TAKSTAR EKX-5A Professional Digital Audio Processor User Manual

EKX-5A Professional Digital Audio Processor
User Manual

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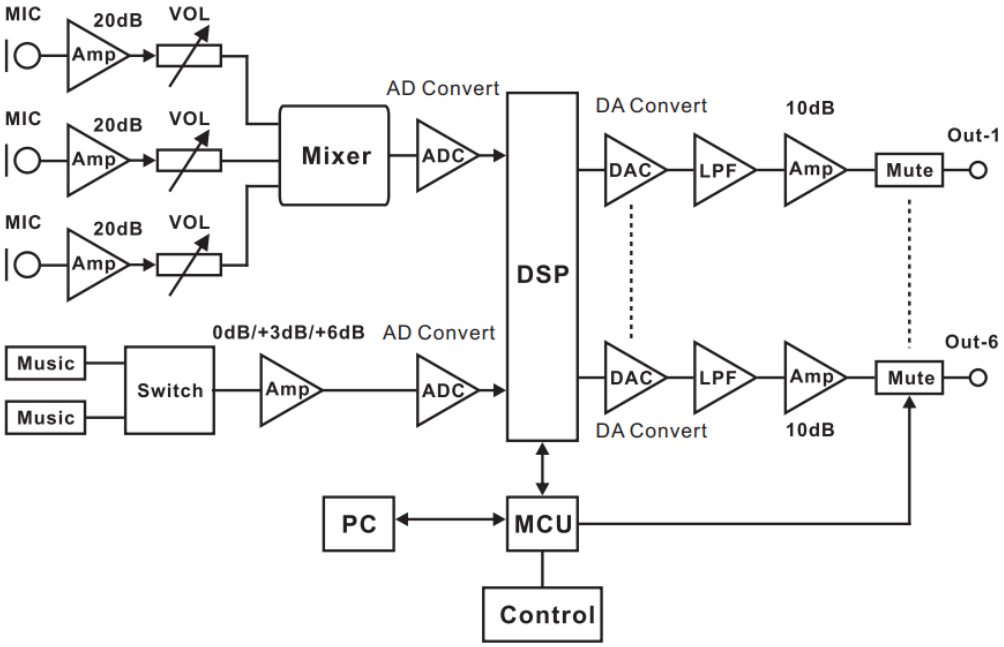
Part I. Introduction

1.1 Schematic



1.2 Features

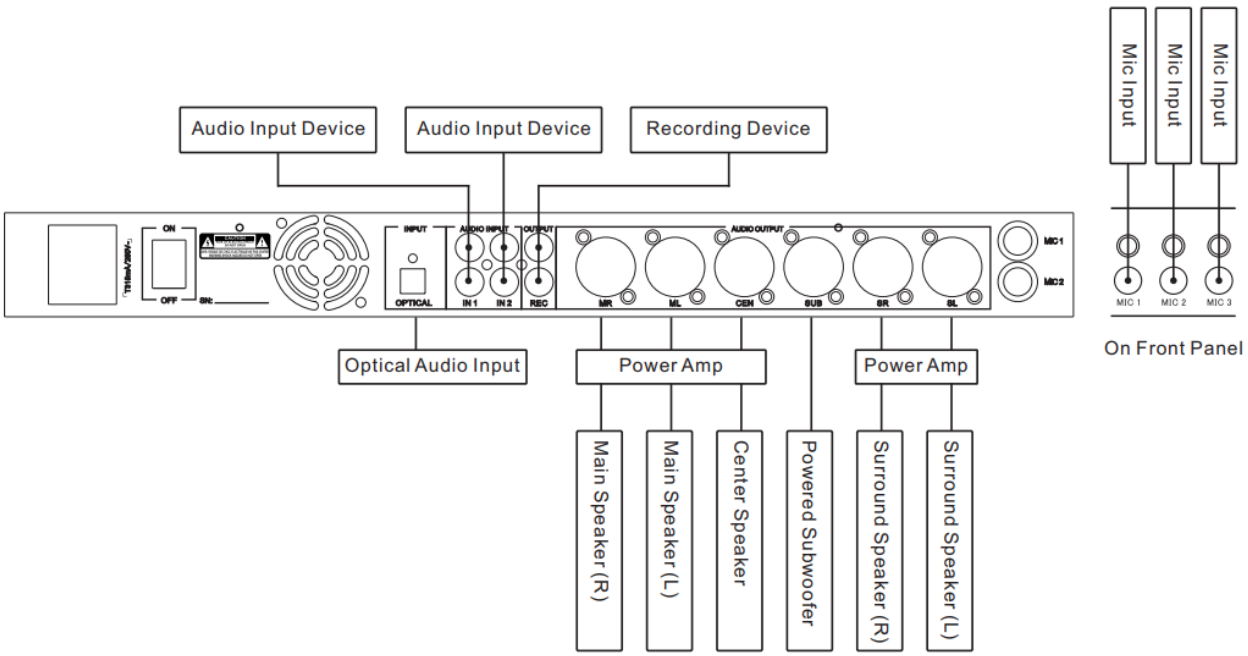
- Latest ADI 5 series chip, 64-Bit high-performance dual-core DSP.
- 9-band PEQ for music channels; automatic recognition of optical input
- 15-band PEQ for microphone adjustment, fully digital audio processing system, and stereo DSP multiple digital reverbs for more professional vocal.
- Microphone noise rejection along with independent limiter design; switchable 2Hz~8Hz frequency shift for feedback suppression.
- Independent HPF/LPF, and 5-band PEQ Reverb/Echo under Effect Channel.
- 7-band PEQ for each output channel, along with HPF/LPF, mix ratio, polarity, delay, limiter and gain functions.
- Supports VOD IR remote control.
- Supports PC control via RS232, using a professional device control software.
- Includes RTA software interface to help find and eliminate howling.
- 3-level password lock for customized security setting.
- Save up to 9 system modes; device automatically restores last saved setting upon bootup.

