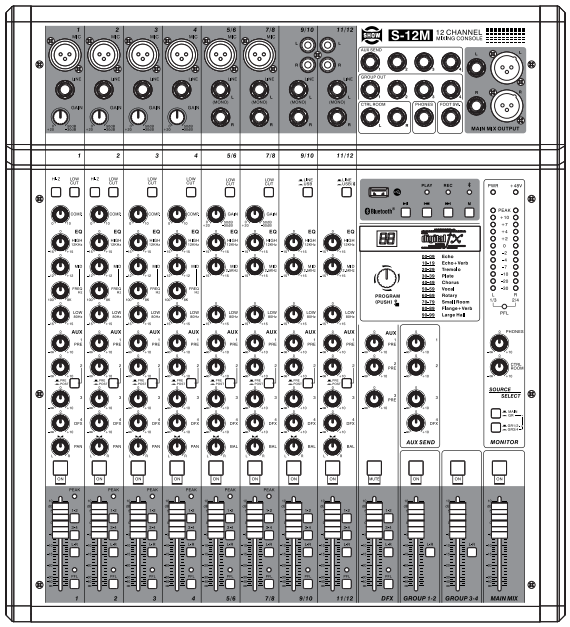
THE UNIVERSE OF INSTALLATION

User's Manual



S-12M / 16M / 20M

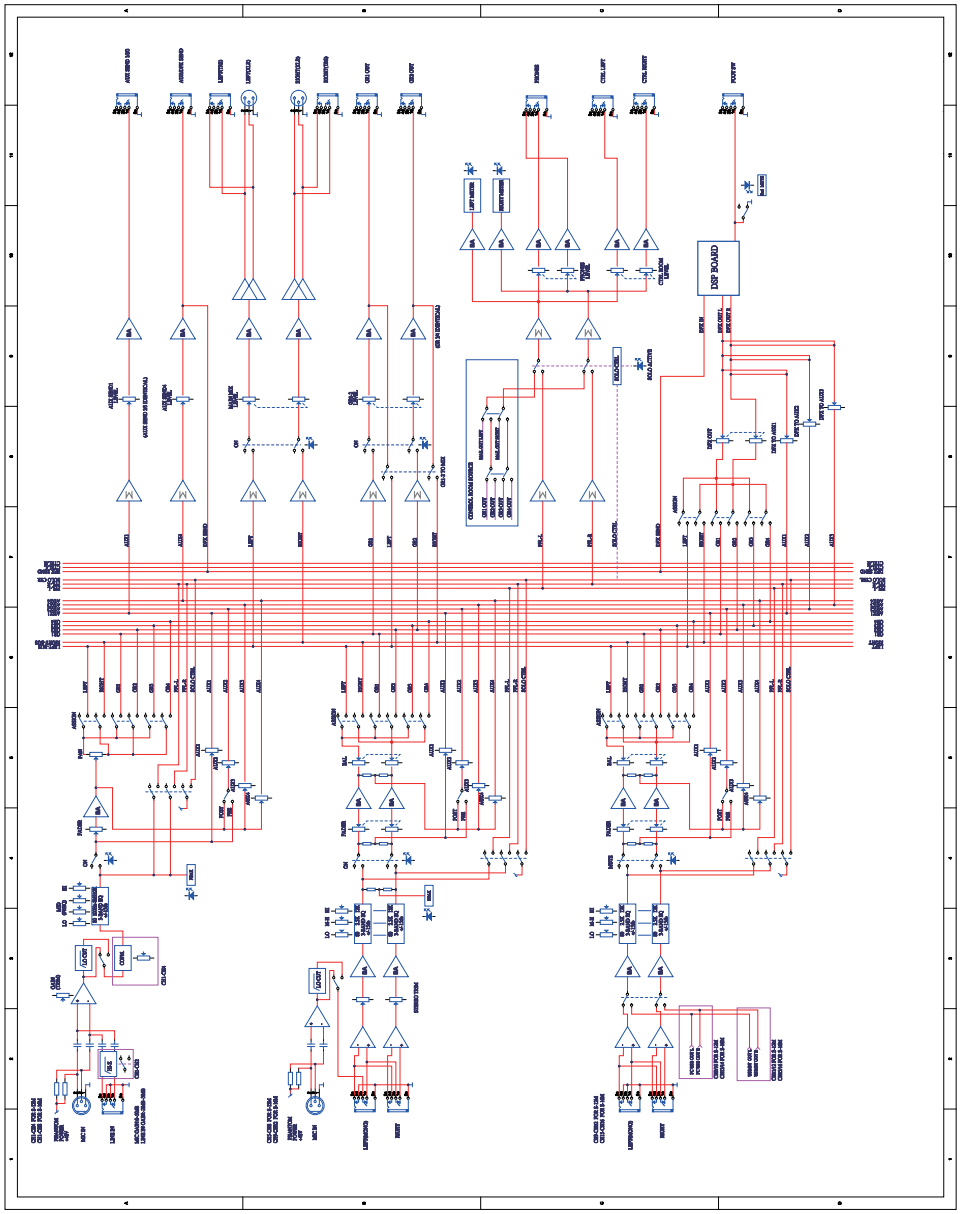
www.seikaku.hk

NF05990-1.0

TECHNICAL SPECIFICATIONS

MODEL	**S-12M / S-16M / S-20M**		
Mono channels			
Microphone input	XLR with balanced		
Frequency response	22Hz to 22KHz,+/-2dB		
Distortion(THD+N)	<0.03% at +0dB ,22Hz~22KHz A-weighted		
Gain range	0dB to 50dB		
Max Input	+20 dB		
LOW CUT	120Hz @18dB OCT		
SNR	>115dB A-weighted		
Phantom power	+48V with switch control		
Line input	1/4" TRS with balanced		
Frequency response	22Hz to 22KHz,+/-2dB		
Distortion(THD+N)	<0.03% at +0dB ,22Hz~22KHz A-weighted		
Sensitivity range	+20dB~ -30dB		
COMPRESSOR	GAIN:0~9dB		
	THRESHOLD:20dB--->5dB		
Stereo input channels			
Mic input	XLR with balanced		
Line input	1/4' TRS with balanced		
Frequency response	22Hz to 22KHz,+/-2dB		
Distortion(THD+N)	<0.03% at +0dB ,22Hz~22KHz A-weighted		
Sensitivity range	+20dBu~ -30dBu		
SNR	>115dB A-weighted		
Channels EQ			
	Mono Channel	Stereo Channel	
High	+/-15dB @12KHz	+/-15dB @12KHz	
Mid	+/-12dB @100Hz -8KHz	+/-15dB @2.5KHz	
Low	+/-15dB @80Hz	+/-15dB @80Hz	
Impedances			
Microphone input	1.8KΩ		
All other input	10KΩ or greater		
All other output	120Ω		
DSP section (options)			
A/D and D/A converters	24bit		
Controls	PROGRAM encoder and EDIT encoder		
	Mute switch & Foot-switching with LED indicator		
FOOT-SW	TIP: FX	SLEEVE:GND	
Frequency range	Bluetooth: 2402-2480MHz		
Maximum EIRP	Bluetooth: 4.24 dBm		
Main mix section			
Max. MAIN MIX output	+26dBu XLR balanced (+20dBu un-balanced)		
AUX range	OFF to +10dB		
Fader range	OFF to +10dB		
PHONES/CONTROL-ROOM range	OFF to +10dB		
Hum & Noise	< -90dB @ 20Hz~22KHz A-weighted, 1 channel & MAIN level:0dB, the other: Minimum		
Crosstalk	<-80dB @0dB 20Hz~22KHz A-weighted, MAIN level:0dB, the other :minimum,		
Power supply			
	S-12M	**S-16M**	**S-20M**
