EXPECT THE BEST

Studiomaster

Professional Mixing Console

C5X-24

USER GUIDE

GD202007177   070403974E

IMPORTANT SAFETY SYMBOLS

```
      ⚡            CAUTION            !
              RISK OF ELECTRIC SHOCK
                   DO NOT OPEN
```

⚡ The symbol is used to indicate that some hazardous live terminals are involved within this apparatus, even under the normal operating conditions, which may within this apparatus, even under the normal operating conditions, which may be sufficient to constitute the risk of electric shock or death.

⚠ The symbol is used in the service documentation to indicate that specific component shall be replaced only by the component specified in that documentation for safety reasons.

⏚ Protective grounding terminal

∼ Alternating current/voltage

⚡ Hazardous live terminal

ON: Denotes the apparatus is turned on

OFF: Denotes the apparatus is turned off.

WARNING: Describes precautions that should be observed to prevent the danger of injury or death to the operator.

CAUTION: Describes precautions that should be observed to prevent danger of the apparatus.

1. IMPORTANT SAFETY INSTRUCTIONS

· **Read these instructions.**

· **Keep these instructions.**

· **Heed all warning.**

· **Follow all instructions.**

· **Water & Moisture**
The apparatus should be protected from moisture and rain, can not used near water, for example: near bathtub, kitchen sink or a swimming pool, etc.

· **Heat**
The apparatus should be located away from the heat source such as radiators, stoves or other appliances that produce heat.

TECHNICAL PARAMETER

No.	Test item	Test condition	Test standard
1	Frequency response	Balanced input (+1,-1dB)	20Hz to 20kHz
2	Distortion (THD&N)	Balanced input (@+10dBu)	< 0.08%
3	Residual noise	Main output	<- 90dB
4	SNR(Signal Noise Rated)		<-80dB
5	Gain range	Single channel microphone input	0dB to +50dB
		Single channel line input	15dB to -35dB
		Stereo channel microphone input	0dB to +40dB
		Stereo channel line input	20dB to -20dB
6	Equalizer	HI:12K	±15dB
		HI MID: 3K	±15dB
		LOW MID: 500Hz	±15dB
		LOW: 80Hz	±15dB
7	Maximum output	Main output / auxiliary output	+21dB, ±2dB
		Headphone output	+18dBu, ±2dB
8	Input Impedance	Microphone input	2.3kΩ bal
		Line input	20kΩ bal
		CD/RCA input	24kΩ unbal
9	Output impedance	RCA output	1k
		Headphone output	25Ω
10	USB	Recording / playback / Bluetooth	
11	LED level indication	(Clip)、10、7、4、2、0、-2、-4、-7、-10、-20、-30	
12	Phantom power	+47VDC (±3V)	
13	Power supply	AC 100V-240V (50/60Hz)	
14	Power consumption	55W	
15	Dimension(WxDxH)	24-channel	630x785x280mm
16	Net weight	24-channel	13.5Kg
17	Testing equipment	1. AP audio analyzer	
		2. TK7020 oscilloscope	

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DSP EFFECT

No.	Program	Description	Specification
00~09	Ambient	simulate an ambient	decay time: 0.36~1.38s
10~19	Room	simulate a small room	decay time: 0.28~0.82s
20~29	Hall	simulate a hall	decay time: 0.9~3.5s
30~39	Plate	simulate a plate	decay time: 0.44~1.54s
40~49	Delay	delay effect	delay time: 100~672.5ms
50~59	Echo	echo/delay effect	decay time: 0.9~3.6s; delay time: 50~466.6ms
60~69	Chorus + Echo	chorus and echo	Freq: 1.46~5.83Hz; delay time: 100~200ms
70~79	Tremolo + Rev	tremolo and reverb	Freq: 4.12~12.36Hz; decay time: 0.28~0.82s
80~89	Flanger+Echo	flanger and echo	Freq: 0.25~2.75Hz; delay time: 100~300ms
90~99	Wah Wah + Rev	wah-wah and reverb	Freq: 0.46~5.49Hz; decay time: 0.28~0.82s

· Ventilation

Do not block ventilation areas. Failure to do so could result in fire. Always install accordance with the manufacturer's instructions.