Part II. Operation Instructions

2.1 Connection and Power-On

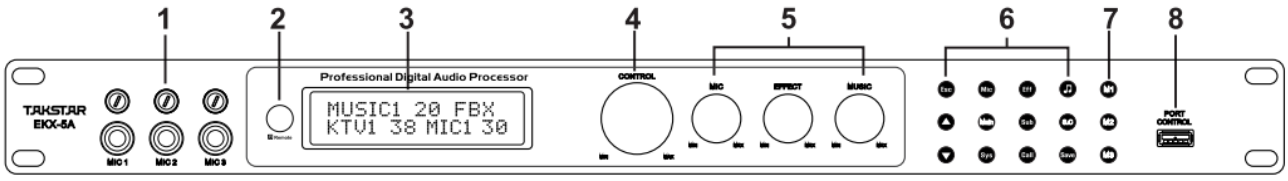
Please make sure that the power of this device and all amplifiers is turned off, then follow the below steps for quick connection and power-on.

1. Connect this device to the audio system.



2. Connect to power supply.
3. During the afore steps, turn all the volumes of power amplifiers to the minimum before connecting them to power supply.
4. Gradually increase the power amplifier volume to an ideal level without signal clipping.
5. **Note:** To protect the speakers and ensure their performance is not hindered, it's recommended that you adjust the volume level structure of the audio system and tweak the settings for crossover, equalizer and compressor/limiter.

2.2 Front Panel



MIC Input*3

One volume control dial above each connector.

6. IR Receiver

Accepts IR signal sent through an IR remote.

7. LCD Display

Displays the current menu and editable parameters under the menu.

8. Function Selection Knob

Used for selecting and editing of editable parameters.

9. Volume Knob

Used for volume adjustment for MIC, Effect, and Music.

10. Function Buttons

Physical buttons for the device functions. Press to enter corresponding menu settings for adjustment.

ESC: escape selection, back to the home screen.

▲–press to move the screen cursor upwards.

▼–press to move the screen cursor downwards.

MIC–press to visit parameters of microphones.

MAIN–press to visit parameters of main channels.

SYS–press to visit system parameters.

EFF–press to visit effect parameters.

SUB–press to visit parameters of surround sound channels.

RECALL–press to call data from a preset.

–press to visit music related parameters.

S.C–press to visit parameters of center speaker and subwoofer.

SAVE–press to save data.

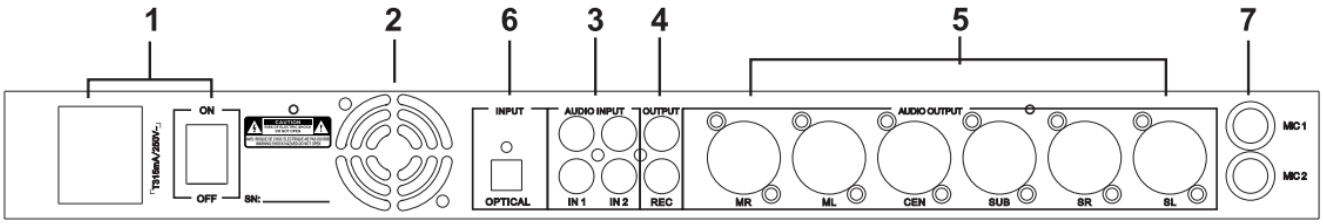
11. Effect Preset Shortcuts

    M1: Mode 1 M2: Mode 2 M3: Mode 3

12. RS232 Connector

    Connect to a Windows computer to use a GUI control software for the processor.

2.3 Rear Panel



1. Power Inlet & Power Switch

   Power requirement: ~210V-230V / 50Hz.

2. Ventilation Outlet

   For cooling-air ventilation. Do not block.

3. Audio Inputs

   Connect to audio input devices such as DVD and VCD. Include

   IN1 (L+R) and IN2 (L+R); L on the top, and R at the bottom.

4. Recording Outputs

   Connect to an audio recorder for karaoke recording.

5. Audio Outputs

   Connect to power amplifiers or powered speakers. Include:

   MR: Main Speaker (Right).

   ML: Main Speaker (Left).

   Center: Center Speaker.

   SUB: Subwoofer.

   SR: Surround Speaker (Right).

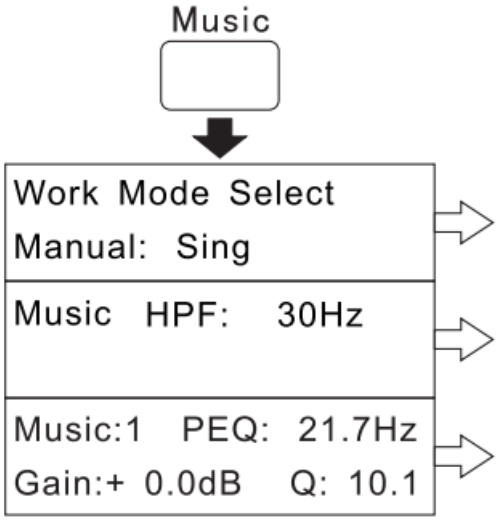
   SL: Surround Speaker (Left).

