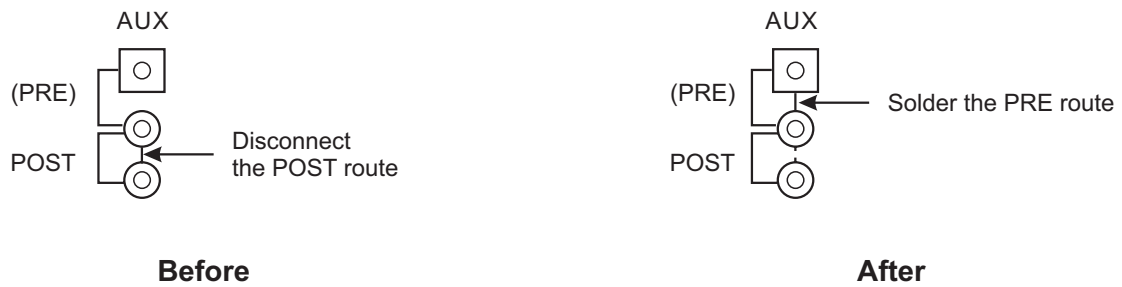


• Insert Leads



6. FOR THE EXPERTS WHO WANT TO KNOW MORE

As we have told you previously in this manual, the AUX SEND2 control both on mono and on stereo channels is factory wired as POST-FADER. If you have some skill in electronic components soldering you can modify this setting and have all your AUX SENDS configured as PRE-FADER.