· Object and Liquid Entry

Objects do not fall into and liquids are not spilled into the inside of the apparatus for safety.

· Power Cord and Plug

Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
Do not defeat the safety purpose of the polarized or grounding-type plug.

· Power Supply

The apparatus should be connected to the power supply only of the type as marked on the apparatus or described in the manual. Failure to do so will result in damage to the product and possibly to user.
Unplug this apparatus during lightning storms or when unused for long periods of time.

· Fuse

To prevent the risk of fire and damaging the unit, please use only the recommended type of fuse as described in the manual. Before replacing the fuse, make sure the unit is turned off and Type disconnected with AC outlet.

· Electrical Connection

Improper electrical wiring may invalidate the product warranty.

· Cleaning

Clean only with a dry cloth. Do not use any solvents such as benzol or alcohol.

· Maintenance

Do not accept any servicing other than that described in the manual. Consult with a qualified service personnel only.

· Only use accessories or parts recommended by the munufacturer.

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Thank you for purchasing our professional audio mixers, which have 24 channel inputs respectively, they can be used in a variety of environments and can also be used for very large live performances and commercial performances. These mixers also include 24-bit high quality built-in digital effects. Each preset comes with 10 default settings and 10 variables, for a total of 100 different digital effects, with 6-band EQ on single channel input and 4-band EQ on stereo input channel.

Enjoy our excellent products, please read this manual carefully before operation.

FEATURES

1). 24 single channel with gilded XLR and balanced TRS connector MIC input.

2). 4 stereo channel with balanced TRS connector input.

3). Ultra-low noise MIC preamplifier with +48 V phantom power.

4). With SUB1-2, SUB3-4 & MAIN L-R signal dispatch switch.

5). Each channel has 6 AUX SEND and 2 PRE/POST keys, which can be switched to monitor application and effects sound processor input; 2 POST knobs for external SEND or internal digital DFX signal SEND.

6). Single channel input has a 6-band EQ scanning MID; stereo channel input has 4-band EQ.

7). Each single channel has an insertion function, and external devices can be flexibly inserted and connected.

8). 24-bit built-in DSP with 100 effects, 10 presets with 10 variables for DSP mute switch and peak indicator.

9). 2 TRK can be assigned to Main Mix and Control Room/Headphone outputs RAC IN with USB port.

CABLE

1/4" TRS interface or XLR connector can be connected in balanced or unbalanced mode. Please refer to the following illustration for connection.

1/4" interface

XLR interface

TS unbalanced   TRS balanced   TRS unbalanced

XLR unbalanced   XLR balanced
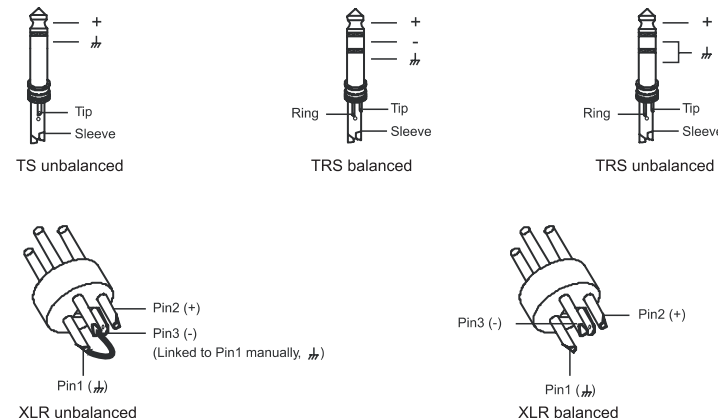
Line connection