Main voltage	100-240V~50/60Hz	100-240V~50/60Hz	100-240V~50/60Hz
Fuse	T1.25A AC250V	T1.25A AC250V	T1.25A AC250V
Rated power consumption	40W	40W	40W

BLOCK DIAGRAM



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FCC Part 15 Statement

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the Federal Communications Commission (FCC) rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not

installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications to this equipment not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Privacy of communications may not be ensured when using this device.

SAFETY RELATED SYMBOLS

The symbol is used to indicate that some hazardous live terminals are involved within this apparatus, even under the normal operating conditions.

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

⏚ Protective grounding terminal.

~ Alternating current /voltage.

ϟ Hazardous live terminal .

ON: Denotes the apparatus turns on.

OFF: Denotes the apparatus turns off, because of using the single pole switch, be sure to unplug the AC power to prevent any electric shock before you proceed your service.

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

Disposing of this product should not be placed in municipal waste and should be separate collection.

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

WARNING

- **Power Supply**

Ensure the source voltage matches the voltage of the power supply before turning ON the apparatus.

Unplug this apparatus during lightning storms or when unused for long periods of time.

- **External Connection**

The external wiring connected to the output hazardous live terminals requires installation by an instructed person, or the use of ready-made leads or cords.

- **Do not Remove any Cover**

There are maybe some areas with high voltages inside, to reduce the risk of electric shock, do not remove any cover if the power supply is connected.