6. Optical Input

7. MIC Inputs

   EQ adjustment corresponds with that of MIC1 and MIC2 on the front panel.

2.4 Function Buttons & Menu Navigation

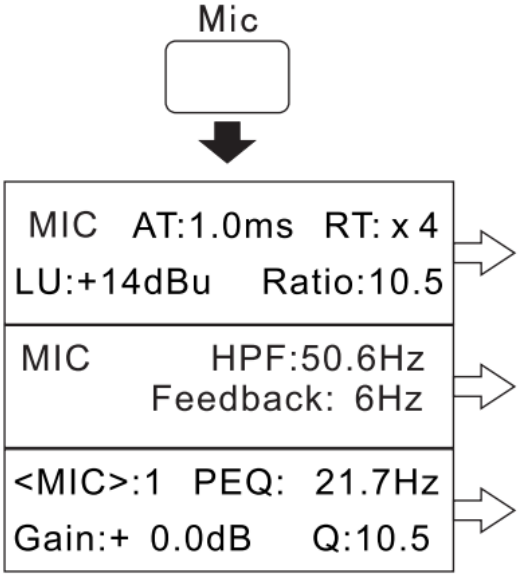


Music Parameter Setting

Work Mode: Auto or Manual (selectable between Sing/Disco).

HPF (High-Pass Filter): 0~303Hz.

Music: Bypass / ON (EQ1~10); Filter Type: PEQ / LSEQ / HSEQ; Frequency: 19.7Hz~20.6KHz; Gain: -24dB~+12dB; PEQ Q: 0.4~128; LSEQ Q: 0.4~2.0; HSEQ Q: 0.4~2.0.

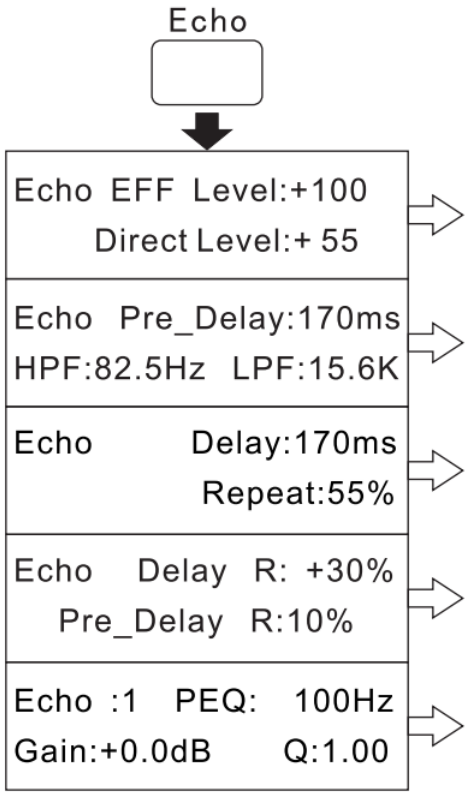


Microphone Parameter Setting

Microphone Compressor. AT (Attack Time): 0.5~90; RT (Release Time): AT× 2/4/6/8/12/16/24/32; LU (Threshold): -20dBu~+14dBu; Ratio (Compression Ratio): 1.0~100.

HPF (High-Pass Filter): 0~303Hz. Mic Feedback (Suppression): OFF / ON (2~8Hz).

<MIC>: Bypass / ON (EQ1~15); Filter Type: PEQ / LSEQ / HSEQ; Frequency: 19.7Hz~20.6KHz; Gain: -24dB~+12dB; PEQ Q: 0.4~128; LSEQ Q: 0.4~2.0; HSEQ Q: 0.4~2.0.



Echo Parameter Setting

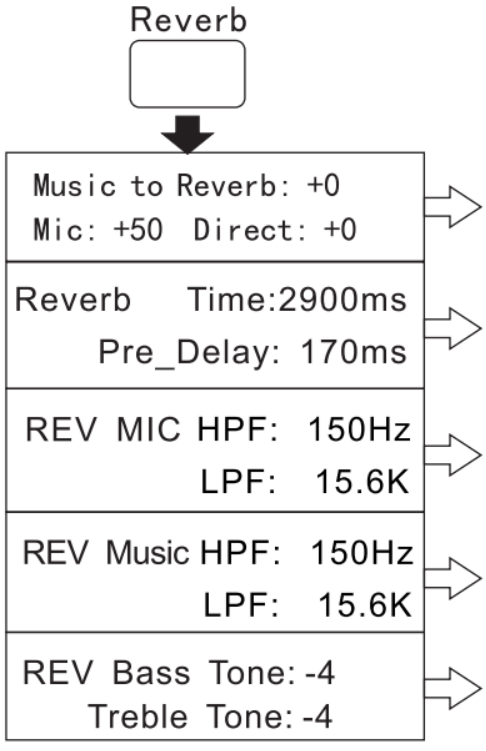
Echo EFF: echo effect mixer. Level: Echo Volume 0~100%, Polarity (+/–). Direct Level: Direct Volume 0~100%, Polarity (+/–).