In these applications, the machine provides 1/4" TRS and XLR connectors for easy connection to professional audio equipment. The following examples can be used for your special connection;

balanced

unbalanced

USB connection

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INSTALLATION

1. There should be no obstacles in front of the speakers. It is best to use a bracket to raise the speakers for best results.
2. Use professional equipment to hang or install speakers. Take precautions to prevent the speaker from falling and hurting people. Use with care to prevent damage to the speakers or parts.
3. Please use high-quality cable to ensure the best sound quality.
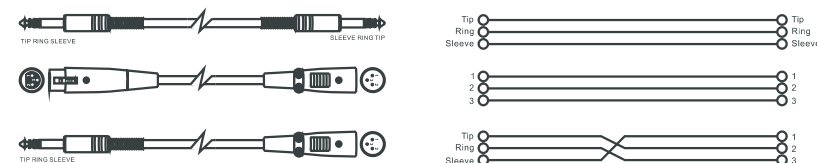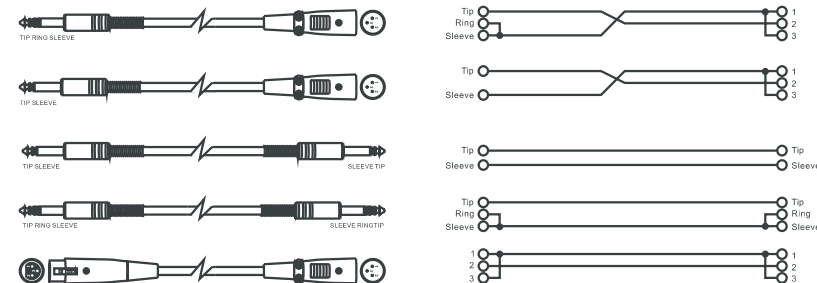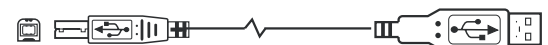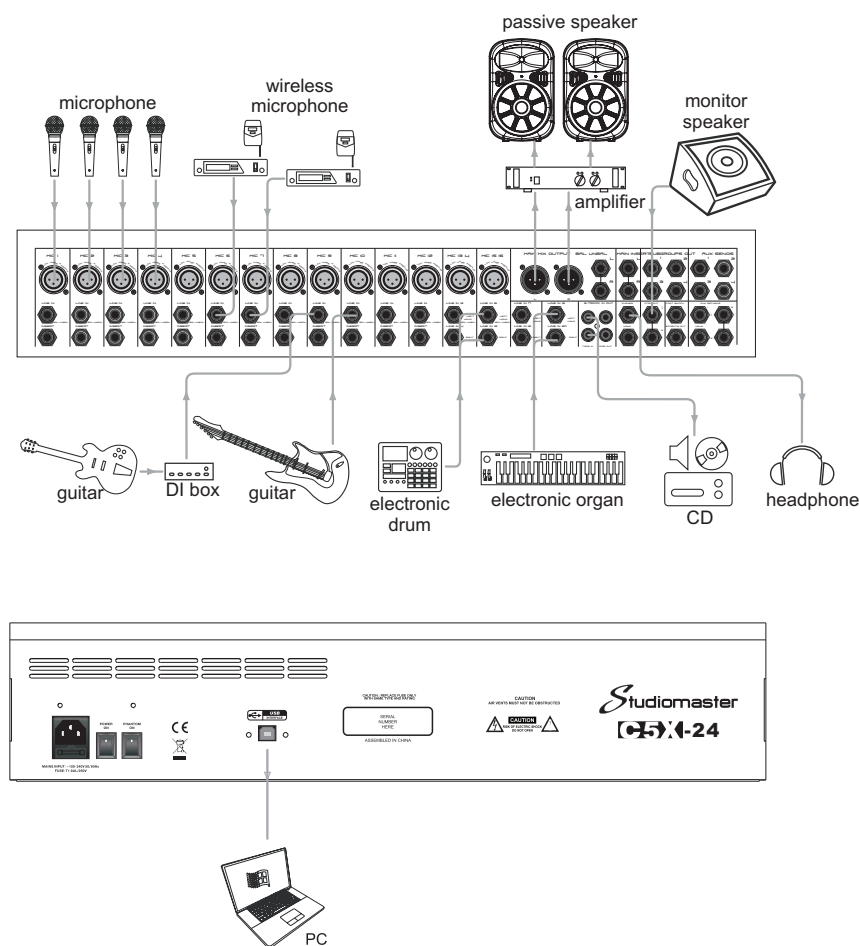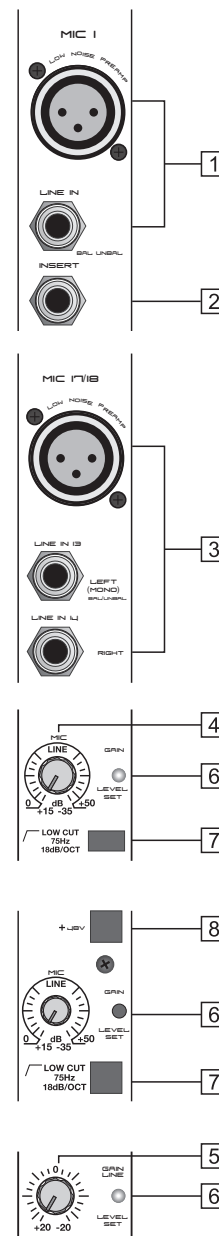4. Use a power amplifier that matches the power and impedance of the speaker. This ensures the best sound quality and extends the life of the parts. Check the power requirements of the speakers.
5. Do not point microphone against speaker to prevent feedback.