The cover should be removed by the qualified personnel only.

No user serviceable parts inside.

- **Fuse**

To prevent a fire, make sure to use fuses with specified standard (current, voltage, type). Do not use a different fuse or short circuit the fuse holder.

Before replacing the fuse, turn OFF the apparatus and disconnected the power source.

- **Protective Grounding**

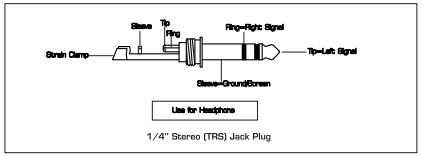
Make sure to connect the protective grounding to prevent any electric shock before turning ON the apparatus.

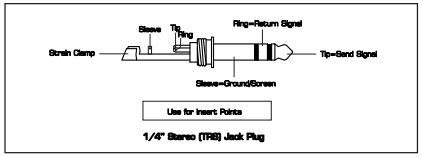
Never cut off the internal or external protective grounding wire or disconnect the wiring of protective grounding terminal.

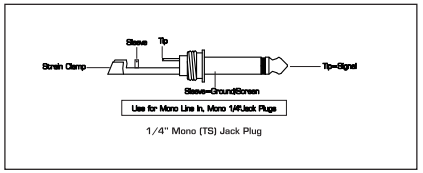
- **Operating Conditions**

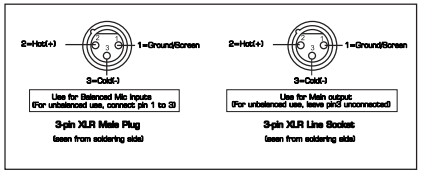
This apparatus shall not be exposed to dripping or splashing and that no objects filled with liquids, such as vases, shall be placed on this apparatus.

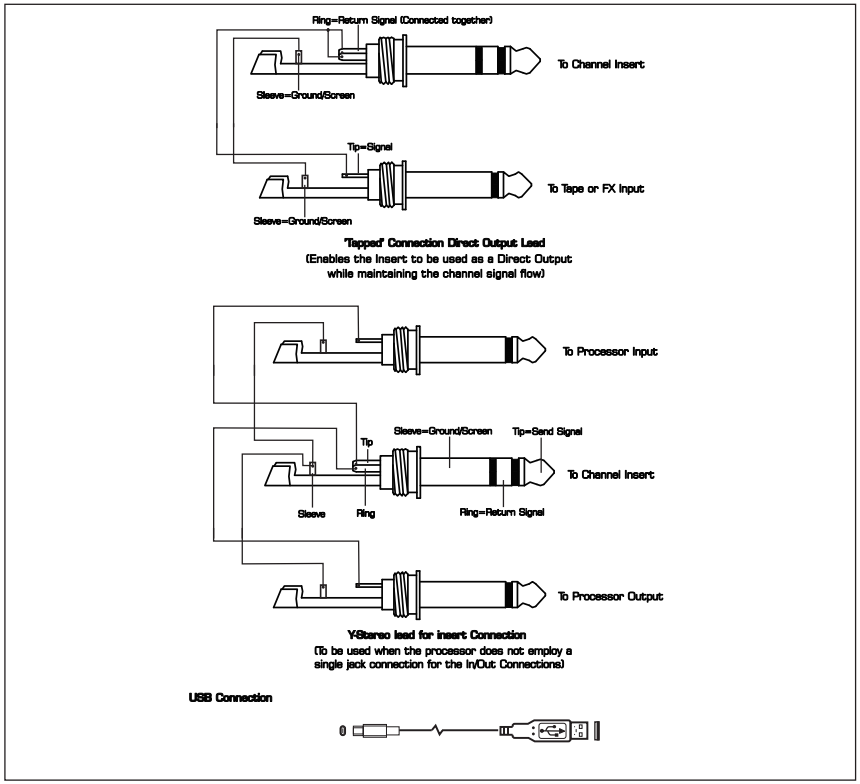
INSTALLATION AND CONNECTION











PRESET LIST

No.	Preset	Description	Parameter
00~09	Echo	Echo/Delay effect	Delay time: 145~205ms
10~19	Echo+Verb	Echo & Reverb combination	Delay time: 208~650ms Decay time: 1.7~2.7s
20~29	Tremolo+GTR	Guitar Effect: Tremolo	Rate : 0.6Hz~5Hz
30~39	Plate	Simulate classic bright vocal plate	Decay time: 0.9s~3.6s
40~49	Chorus+GTR	Guitar Effect: Chorus	Rate:0.92Hz~1.72Hz
50~59	Vocal	Simulate a small space with slight	Rev.delay time: 0.8~0.9s Pre-delay: 10~45ms
60~69	Rotary+GTR	Guitar Effect: Rotary	Modulation depth: 20%~80%
70~79	Small Room	Simulate a bright studio room	Decay time: 0.7~2.1s Pre-delay: 20~45ms
80~89	Flanger+Verb	Flanger effect & Reverb combination	Decay time: 1.5~2.9ms Rate: 0.8Hz~2.52Hz
90~99	Large Hall	Simulate a large acoustic space	Decay time: 3.6~5.4s Pre-delay: 23~55ms

To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.