Echo Pre_Delay: 0~250ms HPF: 0~2,000Hz; LPF: 0.5KHz~20.6KHz

Echo Delay: 0~500ms. Repeat: 0~90%.

Echo Delay R (Right Channel): -50%~+50% Pre_Delay R (Right Channel): 0~50%

Echo: Bypass / ON (EQ1~3); Filter Type: PEQ / LSEQ / HSEQ; Frequency: 19.7Hz~20.6KHz; Gain: -24dB~+12dB; PEQ Q: 0.4~128; LSEQ Q: 0.4~2.0; HSEQ Q: 0.4~2.0.



Reverberation Parameter Setting

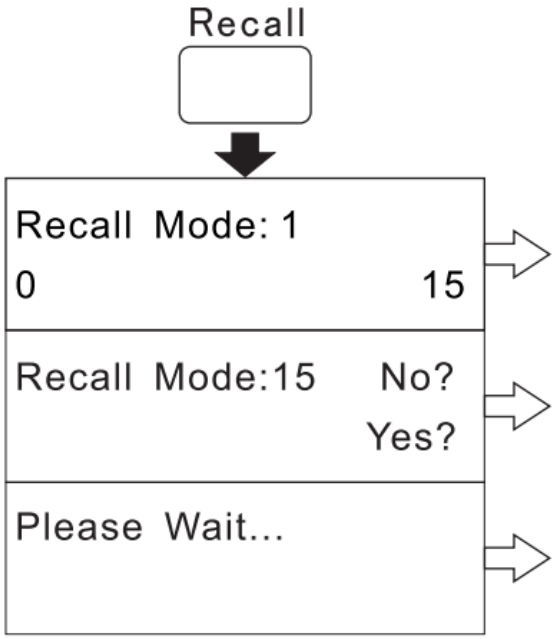
Reverb to Music Volume: 0~100 Mic: Reverb Volume 0~100%, Polarity (+/–). Direct: Reverb Direct Volume 0~100%, Polarity (+/–).

Reverb Time: 0~5,000ms. Pre_Delay: 0~200ms.

Reverb HPF (MIC): 0~2,000Hz. Reverb LPF (MIC): 0.5KHz~20.6KHz.

Reverb HPF (Music): 0~2,000Hz. Reverb LPF (Music): 0.5KHz~20.6KHz.

Reverb Bass Attenuation Reverb Treble Attenuation



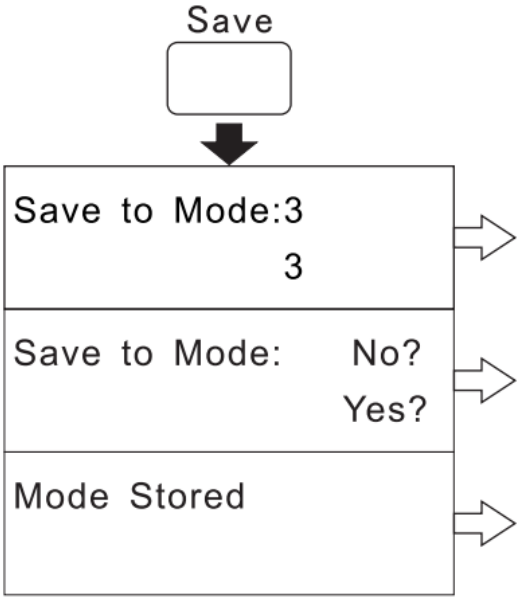
Recall Preset

Press “Recall” to enter this screen, and press “Up” to display a blinking cursor on the upper row, then turn the function knob to select which preset (No. 1~15).

Press “’Recall” again to enter this screen, then either press “Up” to select “No” to exit the recall interface, or press “Down” to select “Yes” to recall the selected mode.

After you select “Yes” by pressing “Down”, wait on this screen for a few seconds to finish the recall. Once finished, it will return to the home screen.

Note: Recall from a preset will override current parameters, please save the current settings if necessary before recall.



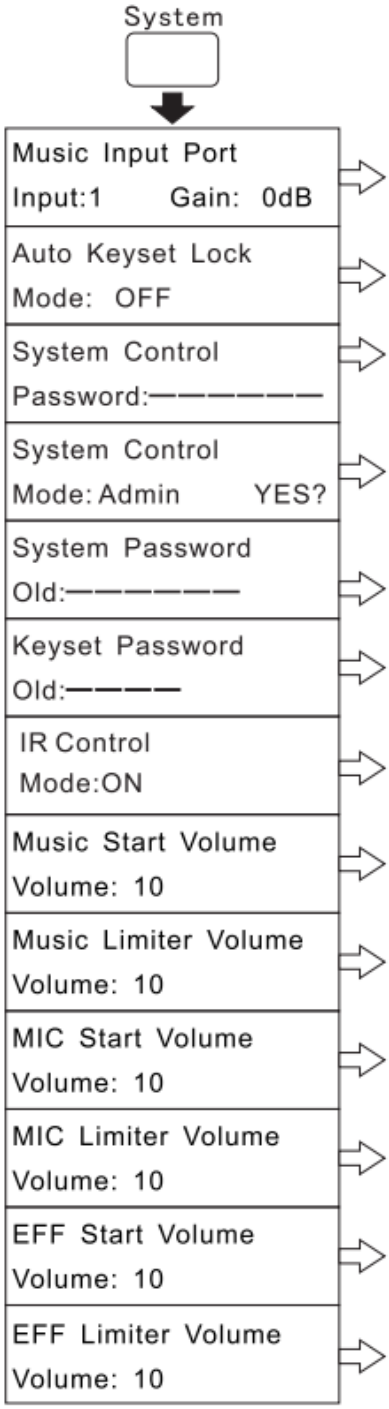
Save Mode

Press “Save” to enter this screen, and press “Up” to display a blinking cursor on the upper row, then turn the function knob to select which mode number to save to (No. 1~15). Then press “Down” to move the cursor downwards, and turn the function knob to set the mode name to save as.