passive speaker

microphone

wireless microphone

monitor speaker

amplifier

guitar   DI box   guitar   electronic drum   electronic organ   CD   headphone

PC

A. CHANNEL CONTROL SECTION

MIC 1

LINE IN

INSERT

MIC 17/18

LINE IN 3

LINE IN 4

1. Microphone/line single channel input
These are balanced XLR microphone input sockets (1: grounding; 2: live; 3: neutral) 24 CH is equipped with 18 low noise microphone preamplifiers with optional phantom power, 50dB gain and over 115dB signal-to-noise ratio. You can connect any type of microphone, and moving-coil microphone does not require phantom power. Capacitive microphones use phantom power, but before connecting the microphone, verify that the phantom power power switch is off. Phantom power can damage your moving-coil microphone, so read the MIC instruction manual before using phantom power. Use the phantom power switch to turn on/off phantom power supply. These channels are also equipped with TRS balanced/unbalanced LINE-IN plugs for connecting line level devices such as keyboards, drums and effects.

2. Single channel insertion function
Each of these sockets provides an insertion point between equalizer and attenuator of the corresponding input channel (channels 1- 24). These INSERT sockets can be used to independently connect devices such as graphic equalizers, compressors, or noise filters to the appropriate channels. These sockets are TRS (tip, ring, sleeve) headphone sockets that carry both send signal and return signal (tip=transmit/output; ring= return/input; sleeve=ground).

3. Microphone/line stereo channel input
These are stereo line input sockets for stereo channel balanced XLR microphone and unbalanced headphone socket, you can connect to these inputs with a keyboard, drums, effects, and more. Note: if an input channel provides both MIC input socket and LINE input socket, you can use either of these sockets. but you can't use two sockets at the same time. You can only connect one socket in each channel at a time.

4. Gain control knob
Adjust input signal level to get the best balance between signal-to-noise ratio and dynamic range; To achieve optimal operation, set this control: CLIP LED is occasionally flashed to avoid distortion of input channel. Microphone input gain adjustment range: single channel: 0~50dB stereo channel: 0~40dB. Line input gain adjustment range: single channel: +15~ -35, stereo channel: +20~ -20dB.

5. Line gain control knob
When you use line level devices, you should set this control for optimal operation: CLIP LED is occasionally flashed to avoid distortion of input channel. Line input gain adjustment range: +20~ -20 dB.

6. Level detection indication
This level detection is very helpful in detecting the input level and can detect the strength of input signal.

7.High pass filter
This switch turns the high pass filter on or off. A 75 Hz low frequency filter can be activated with a gradient of 18 dB per sound interval. You can use this device to reduce humming noise caused by main power or stage noise caused by using microphone.

8. +48 phantom power switch
It is only used for XLR MIC socket capacitive microphones. Do not plug in microphone when the phantom power has been activated. Before turning on phantom power, make sure all the attenuators are turned off so you can protect your stage monitor and main speakers.

