boytone®

PROFESSIONAL

MIXER

BT-88MX

Operating instruction

PRECAUTIONS

- SAFETY INSTRUCTIONS-

⚠ WARNING

INSTALLATION

- Do not allow water to enter the device, or make it wet. Doing this may result in fires or electric shocks.
- Do not place containers filled with liquid or small metal objects on this device. Or the liquid or small metal objects may fall into the device and result in fires or electric shocks.
- Do not place heavy objects (including this device) on the power cord. Otherwise it may damage the cord, thus resulting in fires or electric shocks. Take special notice not to place heavy objects on the cord covered under the carpet.

OPERATIONS

- Do not cut, bend, twist, stretch or heat the power cord. Otherwise, it may damage the cord, thus causing fires or electric shocks.
- Do not open the cover shell of this device. Or, it may result in electric shocks.If you consider it necessary to detect, maintain or repair the internal parts, please contact the sales agent.
- Do not try to modify this device. Or, it may result in fires or electric shocks.
- When there are electrical storms, turn off the power switch of this device and remove the power plug.
- When there is lightening, do not touch the power plug in the condition of being connected. Otherwise, it may result in electric shocks.

WHEN THERE IS ANY ABNORMALITY DURING OPERATION

- If the power cord becomes damaged (such as broken or having wires exposed), please obtain replacement from the sales agent. Continuing to use this device with damaged cord may result in fires or electric shocks.
- If you find any abnormality such as smoking, smelling, noise, foreign matters or liquid entering the interior of this device, immediately turn off the power switch, disconnect the electric plug from the outlet, and have the device repaired by the sales agent. Continuing to use may result in fires or electric shocks.

⚠ WARNING

INSTALLATION

- Avoid using this device in the following occasions:
  - Exposure to the splashing oil or steam in the places such as close to kitchen ovens, moisturizers, etc.
  - On unstable surfaces, such as shaking table surface or slanting surface.
  - Exposure to overheating places such as in a car with windows shut or under the direct sunlight.
  - Exposure to the places with high moisture or pilinup dirt.
- When removing the electric plug from an AC power outlet, do not pull the cord by itself. Pulling by the cord can damage it, and result in fires or electric shocks.
- Do not touch the power plug with wet hands. Or it may result in electric shocks.
- If you want to move this device, disconnect the power plug from the AC power outlet first, and remove all connecting cables. It may otherwise damage the cables and cause fires or electric shocks.

OPERATION

- Do not use cloth or carpet to cover or wrap the AC power adaptor. Otherwise the heat will accumulate in the cloth or carpet, melting the shell of the adaptor or causing fires. Use it under good ventilation.

- CORRECT OPERATING INSTRUCTIONS-

THE DIVISION OF LABOR OF THE CONNECTING PINS

- XLR connection pins shall be wired as shown below Pin 1: ground wire; Pin 2: hot wire (+); Pin 3: cold (-).
- INSERT TRS headphone jack wiring as follows: Sleeve: ground wire; Tip: signal sending; Ring: returns a signal.

CONSUMABLE REPLACEMENT

- The performance of components that are in constant dynamic contact, such as switches, rotary controls, attenuators, and connection pins, declines over time. Although the wear rate varies greatly with the use of different conditions, but a certain degree of wear is inevitable. In case of component failure, please contact the agent dealer for replacement.

Interference from cellular phone calls

- Using a mobile phone near the device may cause noise.
- When making noise, use your mobile phone away from the device.When the mixer is not in use, turn off the power.
- When the power switch is in standby position, there is still a trace of current in the mixer. When determined not to be used for a long time, be sure to remove the power plug from the AC power socket.

The drawings in this manual are for illustration only and may differ from the actual appearance

PREFACE

This mixer is easy to operate and can support various operating environments. Ideal for setup, various installation systems, and many other purposes.

In order to maximize the super function of this mixer and extend the normal service life, please read this user manual carefully before using.

FUNCTION

- Multiple input channels can be provided and these signals mixed into stereo and grouped output signals.
- Because of the high quality internal digital effects, itself can provide a wide range of effects directly. It also has an SEND socket that can be connected to an external effector.
- The monitor is equipped with a handy phone socket. The socket can be used to monitor the main stereo output signal, PFL signal, or 1-2 groups of signals.
- The mixer is also equipped with a AUX SEND socket and a single RETURN socket. AUX communication bus can send signals to external speaker effectors and monitoring systems.
- The virtual power supply may require a convenient connection to a capacitive microphone connected to an external power supply.
- The single sound channel input channel is equipped with XLR microphone input socket and TRS crisis linear socket respectively. Stereo input channels are equipped with TRS linear input jack and RCA linear input jack respectively. These various socket integrations allow the mixer to be connected to many different types of sound source equipment, including microphones, linear level devices, and even stereo output synthesizers.