Press “Save” again to enter this screen, then either press “Down” to select “Yes” and save the mode, or press “Up” to select “No” and return to the main screen without saving.

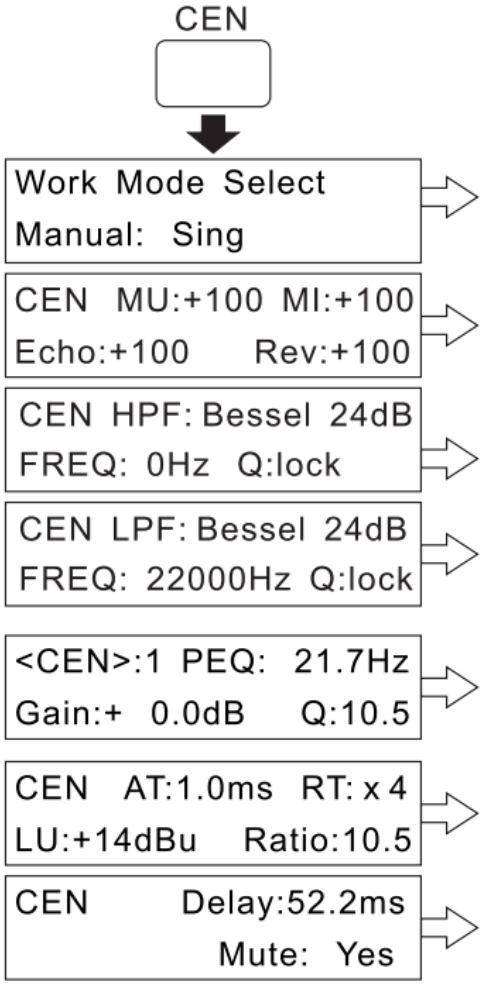
After you select “Yes” by pressing “Down”, this interface will show up, indicating the operation is successful.

Note: Save function is only permitted in Admin mode, but not User mode.



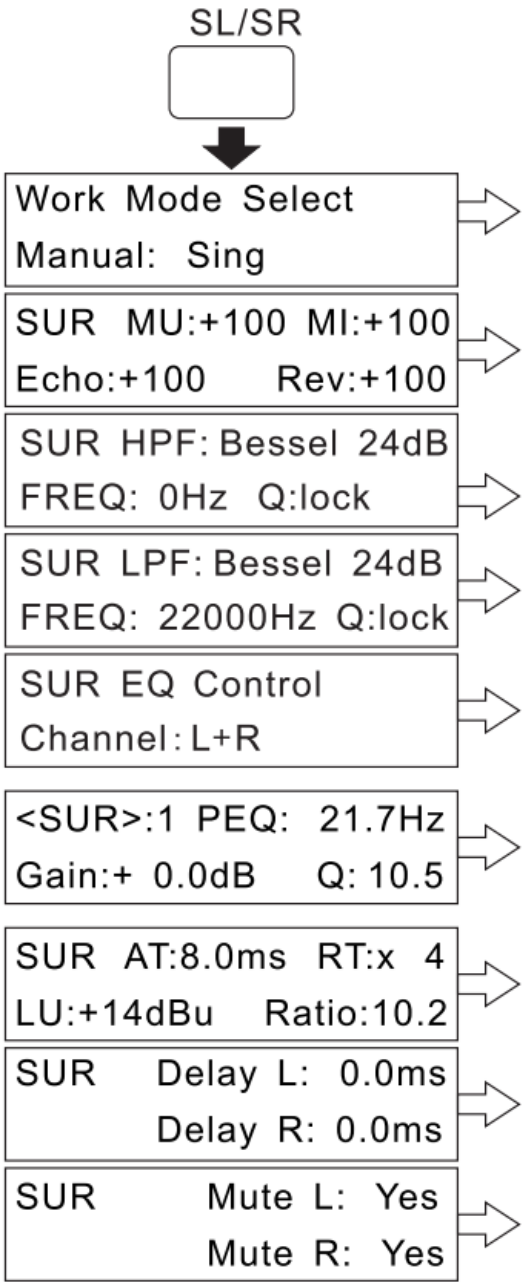
System Parameter Setting

Music Input Port: used to select Port 1/2. Gain: 0dB, 3dB, 6dB (selectable, but not in User mode).
Auto Keyset Lock: ON/OFF.
Input the system control password (6-digit) correctly to enter the mode selection menu.
System Control Mode: User or Admin. In User mode, you can only temporarily modify parameters without save permission; in Admin mode, you can modify and save parameters. By default, the device ships with Admin mode.
Change system password. First, input the old password (6-digit) correctly, then enter a new password.
Change keyset password. First, input the old password (4-digit) correctly, then enter a new password.
IR Control Mode: ON/OFF.
Music Start Volume: 0~84
Music Limiter Volume: 0~84.
Microphone Start Volume: 0~84.
Microphone Limiter Volume: 0~84.
Effect Start Volume: 0~84.
Effect Limiter Volume: 0~84.