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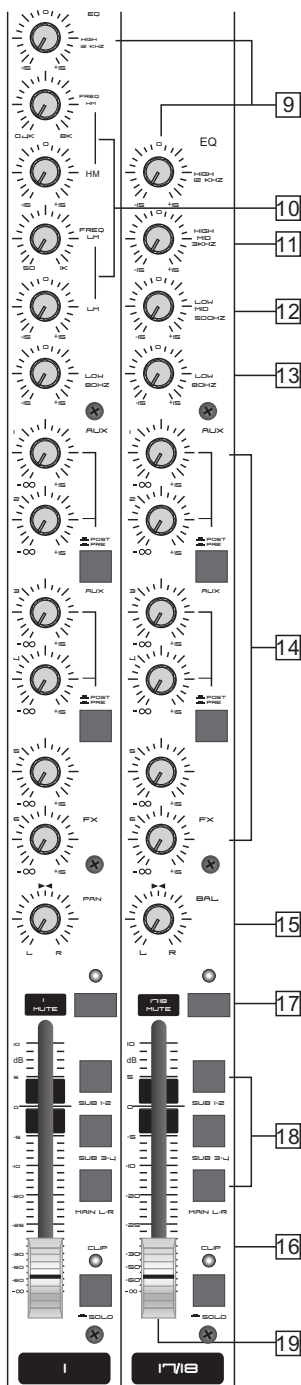
MIC equalizer

All single channel input channel has scanning MID 6-band EQ. HI, HM, LM and LOW. Stereo channel has 4-band fixed frequencies EQ HI, HI-MID, MID-LOW and LOW. Equalizers at all frequencies provide up to 15dB of boost and attenuation.

9. HI

When you turn this knob to maximum, the corresponding 12kHz frequency boosts. You need to add transparency effects to vocals and guitars, and make the sounds crisper. When this knob is turned to the minimum, the corresponding 12kHz frequency is attenuated. In this way, you can reduce hiss of vocals, or hiss of recording player.

10. HM/LM

This is a bandpass filter that affects the frequency around the midpoint HM midpoint frequency range is 0.4Hz-8kHz, LM midpoint frequency range is 50Hz-1k, and boost and attenuation of all bands is +/-15dB.

11. HI-MID

This control allows 3kHz frequency to be boosted and attenuated up to 15dB. You can precisely modify the effect by adjusting this knob.

12. LOW-MID

This control allows boost and attenuation of 500Hz frequency up to 15dB.

13. LOW

This control can boost and attenuate 80Hz frequency by up to 15dB, bringing more strength to bass drum and bass guitar, giving the singer more "male bass" strength. With this frequency attenuation, you can avoid low frequency vibration and resonance, thus extending the life of subwoofer.

14. AUX control knob

These four auxiliary control knobs are used to adjust the level of the independent signal sent to the AUX bus.AUX1 to AUX4 can be used to switch to PRE/POST-FADER with the PRE/POST button. So usually they can be used to monitor the application, the input of the effect sound processor. AUX5 and AUX6 are configured as POST-FADERS. In this professional audio mixer device, it contains direct signals to external effects or processor devices. AUX SEND4 can also be assigned to the internal effects module.

15. PAN/BAL (audio-visual balance) control knob

This is an abbreviation for PANORAMA control for single and stereo channels, often referred to as BALA NCE control. Keep this control in the middle position and the signal will be placed in the middle of the stage.

16. CLIP indicator

The peak level of the signal after EQ is detected. When the level reaches 3dB below clipping, the CLIP indicator illuminates in red. For stereo input channels (17/18 and 19-24) with XLR, the peak level of the post microphone amplifier after EQ is detected simultaneously, and the indicator illuminates in red when any level reaches 3dB below the clipping.

17. MUTE button & LED indicator

Each channel is equipped with a MUTE button. Pressing this button is equivalent to muting the channel input signal, (in PFL mode) corresponding channel output except INSERT channel SEND and SOLO, and the MUTE LED will illuminate.