DIRECTORY

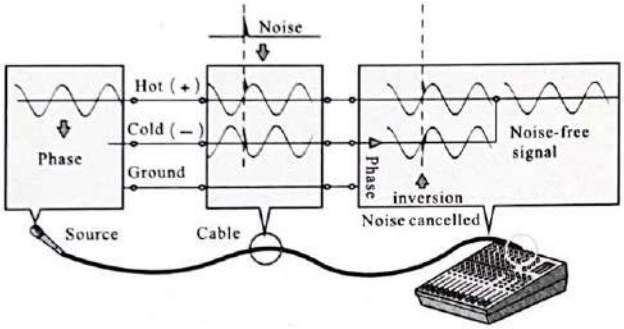
Mixer Basics

You've got yourself a mixer and now you're ready to use it.
Just plug everything in, twiddle the controls, and away you go···right?
Well, if you've done this before, you won't have any problem, but if this is the firest time you've ever used a mixer you might want to read through this little tutorial and pick up a few basics that will help you get better performance and make better mixes.

Balanced, Unbalanced What's the Difference?

In a word: "noise." The whole point of balanced lines is noise rejection, and it's something they're very good at. Any length of wire will act as an antenna to pick up the random electromagnetic radiation we're constantly surrounded by: radio and TV signals as well as spurious electromagnetic noise generated by power lines, motors, electric appliances, computer monitors, and a variety of other sources. The longer the wire, the more noise it is likely to pick up. That's why balanced lines are the best choice for long cable runs.
If your "studio" is basically confined to your desktop and all connections are no more than a meter or two in length, then unbalanced lines are fine unless you're surrounded by extremely high levels of electromagnetic noise. Another place balanced lines are almost always used is in microphone cables. The reason for this is that the output signal from most microphones is very small, so even a tiny amount of noise will be relatively large, and will be amplified to an alarming degree in the mixer's high-gain head amplifier.

Balanced noise cancellation

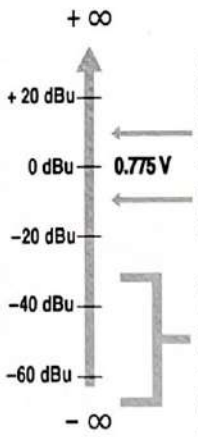


To summarize

Microphones:	Use balanced lines.
Short line-level runs:	Unbalanced lines are fine if you're in a relatively noise-free environment.
Long line-level runs:	The ambient electromagnetic noise level will be the ultimate deciding factor, but balanced is best.

Signal Levels and the Decibel

Let's take a look at one of the most commonly used units in audio: the decibel (dB). If the smallest sound that can be heard by the human ear is given an arbitrary value of 1, then the loudest sound that can be heard is approximately 1,000,000 (one million) times louder. That's too many digits to deal with for practical calculations, and so the more appropriate "decibel" (dB) unit was created for sound-related measurements. In this system the difference between the softest and loudest sounds that can be heard is 120 dB. This is a non-linear scale, and a difference of 3 dB actually results in a doubling or halving of the loudness.
You might encounter a number of different varieties of the dB: dBu, dBV, dBM and others, but the dBu is the basic decibel unit. In the case of dBu, "0 dBu" is specified as a signal level of 0.775 volts. For example, if a microphone's output level is -40dBu (0.00775 V), then to raise that level to 0 dBu (0.775 V) in the mixer's preamp stage requires that the signal be amplified by 100 times.
A mixer may be required to handle signals at a wide range of levels, and it is necessary match input and output levels as closely as possible. In most cases the "nominal" level for a mixer's inputs and outputs is marked on the panel or listed in the owner's manual.



Most professional mixers, power amplifiers, and other types of equipment have inputs and outputs with a nominal level of +4 dBu.

The inputs and outputs on home-use audio gear usually have a nominal level of -10 dBu.

Microphone signal levels vary over a wide range depending on the type of microphone and the source. Average speech is about -30 dBu, but the twittering of a bird might be lower than -50 dBu while a solid bass drum beat might produce a level as high as 0 dBu.

Quick Guide

1 **Be sure that your mixer is turned off and that all level controls* are turned all the way down.**

* STEREO OUT Master fader, Channel faders, GROUP 1-2 faders, GAIN controls, etc.

Note:
Set the equalizer and the PAN controls to their ▶ positions.

2 **Turn off any other external devices, then connect microphones, instruments and speakers.**

Note:
* Connect electric guitars and basses through an intermediary device such as a direct box, preamp, or amp simulator. Connecting these instruments directly to the professional audio mixer may result in degraded sound and noise.

3 **To avoid damage to your speakers, power up the devices in the following order: Peripheral devices→professional audio mixer→power amps (or powered speakers). Reverse this order when turning power off.**

NOTE:
If you use a microphone that requires phantom power, please open the mixer illusions after the power switch,then open the power of the active power amplifier or speakers.