Do not use this apparatus near water. Install in accordance with the manufacture-r's instructions. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat. Do not block any ventilation openings.

No naked flame sources, such as lighted candles, should be placed on the apparatus.

IMPORTANT SAFETY INSTRUCTIONS

- Read these instructions.
- Follow all instructions.
- Keep these instructions.
- Heed all warnings.
- Only use attachments/accessories specified by the manufacturer.

- **Power Cord and Plug**

Do not defeat the safety purpose of the polarized or grounding type plug.

A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.

- **Cleaning**

When the apparatus needs a cleaning, you can blow off dust from the apparatus with a blower or clean with rag etc.

Don't use solvents such as benzol, alcohol, or other fluids with very strong volatility and flammability for cleaning the apparatus body. Clean only with dry cloth.

- **Servicing**

Refer all servicing to qualified personnel. To reduce the risk of electric shock, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so .

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, the apparatus has been exposed to rain or moisture , does not operate normally, or has been dropped.

The mains plug is used as the disconnect device, the disconnect device shall remain readily operable.

INTRODUCTION

Thank for your choosing to purchase S-12M / S-16M / S-20M. As a professional compact mixer, Any model of them can bring you great quality and better reliability than ever before. You can get smooth,accurate, natural and open sound easily by using it. And they are regarded as ideal apparatus for gigs, recording and fixed PA installations.

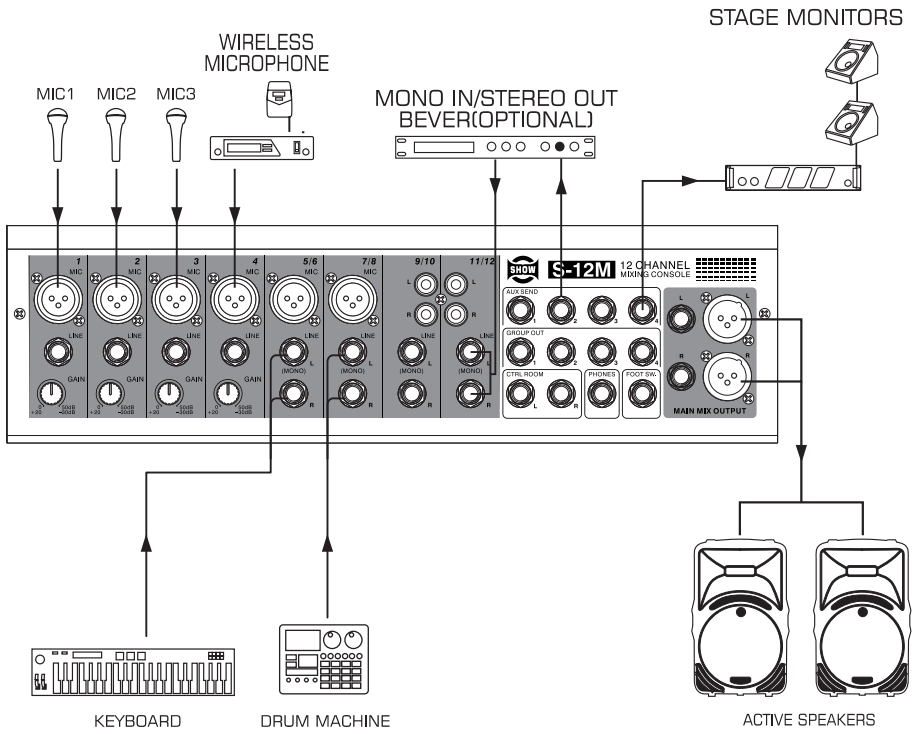
The Mixing Console is packed with features that can not be found in other consoles of its size: 4 / 8 / 12 mono which can provided with ultra low noise microphone pre amplifiers and Phantom Power at +48 Volt; 4 stereo input channels; 3-band EQ with sweepable MID on mono inputs; 3-band EQ on stereo inputs, 4 auxiliary control, highly accurate 12-segment bar graph meters and 2-track inputs assignable to main mix, control room, phone output etc.