57. +48 phantom power switch

It is only used for XLR MIC socket capacitive microphones. Do not plug in the microphone when the phantom power has been activated. Before turning on phantom power, make sure all attenuators are turned off so you can protect your stage monitor and main speakers.
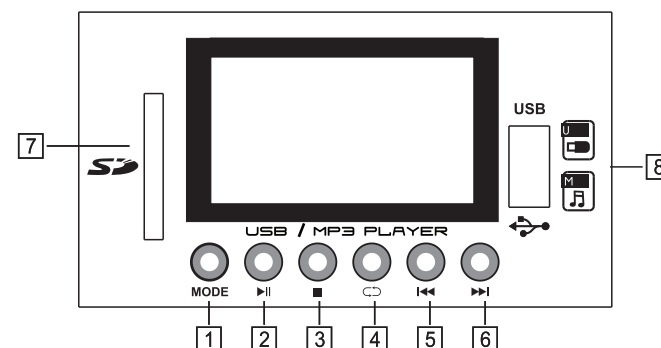
58. POWER switch

This switch is used to turn the main power off or on.

59. AC socket (with fuse)

Use power cord to connect mixer to mains AC terminal for power supply. A fuse is included. When replacing the fuse, please replace it with a fuse of the same specification.

SD/USB/BLUETOOTH SECTION

1. MODE BUTTON

This button controls four mode switch: SD card, USB, Bluetooth.

a). SD/USB mode: Plug in SD card/USB to play music directly.

b). Bluetooth mode: push button to select Bluetooth, then pair and connect with Bluetooth device to start playing music.

2. Play/pause

3. Stop

4. Loop playback

5. Previous

6. Next

7. SD card input socket, play music through SD interface.

8. USB input socket, connected to computer through USB interface for music playback.

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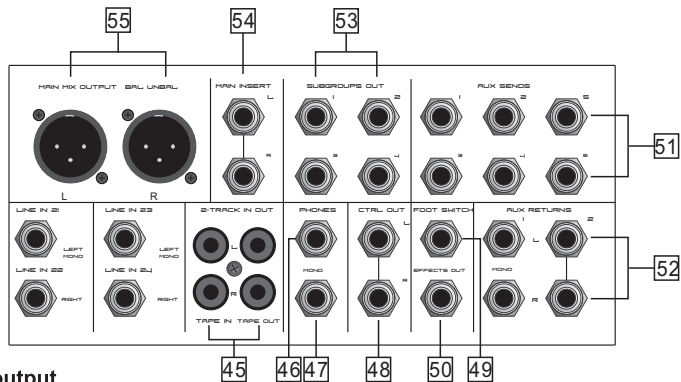
47. MONO output
This 1/4" phone socket is an unbalanced single mix output connector. It can be regarded as the total output of MAIN MIX left and right.

48. CTRL ROOM output
These 1/4" phone sockets will be used to send Control Room signals to studio monitor speaker.

49. FOOT SWITCH control
This 1/4" phone socket can be used to connect an external foot switch to turn the built-in DSP effect on or off.

50. EFFECTS output
This 1/4" phone socket is used to output the effect signal from internal DSP module and the signal level can be controlled by EFFECTS OUT.

51. AUX SENDS output
These 1/4" phone sockets are used to send signals from the AUX bus to external devices such as effects device or stage monitor.

52. AUX RETURNS input
Use these stereo 1/4" phone sockets to return stereo signals from an effects device to Main Mix. Or you can use AUX RETURN level control as a volume control as an additional auxiliary input. The signal will be directly sent to MAIN MIX control.

53. SUB GROUPS group output
These 1/4" phone sockets are used to connect stage amplifier output or complex PA live sound systems. When you operate the SUBGROUP group output, you will find it to be the best tool.

54. MAIN INSERT insertion function
These two 1/4" phone sockets are stereo insertion points for connecting processors, such as compressors, equalizers, etc. When an external processor is inserted into the jack, the main stereo signal will be taken out after EQ, and returned to MAIN MIX output before MAIN MIX attenuator.

55. MAIN MIX output
These stereo outputs are provided by balanced XLR and 1/4" phone sockets, which are controlled by Main Mix level.