Center Parameter Setting

Work Mode: Auto or Manual (selectable between Sing/Disco).
Center volume mixer. MU (Music Volume): 0~200%; MI (MIC Volume): 0~200%;
Echo (Echo Volume): 0~200%; Rev (Reverb Volume): 0~200%; Polarity (+/–).
HPF FREQ: CEN HPF 0~303Hz; Filter Slope: 12dB, 24dB.
LPF FREQ: CEN LPF 0~303Hz; Filter Slope: 12dB, 24dB.
<CEN> Center: Bypass / ON (EQ1~5); Filter Type: PEQ / LSEQ / HSEQ; Frequency: 19.7Hz~20.6KHz; Gain: -24dB~+12dB; PEQ Q: 0.4~128; LSEQ Q: 0.4~2.0; HSEQ Q: 0.4~2.0.
Center Compressor. AT (Attack Time): 0.5~90; RT (Release Time): AT× 2/4/6/8/12/16/24/32;
LU (Threshold): -20dBu~+14dBu; Ratio (Compression Ratio): 1.0~100. CEN Delay: 0~50.0ms; Mute: Yes / No.



Surround Parameter Setting

Work Mode: Auto or Manual (selectable between Sing/Disco) Surround volume mixer. MU (Music Volume): 0~200%;

MI (MIC Volume): 0~200%; Echo (Echo Volume): 0~200%; Rev (Reverb Volume): 0~200%; Polarity (+/–).

HPF FREQ: SUR HPF 0~303Hz; Filter Slope: 12dB, 24dB.

LPF FREQ: SUR LPF 0~303Hz; Filter Slope: 12dB, 24dB.

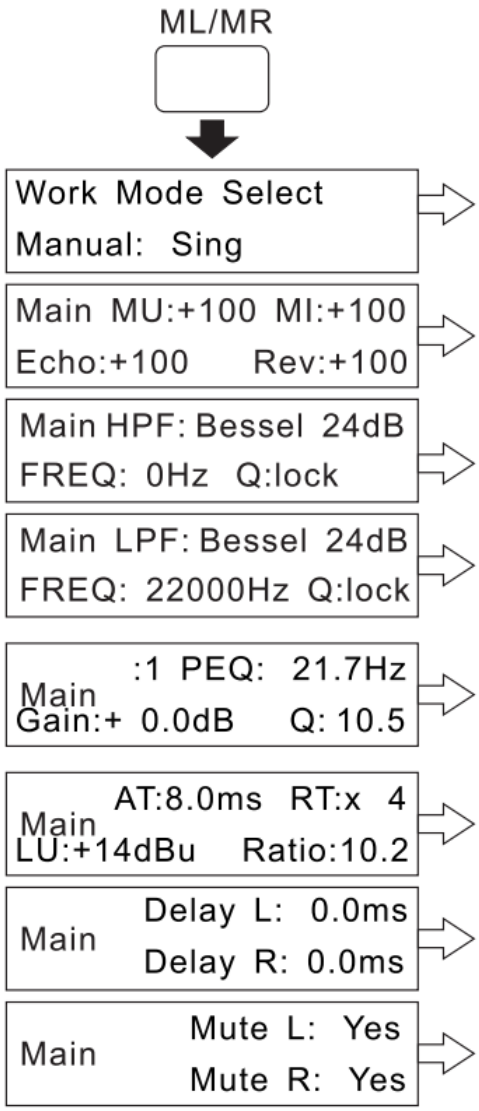
SUR EQ Control Channel: L / R / L+R.

<SUR> Surround: Bypass / ON (EQ1~5); Filter Type: PEQ / LSEQ / HSEQ; Frequency: 19.7Hz~20.6KHz; Gain: -24dB~+12dB; PEQ Q: 0.4~128; LSEQ Q: 0.4~2.0; HSEQ Q: 0.4~2.0.

Surround Compressor. AT (Attack Time): 0.5~90; RT (Release Time): AT× 2/4/6/8/12/16/24/32; LU (Threshold): -20dBu~+14dBu; Ratio (Compression Ratio): 1.0~100.

SUR Delay L: 0~50.0ms; SUR Delay R: 0~50.0ms.

SUR Mute L: Yes / No; SUR Mute R: Yes / No.



Main Channel Parameter Setting

Work Mode: Auto or Manual (selectable between Sing/Disco).

Main channel volume mixer. MU (Music Volume): 0~200%; MI (MIC Volume): 0~200%; Echo (Echo Volume): 0~200%; Rev (Reverb Volume): 0~200%; Polarity (+/–).

HPF FREQ: Main HPF 0~303Hz; Filter Slope: 12dB, 24dB.