4 **Adjust the channel GAIN controls so that the corresponding PEAK indicators flash briefly on the highest peak levels.**

Note:
To use the level meter to get an accurate reading of the incoming signal level, turn the channel PFL switch on. Adjust the GAIN controls so that the level meter indication occasionally rises above the "▶" (0) level.

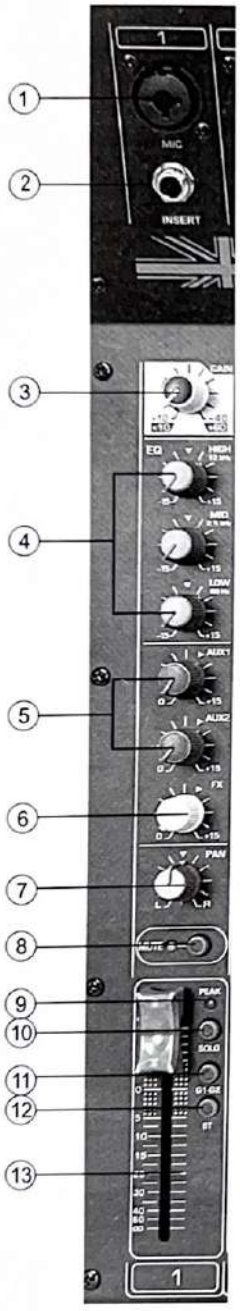
5 **Set the STEREO OUT Master fader to the "0" position.**

6 **Set the Channel faders to create the desired initial balance, then adjust the overall volume using the STEREO OUT Master fader.**

NOTE:
* To use the level meter to view the level being applied to the STEREO L/R buses.
* If the PEAK indicator lights frequently, lower the Channel faders a little to avoid distortion.

Front panel and rear panel

Channel control section



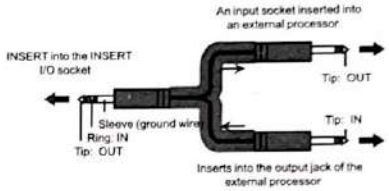
❶ MIC/LINE input jack

Can connect XLR socket and TRS type plug. Connect to the microphone or musical instrument you want to use.

❷ INSERT socket

Each of these sockets provides an insertion point between the equalizer and attenuator of the corresponding channel A. These inserts can be used to independently access devices such as graphic equalizers, compressors, or noise filters to the appropriate channels. These jacks are the TRS(tip, ring, sleeve) headphone jacks, which can carry both sending and returning signals (tip = send/output; Ring = return/input; Sleeve = ground wire)

注 When assigning an external device via an INSERT socket, you need to use a dedicated socket cable as shown in the figure below (socket cables are available separately)



The output signal of the INSERT socket is reversed. This should not be a problem when connecting to effects units, but be aware that there may be phase conflicts when connecting to other types of devices.

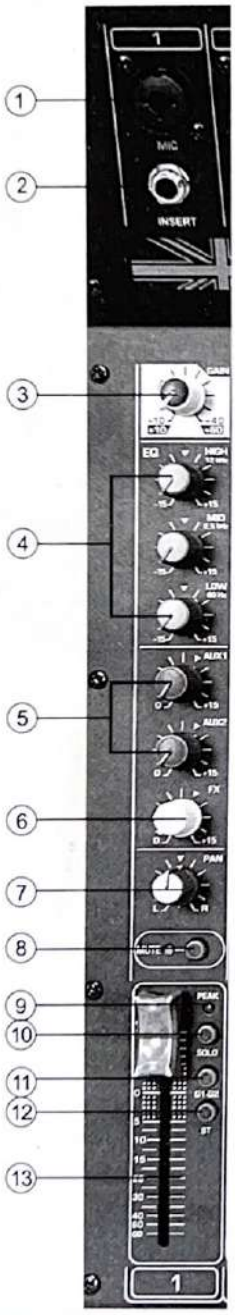
❸ GAIN control knob

Adjust the input signal level. In order to achieve the optimal balance between SNR and dynamic range, the adjustment gain causes the PEAK indicator (⓬) to occasionally and briefly light up only at the highest instantaneous input PEAK.

❹ Equalizers (HIGH, MID, and LOW)

The tri-band equalizer can adjust the high, medium and low frequencies of the channel. Setting the knob to " ▲ " gives you a flat response on the right frequency band. Turning the knob to he right enhances the corresponding frequency range, while turning to the left weakens it. The monophonic channel has MID frequency control to adjust the middle frequency band. The following table shows the EQ types, frequencies and maximum reduction/enhancement of the three frequency bands.