56. USB PORT
The USB port is connected to the computer device with USB cable for recording.
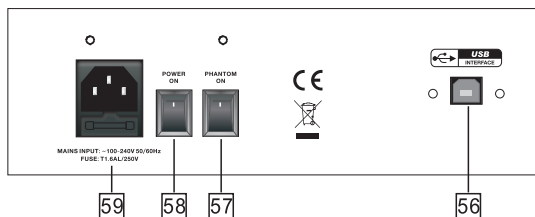
18. Signal dispatch switch button
Four buttons are provided per channel: SUB1-2, SUB3-4, MAIN L-R and SOLO. Press the SOLO button and the corresponding SOLO LED will illuminate. SOLO signal will be sent to the Headphone/Control Room and Meters instead of other signals. The SOLO function is usually used during live performances, preview the channel before entering mixer. It is useful to set input presets and adjustments for musical instruments. And you can turn any channel into a solo. SOLO switches never affect any mixing except Control ROOM. The other three buttons can be used as a signal dispatch switch. Pressing SUB1-2 will assign the channel signal to group 1/2. You can rely on the PAN switch to adjust the amount of signal input to SUB1. SUB2 is similar, when PAN is fully tuned to the left, the signal is only controlled by group1 and vice versa. In the same way, pressing SUB3-4 or MAIN L/R will assign channel signal to group 3/4 or MAIN MIX L/R, which will also be affected by the PAN.

19. FADER channel attenuator
This attenuator will adjust the overall level of this channel and set the amount of signal sent to main output. Note: Adjust the attenuator slider of the unused channel to a minimum to reduce noise.
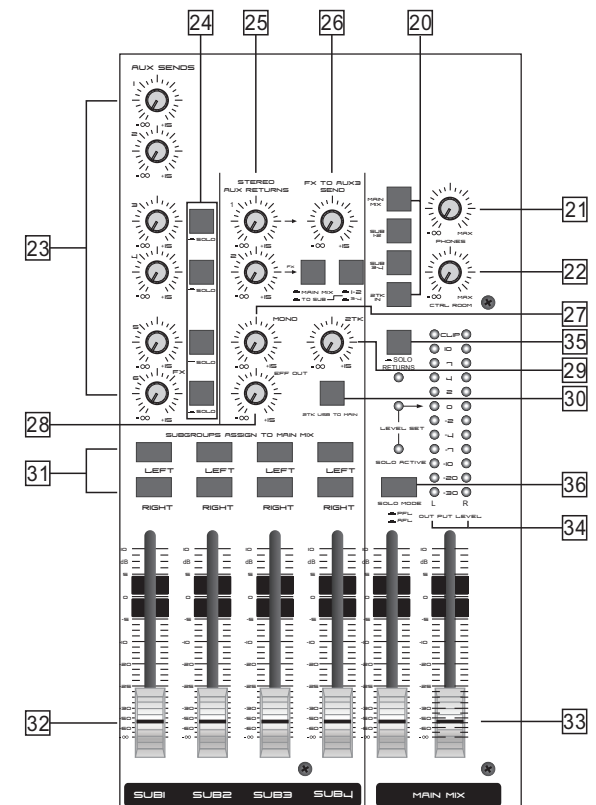
20. Control Room monitor room signal SEND button
You can monitor any combination of MAIN MIX, SUB1-2, SUB 3-4 and 2TK In through matrix switch. With these switches, the stereo signals will be sent to Phones, Control Room and Meters for display. Note: when any SOLO switch is activated, the SOLO signal will replace other signals and be sent to Control Room, Phones and Meters.

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21. PHONES headphone level control knob

Adjust this knob to control the output level of the headphone. The range of level is: - ∞ to maximum.

22. CTRL ROOM monitor room level control knob

Adjust this knob to control the output level of the monitor room. The range of level is: -∞ to maximum.

23. AUX SEND total auxiliary level control knob

These four knob controls are used to determine the main AUX SEND level, which varies from -∞ to +15dB. When an external effects device without input gain control is connected to mixer, you can get gain of more than +15 dB from AUX SEND output. For AUX4, it also provides satisfactory level adjustment for internal effect signals.

24. AUX SOLO button

The function of these SOLO buttons is the same as the channel SOLO button. They can also be affected by SOLO mode. Press SOLO button and the corresponding AUX is sent to Ctrl Room/ Phones output and Meters for display.