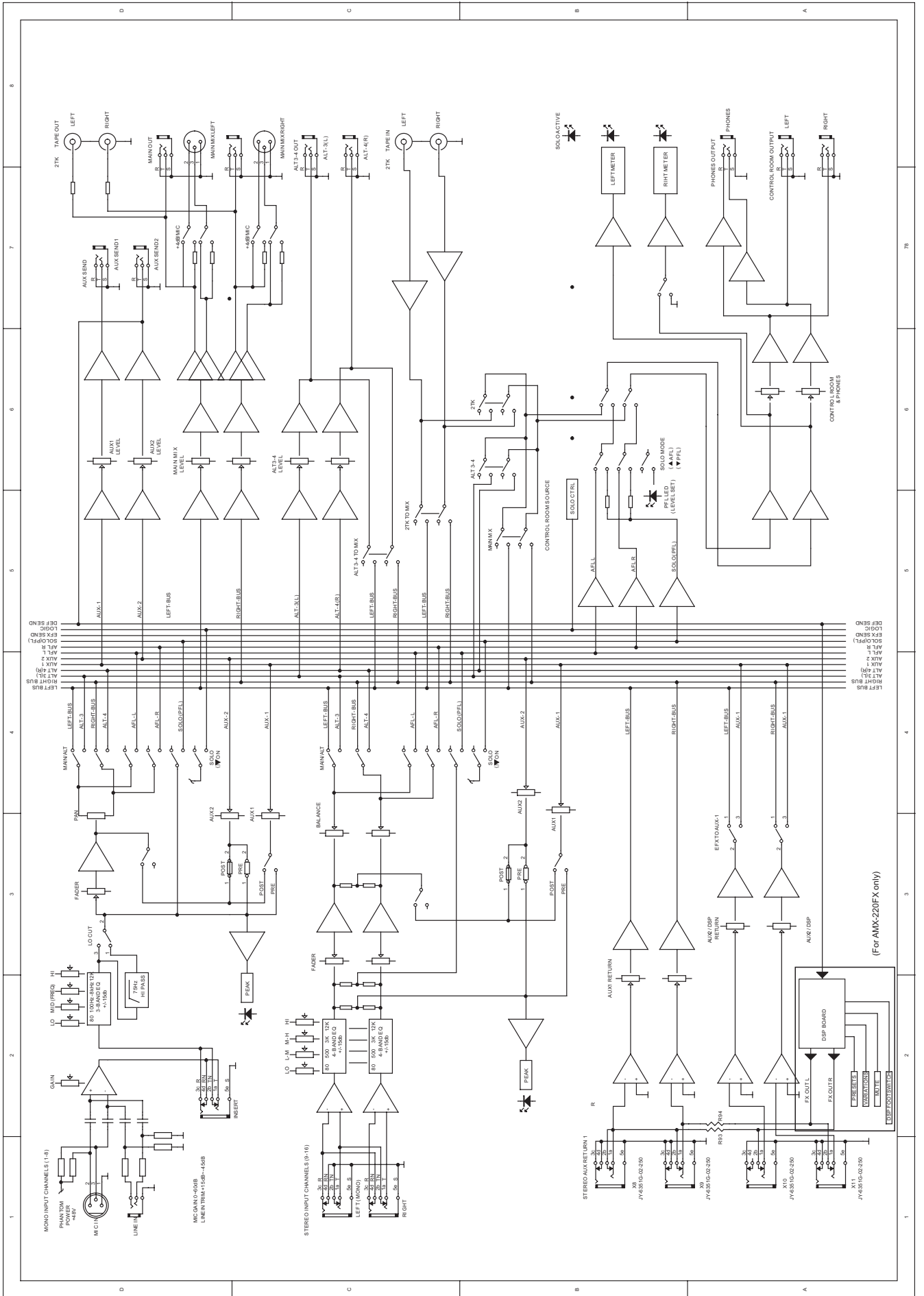


Modification on mono and stereo channels

7. PRESET LIST (For AMX-220FX Model)

No.	Preset	Description	Controllable parameter	
			Parameter	Variable range
1	VOCAL 1	Simulate a room with small delay time.	Decay time Pre-delay	0.8~1.1s 0~79ms
2	VOCAL 2	Simulate a small space with slight decay time.	Decay time Pre-delay	0.8~2.5s 0~79ms
3	LARGE HALL	Simulate a large acoustic space of the sound.	Decay time Pre-delay	3.6~5.4s 23~55ms
4	SMALL HALL	Simulate a small acoustic space of the sound.	Decay time Pre-delay	1.0~2.9s 20~45ms
5	LARGE ROOM	Simulate a studio room with many early reflections.	Decay time Pre-delay	2.9~4.5s 23~55ms
6	SMALL ROOM	Simulate a bright studio room.	Decay time Pre-delay	0.7~2.1s 20~45ms
7	PLATE	Simulate the transducers sound like classic bright vocal plate.	Decay time Pre-delay	0.6~6.1s 10ms
8	TAPE REVERB	Simulate a record head and multiple playback heads at intervals along the tape.	Decay time Pre-delay	1.3~5.4s 0~84ms
9	SPRING REVERB	Simulate the analog transducers' springs lightly stretched sound.	Decay time Pre-delay	1.3~5.4s 0~35ms
10	MONO DELAY	Reproduce the sound input on the output after a lapse of time.	Period	60~650ms
11	STEREO DELAY	Recreate the input sound on the stereo output with different time.	Period Feedback	210~400ms 37~73%
12	FLANGER	Simulate to play with another person carrying out same the notes on the same instrument	Rate	0.16~2.79Hz
13	CHORUS	Recreate the illusion of more than one instrument from a single instrument sound	Rate	0.5~5Hz
14	REV.+DELAY	Delay with room effect	Delay period Rev. decay time	211~375ms 1.0~2.9s
15	REV.+FLANGER	Stereo chorus and large room reverb	Flanger Rate Rev. decay time	0.16~2.52Hz 1.5~2.9s
16	REV.+CHORUS	Simulate the sound effect achieved by rotating horn speakers and a bass cylinder	Chorus rate Rev. decay time	0.5~4.74Hz 1.5~2.9s

8. BLOCK DIAGRAM



9. TECHNICAL SPECIFICATION

Mono input channels	Microphone input	Electronically balanced ,discrete input configuration
	Frequency response	10Hz to 55KHz, ± 3 dB
	Distortion (THD&N)	0.005% at +4dBu, 1KHz
	Gain range	0dB to 44dB(MIC)
	SNR (Signal Noise Rated)	115dB
	Line input	Electronically balanced
	Frequency response	10Hz to 55KHz, ± 3 dB
	Distortion (THD&N)	0.005% at +4dBu, 1KHz
	Sensitivity range	+15dBu to -45dBu
Stereo input channels	Line input	Balanced
	Frequency response	10Hz to 55KHz, ± 3 dB
	Distortion (THD&N)	0.005% at +4dBu, 1KHz
Impedance	Microphone input	1.4K ohm
	Channel insert return	2.5K ohm
	All other inputs	10Kohm or greater
	Tape out	1K Ohm
	All other output	120 ohm
Equalization	Hi shelving	± 15 dB @ 12KHz
	Mid sweep	± 15 dB @ 100Hz~8KHz
	HI-MID	± 15 dB @ 3KHz
	MID-Low	± 15 dB @ 500Hz
	Low shelving	± 15 dB @ 80Hz
DSP SECTION	A/D and D/A converters	24 bit
	DSP resolution	24 bit
	Type of effects	Hall, Room, Vocal & Plate REVERBS Mono & Stereo DELAY (max DELAY TIME 650ms) Chorus, Flanger & Reverb MODULATIONS REVERB+DELAY, REVERB+CHORUS REVERB+FLANGER combinations
	Presets	256
	Controls	16-position PRESET Selector 16-position VARIATION selector PEAK LED MUTE SWITCH with LED indicator
Main Mix Section	Noise (Bus noise)	Fader 0 dB, channels muted:-100.0dBr (ref.:+4dBu)
		Fader 0 dB,all input channels assigned and set to UNITY gain:-90dBr(ref.:+4dBu)
	Max output	+22dBu balanced XLR,
		+22dBu unbalanced, 1/4" jacks
	AUX Return gain range	OFF to +15dB
AUX Sends max out	+22dBu	
Power supply (AC/AC Adaptor)	Main voltage	USA/ Canada 100-120V~,60Hz
		Europe 210-230V~,50Hz
		U.K/Australia 240V~,50Hz
Power Consumption	22watts	
Physical	Dimension (WxDxH)	427mmx412mmx43mm
	Net weight	5.90kg for AMX-220
		5.98kg for AMX-220FX

10. WARRANTY

10.1 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.

10.2 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.

10.3 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.

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

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