Band	Type	Frequency	Maximum Cut/Boost
HIGH	Shelving	12 kHz	±15 dB
MID	Peaking	120Hz-4 kHz (variable)	
LOW	Shelving	80 Hz	



❻ AUX control knob

Adjust the signal level sent from the channel to the AUX bus. This knob should usually be set close to " ▼ ".On the stereo channel, the L and R channel signals are mixed and sent to the AUX bus.

❻ EFFECT control knob

Adjust the signal level to the EFF SEND jack.

❼ PAN control knob

The PAN control knob adjusts the STEREO position of channel signals on the STEREO L and R bus.

❽ MUTE indicator light

Press the MUTE switch the (▬)indicator light goes red.

❾ PEAK light

Detect the peak level of the signal after EQ.When the level reaches 3dB below clipping, the PEAK indicator lights up in yellow.

❿ SOLO switch

The switch is used to monitor the channel front attenuator signal.Press the switch (▬) to turn on the light. When the switch is turned on, the channel's pre-attenuation signal is output to the phone interface for listening.

⓫ G1-G2 switch

This switch outputs channel signals to GROUP 1 and 2 buses.

⓬ ST switch

This switch outputs channel signals to the STEREO L and R bus.

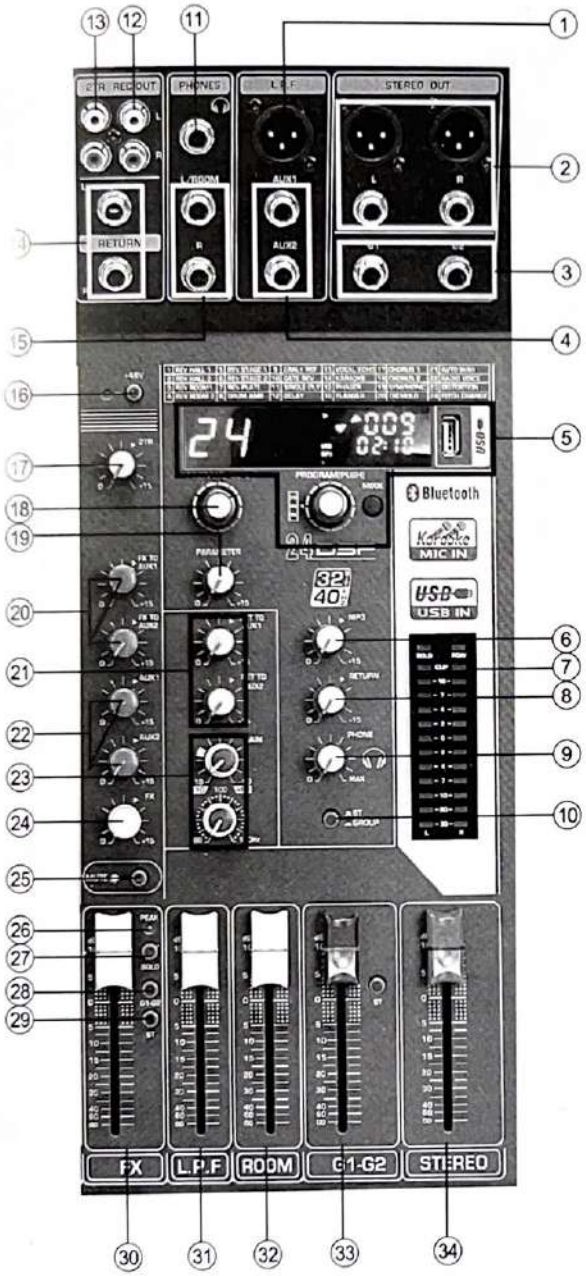
⓭ Channel attenuator

Adjust the level of the channel signal. These attenuators are used to regulate the balance between the channels.

NOTE The 2TRK IN control knob IN the main control section can be used to adjust the signal level.

Front panel and rear panel

Master control section



❶ LPF of socket

Low pass filter output

❷ MAIN OUT (L, R) jack

These ports transmit stereo output from a professional audio mixer. These sockets can be used to connect to the power amplifier that drives the main speaker. These pins can also be connected to a recording device while recording the stereo output of a professional audio mixer while using the MAIN OUT attenuator for level control.

❸ GROUP jack

These impedance balanced headphone jacks can output GROUP signals. These sockets can be used to connect to the input sockets of multitrack recorders or other such devices.

❹ SEND jack

- AUX is an impedance balanced headphone jack. This port outputs signals from the AUX bus and can be used to connect effects units, video filters, or other listening systems.
- This is an impedance balanced headphone jack that outputs a signal from the EFFECT bus and connects to the external effects unit.

❺ Music player

High quality music player, will store MP3, WMA and other music files of the U disk into the player jack, through the USB knob to control the playback of high quality music. This player comes with bluetooth function and recording function, using the "MODE" button to switch.