This Mixing Console 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 Mixing Console.

FEATURES

- Ultra-low noise discrete MIC Preamps with +48V Phantom Power.
- 6 / 10 / 14 MIC Input Channels with XLRs and balanced Line Inputs.
- 4 Compressors control.
- Low Cut for each MIC Input.
- 2 Stereo Input Channels with mono XLRs Input and TRS Jacks;
- 3-band EQ with sweepable MID and Peak LEDs on each Mono channels.
  3-band EQ and Peak LEDs on Stereo channels.
- AUX 1 & AUX 2 Send POST/PRE per channel for monitoring or external effects.
  AUX 3 & DFX Send POST Fader for internal effects or monitoring.
- PFL/ON function for each channels, 60mm Fader for level control.
- GR1/2, GR3/4 and Main L-R bus assign for each channel.
- Balanced XLR & TRS outputs for Main Mix.
- Built-in effects processor.
- USB & BLUETOOTH media Player.
- Internal switch-mode power supply for maximum flexibility 100-240V.
- With USB port, record from MAIN OUT and play to CH9/10 & CH13/14 & CH17/18.

HOOKUP DIAGRAM



Ok, you have gotten to this point and you are now in the position to successfully operate your 12 / 16 / 20 Channel Mixing Console. 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, effect 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 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 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.

Some Final Tips on Wiring Configuration

You can connect unbalanced equipment to balanced inputs and outputs. Simply follow these schematics.

The following features will be applied to S-12M/S-16M/S-20M. in case where different features needs to be described for each other. The S-12M will be described first. Following by the S-12M/S-16M/S-20M features in brackets.

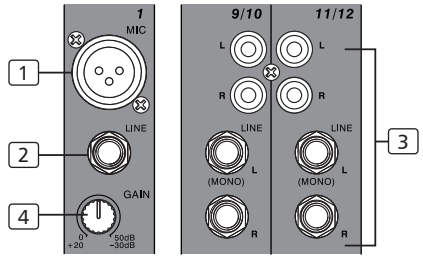
1. MIC INPUT JACKS(CH1 to 7/8 for S-12M or CH1 to 11/12 for S-16M or CH1 to 15/16 for S-20M)

These are balanced XLR-type microphone input jacks.

2. LINE INPUT JACKS(CH1 to 4 for S-12M or CH1 to 8 for S-16M or CH1 to 12 for S-20M)

These are balanced TRS phone-jack line inputs.

You can connect either balanced or unbalanced phone plugs to these jacks.



3. STEREO INPUT

a). LINE INPUT JACKS (CH5/6 to 11/12 for S-12M or CH9/10 to 15/16 for S-16M or CH13/14 to 19/20 for S-20M).

They are organized in stereo pair and provided with 1/4" TRS sockets. It is used to connect the stereo device, plug both the left input and the right input. Using the left input if connect a mono input signal to the stereo channel, the output signal will appear on both sides.

b). L/R INPUT JACKS(CH13/14 to 15/16 for S-12M or CH13/14 to 15/16 for S-16M or CH17/18 to 19/20 for S-20M)

They are organized in stereo pair and provided with RCA sockets.It is used to connect the stereo device, plug both the left input and the right input. Using the left input if connect a mono input signal to the stereo channel, the output signal will appear on both sides.

4. GAIN CONTROL

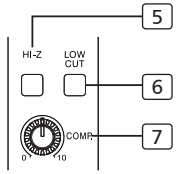
Adjusts the input signal level. To achieve the best balance between S / N and dynamic range, adjust the level so that the peak LED indicator lights occasionally only on the highest input transients. For each channel the MIC input adjustment range of the Gain is 0 to 50dB and the sensitivity of line input is +20 to -30dB.

5. HI-Z

To change to a high impedance input, push the appropriate hi-z switch.

6. LOW CUT

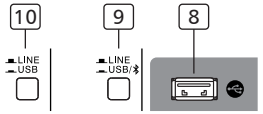
By pressing this button you will activate a 120Hz low frequency filter with a slope of 18dB per octave. You can use this facility to reduce the hum noise infected by the mains power supply, or the stage rumble while using a microphone.



7. COMP CONTROL

Adjust the amount of compression applied to the channel. Turn the knob to the right to increase the compression ratio and the output gain will automatically adjusted. The result is smoother, more even dynamics because louder signals are attenuated which the overall level is boosted.

8. USB PORT
For connecting with USB memory.

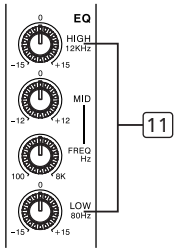


9. LINE/ Media Player
When the button sinks by pressing it,it will switch to the USB/BT player mode, then the singal of USB PLAYER module sent to this channel. When the button rises by pressing it again, it will switch to the LINE mode, then the signal of LINE IN will be sent to this channel.