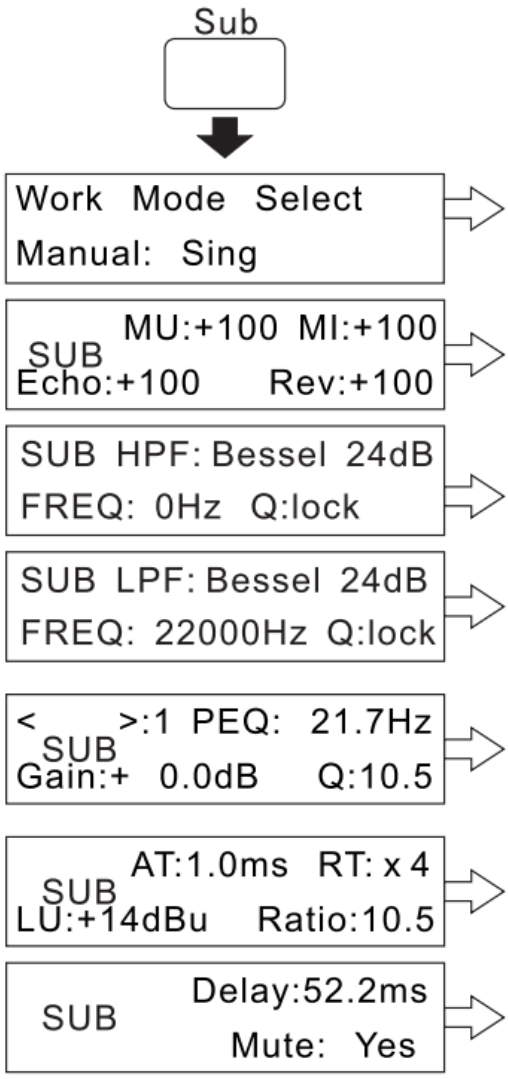
LPF FREQ: Main LPF 0~303Hz; Filter Slope: 12dB, 24dB.

Main: Bypass / ON (EQ1~5); Filter Type: PEQ / LSEQ / HSEQ; Frequency: 19.7Hz~20.6KHz; Gain: -24dB~+12dB; PEQ Q: 0.4~128; LSEQ Q: 0.4~2.0; HSEQ Q: 0.4~2.0.

Main Channel Compressor. AT (Attack Time): 0.5~90; RT (Release Time): AT× 2/4/6/8/12/16/24/32; LU (Threshold): -20dBu~+14dBu; Ratio (Compression Ratio): 1.0~100.

Main Delay L: 0~50.0ms; Main Delay R: 0~50.0ms.

Main Mute L: Yes / No; Main Mute R: Yes / No.



Subwoofer Parameter Setting

Work Mode: Auto or Manual (selectable between Sing/Disco).

Subwoofer volume mixer. MU (Music Volume): 0~200%; MI (MIC Volume): 0~200%; Echo (Echo Volume): 0~200%; Rev (Reverb Volume): 0~200%; Polarity (+/–).

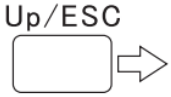
HPF FREQ: SUB HPF 0~303Hz; Filter Slope: 12dB, 24dB.

LPF FREQ: SUB LPF 0~303Hz; Filter Slope: 12dB, 24dB.

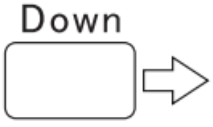
<SUB> Subwoofer: Bypass / ON (EQ1~5); Filter Type: PEQ / LSEQ / HSEQ; Frequency: 19.7Hz~20.6KHz; Gain: -24dB~+12dB; PEQ Q: 0.4~128; LSEQ Q: 0.4~2.0; HSEQ Q: 0.4~2.0.

Subwoofer Compressor. AT (Attack Time): 0.5~90; RT (Release Time): AT× 2/4/6/8/12/16/24/32; LU (Threshold): -20dBu~+14dBu; Ratio (Compression Ratio): 1.0~100.

SUB Delay: 0~50.0ms; Mute: Yes / No.



Press “Up/Esc” to display a blinking cursor on the upper-row menu, then turn the function knob to adjust the parameter. If there are more than one parameter setting on the upper rows, press “Up/Esc” again to navigate and cycle through different settings. Press and hold “Up/Esc” button to return to the main menu.



Press “Down” to display a blinking cursor on the lower-row menu, then turn the function knob to adjust the parameter. If there are more than one parameter setting on the lower rows, press “Down” again to navigate and cycle through different settings.

LCD Main Menu Parameter Setting: Enter the main menu parameter by pressing any one of the 6 buttons on the front panel (“MIC”, “EFFECT”, “MUSIC”, etc.). To enable Auto Keyset Lock function, set a keyset password under

“System” setting.