❻ Mp3 control knob

Adjust the signal level of the USB music player to the MAIN bus.

❼ LED level indicator light

This LED meter shows the signal levels of MAIN and PHONES. The 0" segment corresponds to the nominal output level. When the output level reaches clipping power, the red light will be on.

❽ RETURN control knob

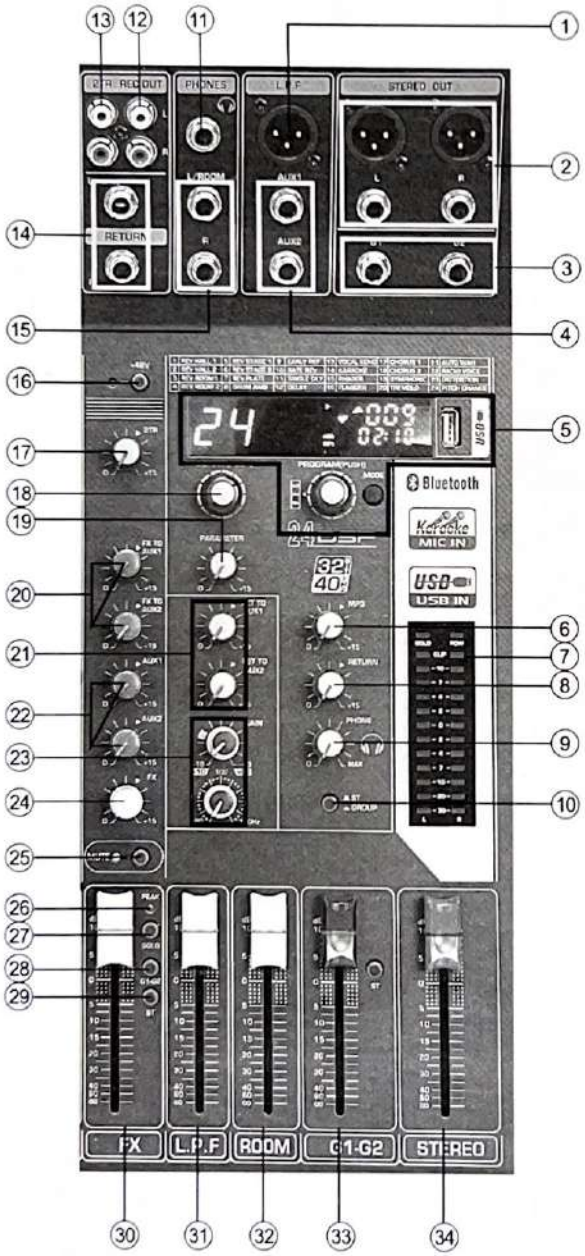
Adjust the level at which the RETURN jack L (MONO) and the L/R signal received by R are sent to the Aux bus.

❾ PHONES control knobs

The knob can control the volume of the earphone

❿ ST/ G1-G2 switch

This switch switches the output signal of ST or GROUP to PHONES for listening and is displayed by the LED level meter.



⓫ PHONES jacks

Headphone connection jack, this is a balanced ear model output jack.

⓬ REC OUT

These RCA pin pins can be connected to external recorders such as the MD recorder to record the same signals as the STEREO OUT jack output.

NOTE The STEREO OUT main attenuator on the mixer has no effect on the output of these sockets. Be sure to make appropriate comments and adjustments on the recording equipment.

⓭ 2TRK IN

These RCA pins are used to input stereo sound sources. If you want to connect the CD player directly to the tuning desktop, use these ports.

NOTE The 2TRK IN control knob IN the main control section can be used to adjust the signal level.

⓮ RETURNL (MONO) socket

These are non-balanced headphone plugs with linear input ports. Signals received by these ports are sent to the STEREO L/R bus and AUX bus. When the stereo signal is returned, the mono mix of the signal is sent to AUX1 and AUX2 buses. These pins are generally used to receive signals from external effects devices (reverb, delay, etc.).

NOTE
- These pins are also used as auxiliary stereo inputs.
- If you only link to the L (MONO) jack, the mixer will treat the signal as a MONO and send the same signal to the L and R pins.

⓯ ROOM(L/R) non-equilibrium jack

This output is the left and right channel output of the KTV room.