10. LINE/USB(PC)
When the button sinks by pressing it,it will switch to the USB mode, then the USB singal can be sent to this channel. When the button rises by pressing it again, the LINE IN input singal will be sent to this channel.

11. EQUALISER CONTROLS
There are 3-band EQ with sweepable MID on all mono input channel 1-4/1-8/1-12: HI, MID and LOW band. There are 3-band fixed frequency EQ on the stereo channel 5-12/9-16/13-20: HI, MID and LOW band. All bands provide up to 15 dB of boost or cut.

--HIGH
If you turn this control up, you will boost all the frequencies above 12 kHz (shelving filter). You will add transparency to vocals and guitar and also make cymbals crispier. Turn the control down to cut all frequencies above 12 kHz In such way, you can reduce sibilances of human voice or reduce the hiss of a Tape player.



--MID (mono channel)
This is a peaking filter and it will boost/cut frequencies from 100 Hz to 8 kHz depending on the position of the MID freq control. This control will affect especially upper male and lower female vocal ranges and also the harmonics of most musical instruments.

--MID(stereo channel)
This control gives you from -15dB to +15dB boost or cut at 2.5KHz. It is useful for controlling voice. It can accurately polish your performance via adjusting this knob.

--LOW
If you turn this control up, you will boost all frequencies below 80 Hz. You will give more punch to bass drum and bass guitar and make the vocalist more "macho". Turn it down, you will cut all the frequencies below 80 Hz. In this way, you can avoid low frequency vibrations and resonance thus preserving the life of your woofers.

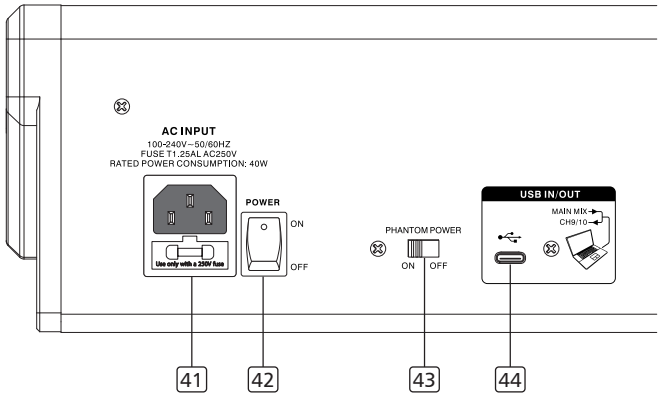
40. MAIN MIX OUTPUT
These stereo outputs are supplied with both the XLR and 1/4" TRS jack and it is controlled by the Main Mix Level.

41. AC INPUT
Use it to connect your mixer to the main AC with the supplied AC cord. Please check the voltage available in your country and how the voltage for your miser is configured before attempting to connect your mixer to the main AC.

42. POWER Switch
This switch is used to turn the main power on and off.

43. +48 Volt Phantom Power Switch
It is available only to the XLR MIC sockets. Never plug in a microphone when phantom power is already on. Before turning phantom power on, make sure that all faders are totally down. In this way, you will protect your stage monitors and main loudspeakers.

44. USB PORT
This USB port is used to connect the unit to PC with a transmission line. When it is in RECORD mode, it can connect with the MAIN MIX output; in the PLAYBACK mode, it can connect with the stereo channel 9/10 or channel 13/14 or channel 17/18.



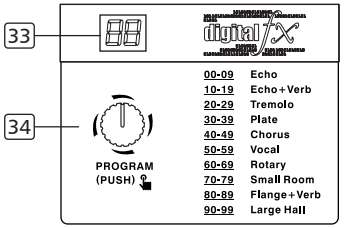
d). "⏯" button
Press the button to play or stop the playback/recording of current music audio.

e)." ⏮ ⏭ "button
Shortly press the each of two buttons to play previous or next songs. Or press and hold the each of two buttons for about 3 seconds to decrease or increase current volume.

f). "M" button
Press the button to switch to play/REC /BT as current mode, Switched to the "play" mode with corresponding solid green will light on. Switched to the "REC" mode with corresponding solid red will light on. Switched to the "BT" mode with corresponding solid blue will light on.