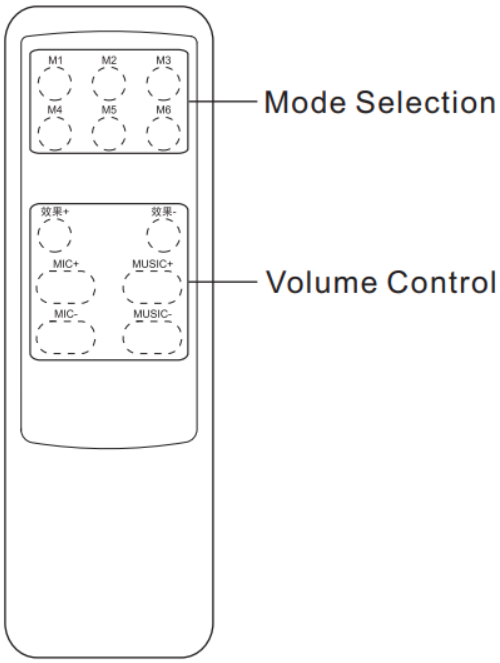
2.5 Input/Output Processing

Input/Output	Processing Effects
Music Input	Input Gain, 9-band PEQ, Auto / Sing / Disco.
Microphone Input	Feedback suppression, 15-band PEQ, HPF.
Main Channel Output	Volume mixer, delay, compressor, 7-band PEQ, HPF, Auto / Sing / Disco.
Center Output	Volume mixer, delay, compressor, 7-band PEQ, HPF, Auto / Sing / Disco.
Subwoofer Input	Volume mixer, delay, compressor, 7-band PEQ, HPF, LPF, Auto / Sing / Disco.
Surround Output	Volume mixer, delay, compressor, 7-band PEQ, HPF, Auto / Sing / Disco.

2.6 Parameter Description

1. Input Gain: used to compensate level difference between various input sources, especially those with lower input level, for overall level consistency.
2. Volume Mixer: used to send signals from microphone or music or both to outputs.
3. HPF (High-Pass Filter): filters away lower frequencies while letting higher frequencies through.
4. LPF (Low-Pass Filter): filters away higher frequencies while letting lower frequencies through.
5. Microphone Feedback Suppression: used to prevent feedback howling when recording high volume.
6. PEQ (Parametric EQ): used to adjust the coloration of the audio signal. Set the center frequency of a band, and freely adjust the EQ parameters of the band. Q can be used to adjust the bandwidth. n d
7. HSEQ/LSEQ (2 Order High/Low-Pass Slope Filter): used to boost or attenuate the highs or lows of nd audio signals, which can effectively control the coloration of a wide range of frequencies. 2 order filters have a 12dB/octave slope, and have +12/-24dB boost/attenuation range.
8. Q (the ratio of center frequency to bandwidth): used to adjust PEQ bandwidth. The lower the Q value, the wider the bandwidth (wider frequency coverage), and vice versa (narrower for a more accurate equalization). This parameter only applies to aforementioned PEQ bands.
9. Gain: used to boost or attenuate output audio signal. For example, -6dB refers to a 6-decibel attenuation of the output audio signal, while +12dB means a 12-decibel increase of the output audio signal.
10. EQ PASS: when selected, the EQ will be turned off, and the frequency band of the current channel becomes flat.
11. Compressor: compression over a dynamic range. When the output signal reaches the “Compression Attack Time”, the compressor will engage to control the signal level. Mostly used to prevent speaker damage from excessively high level of peak audio signal.
12. Delay: can be used to help synchronize signals of different speakers, making the output speaker signals reach the audience at about the same time, decreasing phase distortion.
13. Echo: consist of multiple delay-generated artificial echoes. By mixing processed and unprocessed signals, the singer’s voice can sound more compelling. A desired karaoke effect can be achieved by flexibly adjusting the echo time, feedback and level.
14. Reverb: similar to the echo effect. It enhances the vocalist’s voice and makes it sound more live.
15. Initial Volume: the configured default volume for the device after each bootup.
16. Max Volume: the configured maximum volume adjustable for the device.

Part III. Remote Controller



Mode Selection: M1~M6
Volume Control: volumes for Effect, Microphones and Music.

Part IV. Appendix

4.1 Product Specifications

Music Socket Max. Input Level:	+14dBu (4V RMS)
All Channel Max. Output Level:	+14dBu (4V RMS)
Mic Input Sensitivity:	64mV (out:4V)
Music Input Gain:	0dB, +3dB, +6dB (selectable)
S/N Ratio:	> 90dB
Power Supply:	220V/50Hz
Net Weight:	3.8Kg
Device Dimensions (L*W*H):	483*218.5*47.5mm

4.2 Packing List (per set)

- 1 – Digital Audio Processor
- 1 – Power Cord
- 1 – User Manual
- 1 – Remote Controller

Safety Instructions

To avoid electric shock, overheat, fire, radiation, explosion, mechanical risk and injury or property loss due to improper use, please read and observe the following instructions before use:

1. Please check if the power of the connected equipment matches with that of this product before operation.

Adjust the volume to proper level during operation. Do not operate at over-power or high-volume level for extended time to avoid product malfunction or hearing impairment.

2. If there is any abnormality during use (e.g., smoke, strange odor), please kill the power switch and unplug from power source, then send the product to the local dealer for repair.
3. Keep this device and its accessories in a dry and ventilated area. Do not store in a humid or dusty area for extended time. Keep away from fire, rain, liquid intrusion, bumping, throwing, vibrating, or from blocking any ventilation openings, to prevent malfunction.
4. The product must, when installed on walls or ceilings, be fixed firmly in place at adequate strength to prevent from falling.
5. Please abide by safety rules during operation. Do not use the product in places prohibited by laws or regulations to avoid accident.
6. Do not disassemble or repair the product by yourself to avoid injury. If you have any questions or require any services, please contact our local dealer.

Suitable only for altitudes below 2,000m


Suitable only for non-tropical climates

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Documents / Resources

	**TAKSTAR EKX-5A Professional Digital Audio Processor** [pdf] User Manual EKX-5A, Professional Digital Audio Processor, EKX-5A Professional Digital Audio Processor, Digital Audio Processor, Audio Processor, Processor