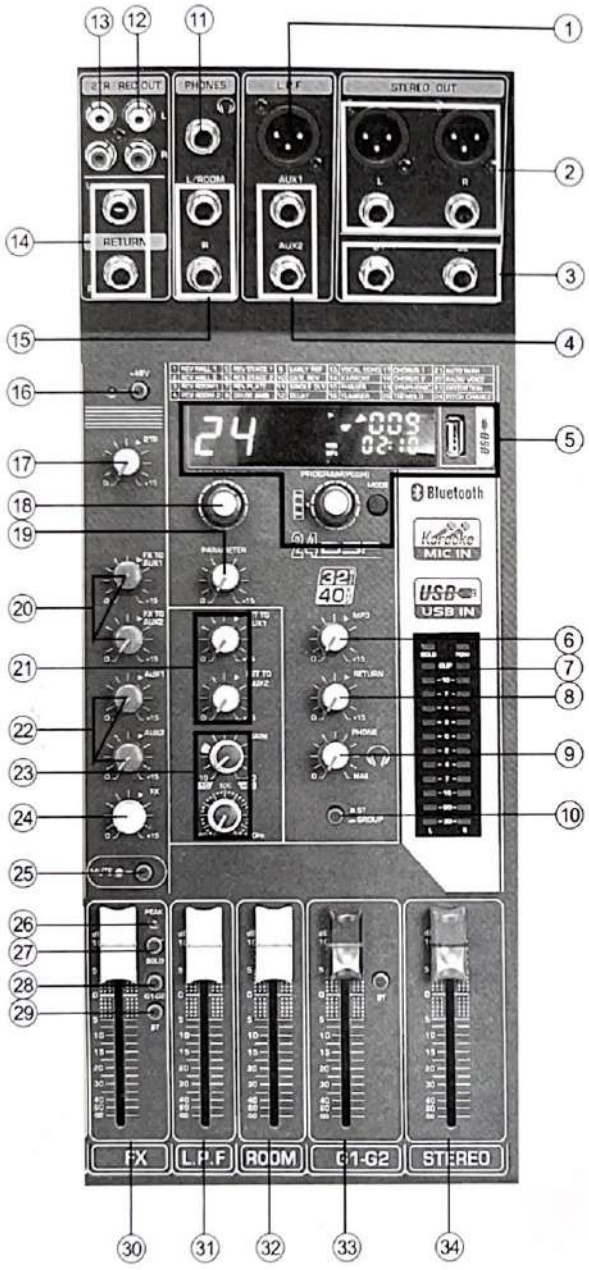
⓰ PHANTOM +48 power switch

With this switch the phantom power supply can be turned on or off. When this switch is turned on, the mixer will supply +48v phantom power to channels with input sockets for XLR microphones. Turn this switch on when using one or more capacitor microphones powered by phantom power.

NOTE When this switch is turned on, the mixer will supply DC +48V power to pin 2 and pin 3 of all XLR MIC INPUT pins.

CAUTION
- If you do not need phantom power, be sure to turn off the switch (▬)
- When this switch (▬) is turned on, be sure to connect only devices other than the condenser microphone to the phantom power supply. This may damage the device. Note, however, that this switch may remain on when connected to a balanced moving coil microphone.
- To avoid damaging the speaker, be sure to turn off the power amplifier (or active speaker) before turning on or off the switch. It is recommended that you adjust all output control buttons (main-L, main-R MAIN attenuators) to the minimum setting before operating this switch, so as to avoid hearing damage or equipment damage caused by excessive noise.

Digital effects section and back panel input/ output section



⑱ 2 TRK control knob
Adjust the level signal sent from the 2TRK IN jack to the STEREO L/R bus.

⑲ PROGRAM data plate
Select one of 24 internal effects. For more information about internal effects,See page 11.

⑲ PARAMETER knob
Select one of 24 internal effects. For more information about internal effects,See page 11.

NOTE When you switch to a different effect type, the mixer will automatically restore the previously used PARAMETER values for the newly selected effect (regardless of the current position of the PARAMETER control knob).When the power was turned off, the parameter values will be reset

⑳ FX TO AUX1,FX TO AUX2 control knob
Adjust the signal level of the effect sent to the AUX1,AUX2 jack.

㉑ RET TO AUX1,RET TO AUX2 control knob
Adjust the signal level returned to the AUX1,AUX2 jack.

㉒ AUX1,AUX2 control knob
Adjust the signal level sent to AUX1,AUX2 jack.

㉓ AUX1,AUX2 control knob
Adjust the input signal level. To achieve the optimal balance between SNR and dynamic range, the adjustment gain causes the PEAK indicator to light up only occasionally and briefly at the highest instantaneous input PEAK.