33. DIGITAL EFFECTS
It displays the selected presets.

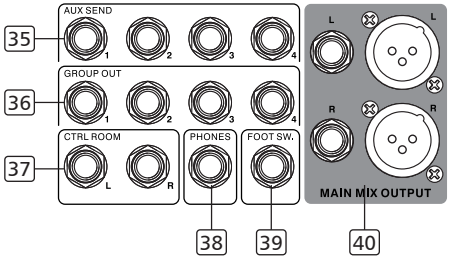
34. PROGRAM(PUSH)
Adjust this knob to select the right effect you wish to perform. There are totally 100 options for you: Echo, Tremolo, Plate, Chorus, Vocal, Rotary, Large Hall and versatile two-effect combination.
When you are satisfied the right preset, please push this knob to store this preset you want.



35. AUX SENDS
These 1/4" TRS jack are used to send out the signal from the AUX bus to external devices such as effects.

36. GROUP OUT
These 1/4" TRS jack are used to send out the signal from the GROUP 1/4 mix bus to external devices.

37. CTRL-ROOM
These 1/4" TRS jack will be used to send the signal to studio monitor speakers or to a second set of PA.



38. PHONES
This socket will be used to send out the mix signal to a pair of headphones.

39. FOOT SW.
This socket is used to connect external footswitch for your convenient operation, it has the same function as DFX MUTE button.

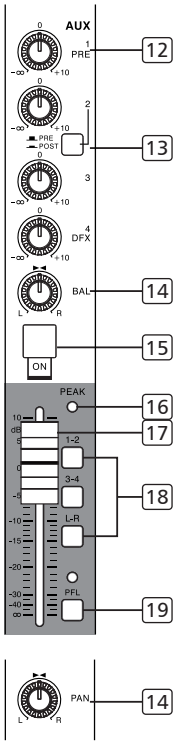
12. AUX SEND CONTROLS
These four controls are used to adjust the level of the respective signal sent to AUX bus and their adjustable range is from -∞ to +10 dB .

13. PRE/POST
AUX1 configured as Pre-Faders, and AUX2 can be switched to PRE/POST-FADER via the PRE/POST button, so, generally, they can be used to monitor application and effects&sound processors input, AUX3 and AUX4 are configured as POST-Faders.

14. PAN / BAL CONTROL
The PAN control determines the stereo positioning of the channel signal on the stereo L and R buses.The BAL control knob sets the balance between left and right channels. Signal input through the stereo L/R bus.

15. ON
Each channel is equipped with the ON button, Press this button to open corresponding channel to input signal. Since each channel is closed by default.

16. PEAK LED
When this LED blinks, It means to warn you that input signal is nearly saturated and distortion maybe happen. At this time you should adjust the level to propriate value in order to avoid distortion due to too strong signal or be lost in noise due to too week signal .



17. CHANNEL LEVEL
Slide the fader to adjust the overall level of corresponding channel and setup the amount of signal sent to the output.

18. GR1-2/GR 3-4/L-R
Each channel provides three push-buttons: GR1-2, GR3-4, L-R. The three buttons can be considered as signal assignment switches. Pressing the GR1-2 will assign the channel signal to GROUP 1-2, you can depend on the PAN switch to adjust the amount of channel signal sent to the GR1 versus GR2, when turns the PAN to completely left, then the signal can be only controlled by GROUP 1 and vice versa. In the same way, pressing the GR3-4 or L-R will assign the channel signal to GROUP 3-4 or MAIN MIX L-R, and will also be affected by PAN.

19. PFL
Each channel is equipped with the PFL button, pressing this button which the corresponding signal send will be routed to CTRL ROOM/PHONES outputs and METER display.

20. DFX TO 1-2 / 3-4 / L-R
This control is used to assign the signal from FX to GR1-2, GR3-4, L-R.

21. DFX MUTE
Enables or disables the internal effects processor.

22. DFX TO AUX SEND1/2/3
These three rotary knobs assign the DFX signals to their respective AUX SEND outputs.

23. AUX SEND CONTROLS
These four controls are used to determine the master AUX SEND levels, which can be varied from -∞ to +10 dB. When the external effect units which have no input gain control were connected to mixer, you can get a further +10 dB gain available from these Aux Send outputs.
As to the AUX4, it can also provide the level adjustment for the internal effect signal.