25. STEREO AUX RETURNS

The auxiliary return level control knob is used to set effect level received by stereo AUX RETURN connector. Its range of variation is -∞ to +15dB. They are used to provide further gain for low level effects.

26. TO AUX SEND3

This knob assigns AUX RETURN signals to their respective AUX SEND outputs; "TO AUX SEND3" assigns signals from AUX RETURN 1 to AUX SEND 3 bus. Adjustable range: -∞ to + 15 d B.

27. MONO volume control knob

This knob sets the level of MONO output signal, which can be adjusted from -∞ to +15 dB.

28. EFF effect volume control knob

This knob set the level of the signal directly sent to DFX output after internal effects are blocked, its adjustable range is: -∞ to +15 dB.

29. 2TRK volume control knob

This knob sets the level of 2TRK output signal with an adjustable range of -∞ to +15 dB.

30. 2TRK/USB TO MAIN button

This button sends 2TRK/USB input signal to MAIN MIX output.

31. SUBGROUPS ASSIGN TO MAIN MIX button

With these buttons, you can use the group attenuator as the main control and assign the group to MAIN MIX output. Press the LEFT switch to send the corresponding group signal to MAIN MIX L. The RIGHT switch corresponds to MAIN MIX R. When these two buttons are pressed, the signal will be sent to L/R of MAIN MIX.

32. SUB GROUPS group faders

These attenuators are used to control the level of the signal sent to group output. The adjustable range is -∞ to +10dB. Any channel assigned to the group, not muted or attenuated, will be assigned to SUB GROUPS.

33. MAIN MIX volume fader

This attenuator sets the volume sent to Main Mix Output or Tape Output.

34. LED Meter level indication

The level indication of the mixer is accurately displayed by 12-band stereo LED. In order to achieve the best signal output, it should be controlled near the 0 position and the indication be sent to Ctrl Room and Phones output respectively.

35. AUX RETURNS SOLO button

This function of AUX RETURN SOLO is the same as channel SOLO button. Press it to send signal from AUX RETURN (1-2) to CTRL ROOM, PHONES output and Meters for display. It can also be affected by SOLO mode button, and the LED below this button will illuminate.

36. SOLO MODE button

The button provides two modes: PFL (Pre-Fader-Listen) mode, AFL (After-Fader-Listen) mode. When this button is pressed, independent signal will be output after level control, otherwise when the button is released, it will be output before level control. Note: SOLO function does not affect the mix at the main recording output, and is not affected by channel MUTE switch.

37. EQ switch button

Press this switch to add 3D graphic EQ to main mix output circuit. It can be used to modify the frequency of a sound to compensate. If you release this button, the 3D graphic EQ will be bypassed.

38. 3D graphic EQ fader

The 2X9-band 3D graphic equalizer inside mixer can use the equalizer to compensate signal according to characteristics of the program, and the corresponding frequency is boosted or attenuated (+/-15 dB). When all the faders are in the middle position, output of the equalizer is a smooth response. DSP part MK mixer series includes a powerful preset with multiple effects, the effects include: reverb, chorus, flange, delay, etc.

39. DSP effects control

Use this control to choose the effect you want. There are 100 effects to choose from: echo, vocal metal and various double effects combinations. When you select the effect you want, press this control to save.

40. DSP mute switch

This switch is used to turn DSP effects on or off, and the corresponding mute light will also illuminate. For easy operation, you can also use foot switch.

41. DSP effects display

It shows preset type of DSP effect, with 100 effects available from the "00-99".

42. DSP level indication

These indicators show DSP output level. Make sure that the CLIP indicator only flashes occasionally. The best signal output should be controlled near 0 position.

43. POWER LED indicator

This LED illuminates when the power is turned on.

44. PHANTOM LED indicator

This LED illuminates when phantom power is on.

45. 2-TRACK IN/OUT

-TAPE IN

If you want to listen to a mix from Tape Recorder or DAT, use the Tape input.

- TAPE OUT

These RCA connector are used to connect the main mix to the tape recorder.

46. PHONES output

This jack will be used to send signal to headset

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