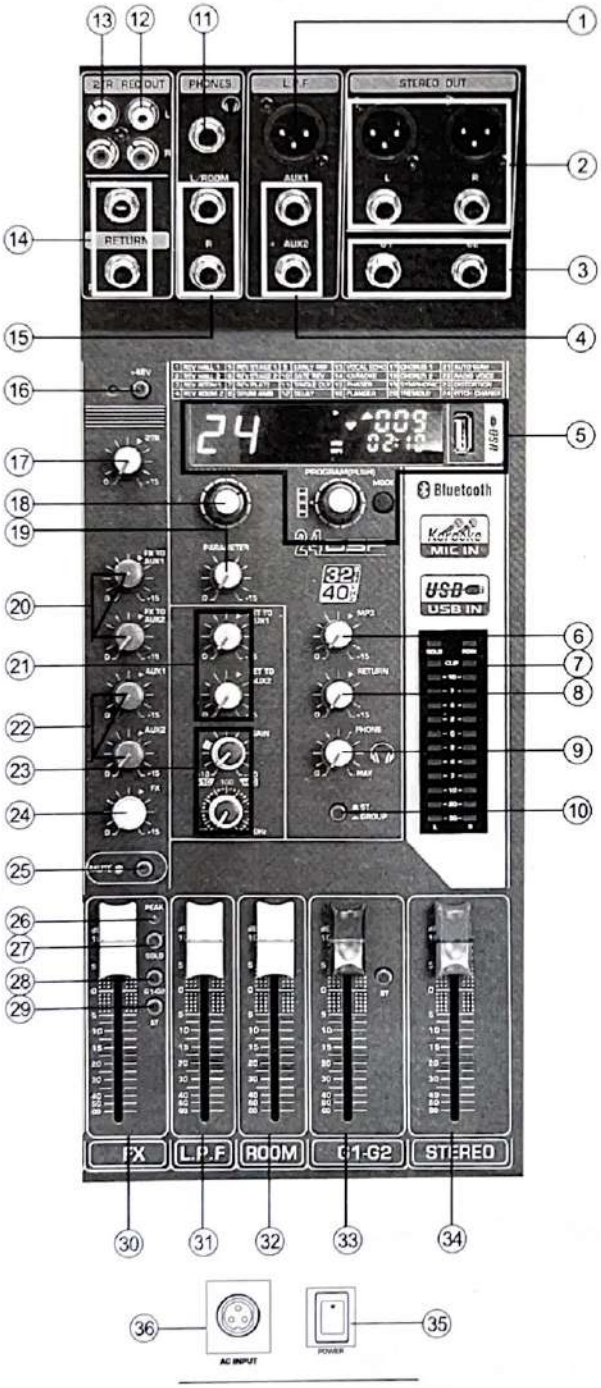
㉔ EFFECT control knob
Adjust the signal level to the EFF SEND jack.

㉕ EFF MUTE switch
Open the tube to close the internal effect. Only when this switch is turned on can internal effects be applied. The yellow light is on when the switch is off (pressed).

㉖ PEAK light
The signal peak level after detecting EQ. When the level reaches 3dB below clipping, the PEAK indicator lights up.

㉗ SOLO switch
Turn on this switch to send a digital effect signal to the PFL bus. Press the switch (▬) to turn on the light. When the switch is turned on, the channel's pre-attenuation signal is output to the phone interface for listening.

㉘ G1-G2 switch
This switch outputs digital effect signals to GROUP1 and bus 2



29 ST switch
This switch outputs the digital effect signal to the MAIN L and R buses.

30 EFFECT attenuator
Adjust the level of the digital effects signal transmitting the large STEREO bus.

31 LPF attenuator
Used to regulate the signal level sent to the LPF jack.

32 ROOM attenuator
Used to adjust the signal level sent to the ROOM jack.

33 GROUP attenuator
Adjust the signal level sent to the GROUP OUT jack.

34 STEREO attenuator
Used to regulate the signal level sent to the STEREO OUT jack.

35 POWER
Power switch.

36 AC INPUT socket
AC17V input, connect the supplied AC power adapter to this socket.

> CAUTION Only use the power adapter that comes with the unit. Using other power adapters may cause fire or electric shock.

List of digital effects

Number	Program	Parameter	Instructions
1	REV HALL 1	Reverb Time	Simulate reverberation of large space such as concert hall.
2	REV HALL 2	Reverb Time	
3	REV ROOM 1	Reverb Time	Simulates the reverberation of the acoustic environment in a small space (room)
4	REV ROOM 2	Reverb Time	
5	REV STAGE 1	Reverb Time	Simulate the reverberation of a large stage.
6	REV STAGE 2	Reverb Time	
7	REV PLATE	Reverb Time	Simulate the metal reverberation unit to produce more sharp reverberation.
8	DRUM AMB	Reverb Time	Short reverberation, especially for drum sets.
9	EARLY REF	Room Size	This effect separates only the early reflection from the reverberation, creating a more "showy" effect than normal reverberation.
10	GATE REV	Room Size	This effect cuts the reverberation tail in half,producing a more powerful sound.
11	SINGLE DLY	Delay Time	The effect of repeating the same sound only once.Shortening the delay time doubles the effect.
12	DELAY	Delay Time	Add feedback delay for multiple delay signals.
13	VOCAL ECHO	Delay Time	Used for the echo of a common chorus.
14	KARAOKE	Delay Time	Used as an echo for karaoke.
15	PHASER	LFO* Freq	Loop changes phase to add modulation to sound.
16	FLANGER	LFO* Freq	Add a debug sound to the to sound tproduce a pulsating sound similar to that of a jet engine.
17	CHORUS 1	LFO* Freq	Multiple layers of sound are added with different delay times to create a thick replaying sound.
18	CHORUS 2	LFO* Freq	
19	SYMPHONIC	LFO* Depth	Add a richer texture to the sound
20	TREMOLO	LFO* Freq	The effect of adjusting the volume in a loop.
21	AUTO WAH	LFO* Freq	Wow effect with periodic filter modulation. The [PARAMETER] knob can adjust the speed of the LFO* modulated to the "wah" filter.
22	RADIO VOICE	Cutoff Offset	Recreate the low-fidelity sound of an am radio. The PARAMETER knob is used to adjust the frequency band to be enhanced.
23	DISTORTION	Drive	Add mutation distortion to the sound.
24	PITCH CHANGE	Pitch	This effect changes the pitch of the signal.