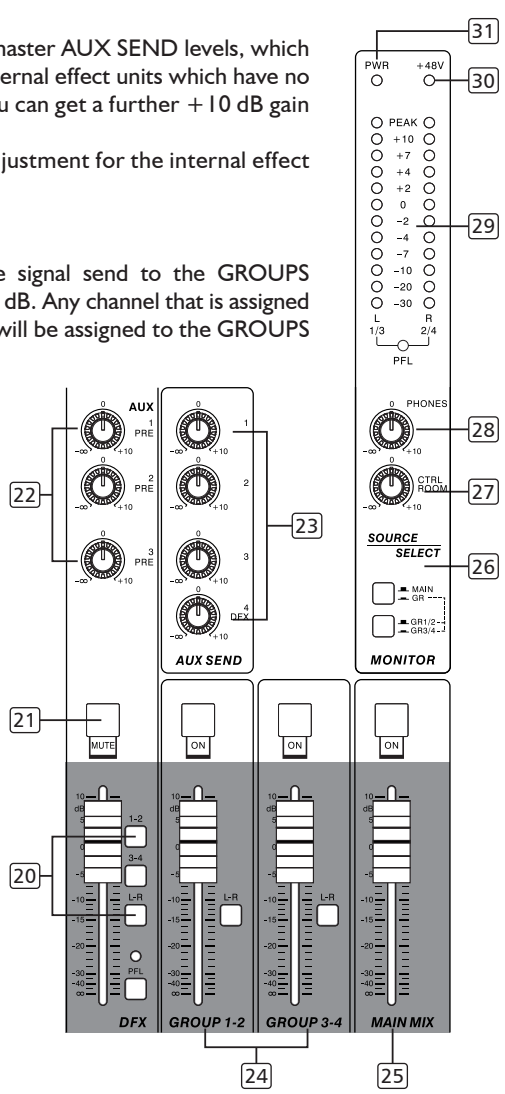
24. GROUPS LEVEL
These faders are used to control the levels of the signal send to the GROUPS OUT, the adjustable range goes from -∞ to +10 dB. Any channel that is assigned to the groups, not muted and not turned down will be assigned to the GROUPS OUT.

25. MAIN MIX LEVEL
This fader is used to set the amount of signal sent to the main mix output.

26. SOURCE SELECT
If you release the MAIN/GR button, the signal will be cone from the MAIN MIX output, it will not be affected by pressing both GR1/2 and GR3/4 button. When you push down the MAIN/GR button and press both GR1/2 and GR3/4 at the same time, the signal will be come from the GR3/4 output. When you release the GR1/2 and GR3/4, the signal will be come from the GR1/2 output.

27. CTRL ROOM CONTROL
This control is used to adjust the signal present at the control room output, which can be varied from -∞ to +10 dB.

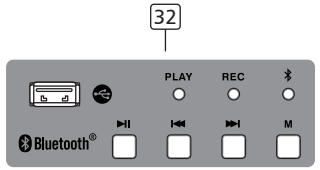
28. PHONES CONTROL
This control is used to adjust the signal present at the Phones output, which can be varied from -∞ to +10 dB.



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

30. +48V LED
This LED illuminates when the phantom power is switched on.

31. PWR LED
This LED illuminates when the power is on in your mixer.



32. BT FUNCTION (corresponding channel=CH11/12 for S-12M, CH15/16 for S-16M, CH19/20 for S-20M)
a). USB port
*Insert your U-disk into the port and then switch to the "play mode" or "REC mode" by pressing the "M" button, If under the "play mode"with solid green lighting, the music memorized in your U-disk will play. Selecting "USB/BT" for S-12M/16M/20M and then it will connect to the corresponding stereo input channel and MAIN MIX output.
*Pressing the "M" button to choose the "REC mode" with corresponding solid red lighting, then press the "▶II" button with the red flashing, the audio from the main mix output will be recorded in your U-disk.

b). Bluetooth connection
*Press the M button to choose the "BT mode" with solid blue lighting. it will connect with your cell-phone with the name "S-BT" automatically. Then press the "▶II" button to play the music memorized in your phone. Selecting "USB/BT" for S-12M/16M/20M and then it will connect to the corresponding stereo input channel and MAIN MIX output.
*Each time when the unit powers on, it will search and connect with the latest BT device used automatically. The blue will keep flashing quickly during searching and the solid blue lights up once sucessful connection. It will stop searching if none BT device found within 60 seconds. Then please hold and press the "▶II" button for 3 seconds to restart searching BT device.

c). LED Indicator
-- The Green LED
If it enters the "Play mode" or the U-disk found and waiting for playing, the solid blue will light up and it will flash slowly (each every 1 second) if playing the audio files of U-disk.
-- The Red LED
If it enters the "REC" mode or the U-disk found and waiting for recording, the solid red will light up and it will flash slowly (each every 1 second) when playing the audio files in U-disk.
-- The Blue LED
If it enters the "BT"mode and under searching the BT devices, The blue will quickly flash(each every 0.5 second); If the BT sucessful connection but waiting for playback,the solid blue will light up; If the audio files is playing via BT, the blue will slowly flash(each every 1 second).