* "LFO" means low frequency oscillator. LFO is commonly used to periodically modulate another signal with different waveform shapes and modulation rates.

Jack list

Input and Output Jacks	Polarities	Configuration
MIC INPUT, STEREO OUT	Pin 1: Ground Pin 2: Hot (+) Pin 3: Cold (-)INPUT OUTPUT	INPUT OUTPUT  XLR Jack
LINE INPUT (monaural channels) GROUP OUT, STEREO OUT, MONITOR OUT, AUX SEND, EFFECT SEND	Tip: Hot (+) Ring: Cold (-) Sleeve: Ground	 Ring Sleeve Tip TRS Phone Jack
INSERT	Tip: Output Ring: Input Sleeve: Ground	
PHONES	Tip: L Ring: R Sleeve: Ground	
RETURN LINE INPUT (stereo channels)	Tip: Hot Sleeve: Ground	 Sleeve Tip Phone Jack

* These jacks will also accept connection to phone plugs. If you use monaural plugs, the connection will be unbalanced.

Specifications

■ Input Specifications

Input Connectors	Gain	Input Impedance	Appropriate Impedance	Sensitivity*	Nominal Level	Max. before Clipping	Connector Specifications
CH INPUT MIC	-60 dB	3kΩ	50-600Ω Mics	-80 dBu (0.078 mV)	-60 dBu (0.775 mV)	-40 dBu (7.75 mV)	XLR 3-31 type (balanced (1= GND, 2=HOT, 3=COLD)
	-16 dB			-36 dBu (12.3 mV)	-16 dBu (123 mV)	+4 dBu (1.23 V)	
CH INPUT LINE	-34 dB	10kΩ	600Ω Lines	-54 dBu (1.55 mV)	-34 dBu (15.5 mV)	-14 dBu (155 mV)	TRS phone jack (balanced (Tip = Hot, Ring = Cold, Sleeve = GND)
	+10 dB			-10 dBu (245 mV)	+10 dBu (2.45 V)	+30 dBu (24.5 V)	
RETURN (L、R)	-	10kΩ	600Ω Lines	-12 dBu (195 mV)	+4 dBu (1.23 V)	+24 dBu (12.3 V)	Phone jack (unbalanced)
2TR IN (L、R)	-	10kΩ	600Ω Lines	-26 dBV (50.1 mV)	-10dBV (0.316V)	+10dBV (3.16 V)	RCA pin jack

Where 0 dB = 0.775 Vrms, 0 dBV = 1 Vrms

* Sensitivity: The lowest level that will produce an output of +4dB (1.23 V), or the nominal output level when the unit is set to the maximum level. (All faders and level controls are at their maximum position.)

■ Output Specifications

Output Connectors	Output Impedance	Appropriate Impedance	Nominal Level	Max. before clipping	Connector Specifications
MAIN OUT (L、R)	75Ω	600Ω Lines	+4dBu (1.23 V)	+24 dBu (12.3 V)	XLR-3-32 type (balanced (1=GND, 2=HOT, 3=COLD)) phone jack (balanced (Tip = HOT, Ring = COLD, Sleeve = GND)
EFFECT/AUX (AUX1、2*) SEND	150Ω	10kΩ Lines	+4dBu (1.23 V)	+20 dBu (7.75 V)	phone jack (impedance balanced (Tip = Hot, Ring = Cold, Sleeve = GND)
REC OUT (L、R)	600Ω	10kΩ Lines	-10 dBV (0.316 V)	+10 dBV (3.16 V)	RCA pin jack
PHONES OUT	100Ω	40Ω Phones	3 mW	75 mW	STEREO phone jack

Where 0 dBu = 0.775 Vrms and 0 dBV = 1 Vrms.

Socket connection