KAV DIGITAL A/V PROCESSOR AMPLIFIER

User's Manual

CAUTION
READ INSTRUCTIONS BEFORE OPERATING

Contact Information

support@singeasy.com

https://singeasy.com

IMPORTANT SAFETY INFORMATION

WARNING FOR YOUR PROTECTION
READ THE FOLLOWING:

KEEP THESE INSTRUCTIONS

HEED ALL WARNINGS

FOLLOW ALL INSTRUCTIONS

The apparatus shall not be exposed to dripping or splashing liquid and no object filled with liquid, such as vases, shall be placed on the apparatus.

CLEAN ONLY WITH A DRY CLOTH.

DO NOT BLOCK ANY OF THE VENTILATION OPENINGS. INSTALL IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.

DO NOT INSTALL NEAR ANY HEAT SOURCES SUCH AS RADIATORS, HEAT REGISTERS, STOVES, OR OTHER APPARATUS (INCLUDING AMPLIFIERS) THAT PRODUCE HEAT.

ONLY USE ATTACHMENTS/ACCESSORIES SPECIFIED BY THE MANUFACTURER.

UNPLUG THIS APPARATUS DURING LIGHTNING STORMS OR WHEN UNUSED FOR LONG PERIODS OF TIME.

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 third prong are provided for your safety. If the provided plug does not fit 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.

Use only with the cart stand, tripod bracket, or table specified by the manufacture,
or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.

Refer all servicing to qualified service personnel. 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.

POWER ON/OFF SWITCH: If the equipment has a Power switch, the Power switch used in this piece of equipment DOES NOT break the connection from the mains.

MAINS DISCONNECT: The plug shall remain readily operable. For rackmount or installation where plug is not accessible, an all-pole mains switch with a contact separation of at least 3 mm in each pole shall be incorporated into the electrical installation of the rack or building.

FOR UNITS EQUIPPED WITH EXTERNALLY ACCESSIBLE FUSE RECEPTACLE:
Replace fuse with same type and rating only.

MULTIPLE-INPUT VOLTAGE: This equipment may require the use of a different line cord, attachment plug, or both, depending on the available power source at installation. Connect this equipment only to the power source indicated on the equipment rear panel. To reduce the risk of fire or electric shock, refer servicing to qualified service personnel or equivalent.

If connected to 240V supply, a suitable CSA/UL certified power cord shall be used for this supply.

The symbols shown above are internationally accepted symbols that warn of potential hazards with electrical products. The lightning flash with arrowpoint in an equilateral triangle means that there are dangerous voltages present within the unit. The exclamation point in an equilateral triangle indicates that it is necessary for the user to refer to the owner's manual.

These symbols warn that there are no user serviceable parts inside the unit. Do not open the unit. Do not attempt to service the unit yourself. Refer all servicing to qualified personnel. Opening the chassis for any reason will void the manufacturer's warranty. Do not get the unit wet. If liquid is spilled on the unit, shut it off immediately and take it to a dealer for service. Disconnect the unit during storms to prevent damage.

IMPORTANT SAFETY INFORMATION

SAFETY INSTRUCTIONS

NOTICE FOR CUSTOMERS IF YOUR UNIT IS EQUIPPED WITH A POWER CORD.

WARNING: THIS APPLIANCE SHALL BE CONNECTED TO A MAINS SOCKET OUTLET WITH A PROTECTIVE EARTHING CONNECTION.

The cores in the mains lead are coloured in accordance with the following code:

GREEN and YELLOW - Earth BLUE - Neutral BROWN – Live

As colours of the cores in the mains lead of this appliance may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:
- The core which is coloured green and yellow must be connected to the terminal in the plug marked with the letter E, or with the earth symbol, or coloured green, or green and yellow.
- The core which is coloured blue must be connected to the terminal marked N or coloured black.
- The core which is coloured brown must be connected to the terminal marked L or coloured red.

This equipment may require the use of a different line cord, attachment plug, or both, depending on the available power source at installation. If the attachment plug needs to be changed, refer servicing to qualified service personnel who should refer to the table below. The green/yellow wire shall be connected directly to the units chassis.

CONDUCTOR		WIRE COLOR	
		Normal	**Alt**
L	LIVE	BROWN	BLACK
N	NEUTRAL	BLUE	WHITE
E	EARTH GND	GREEN/YELLOW	GREEN

WARNING: If the ground is defeated, certain fault conditions in the unit or in the system to which it is connected can result in full line voltage between chassis and earth ground. Severe injury or death can then result if the chassis and earth ground are touched simultaneously
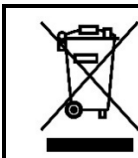
If you want to dispose this product, do not mix it with general household waste. There is a separate collection system for used electronic products in accordance with legislation that requires proper treatment, recovery and recycling

Private household in the 25 member states of the EU, in Switzerland and Norway many return their used electronic products free of charge to designated collection facilities or to a retailer (if you purchase a similar new one).

For countries not mentioned above, please contact your local authorities for a correct method of disposal. By doing so you will ensure that your disposed product undergoes the necessary treatment, recovery and recycling and thus prevent potential negative effects on the environment and human health.

KAV

Table of Contents

Congratulations on your purchase of the Sing Easy KAV Series. The KAV Series is a powerful and full-featured digital A/V processor, designed specifically for karaoke installations. With a variety of audio connectivity options, six channels output and effects processing, and video connectivity options, four HDMI porta and an ARC port, the KAV provides you with all the connectivity and processing required for an amazing karaoke experience.

1.1 Defining the KAV

The KAV Series provides you with all the connectivity and processing required between your sources and amplifiers.

The KAV's main features include:
- High-performance 32-bit DSP and A/D and D/A Converter, 24 bit, 48kHz HD Audio processing
- High-efficiency 450-watt and 650-watt, two channels Class D amplifier
- Four levels of AFE (Automatic Feedback Elimination) technology
- Large TFT display for intuitive operation and settings information
- Two RCA analog audio input, optical audio input, Bluetooth, USB and Quad HDMI inputs
- HDMI output with Audio Return Channel (ARC) function
- Two separate microphone input channels
- 10-band parametric equalizer for audio inputs
- 7-band parametric equalizer for microphone inputs
- Six output channels: Right, Left, Centre, Sub, Surround Right and Surround Left
- Dance/Sing mode for manual/automatic subwoofer management
- Password viable for front panel lock
- 12 custom presets
- Independent control of Echo and Reverb
- USB port on the front panel for MP3 playback
- Remote controllable via DB9 RS232 communication port

Package Contents:
- Sing Easy KAV digital A/V processor
- Owner's Manual
- Power Cable
- Infrared Remote Controller

1.2 Contact Info
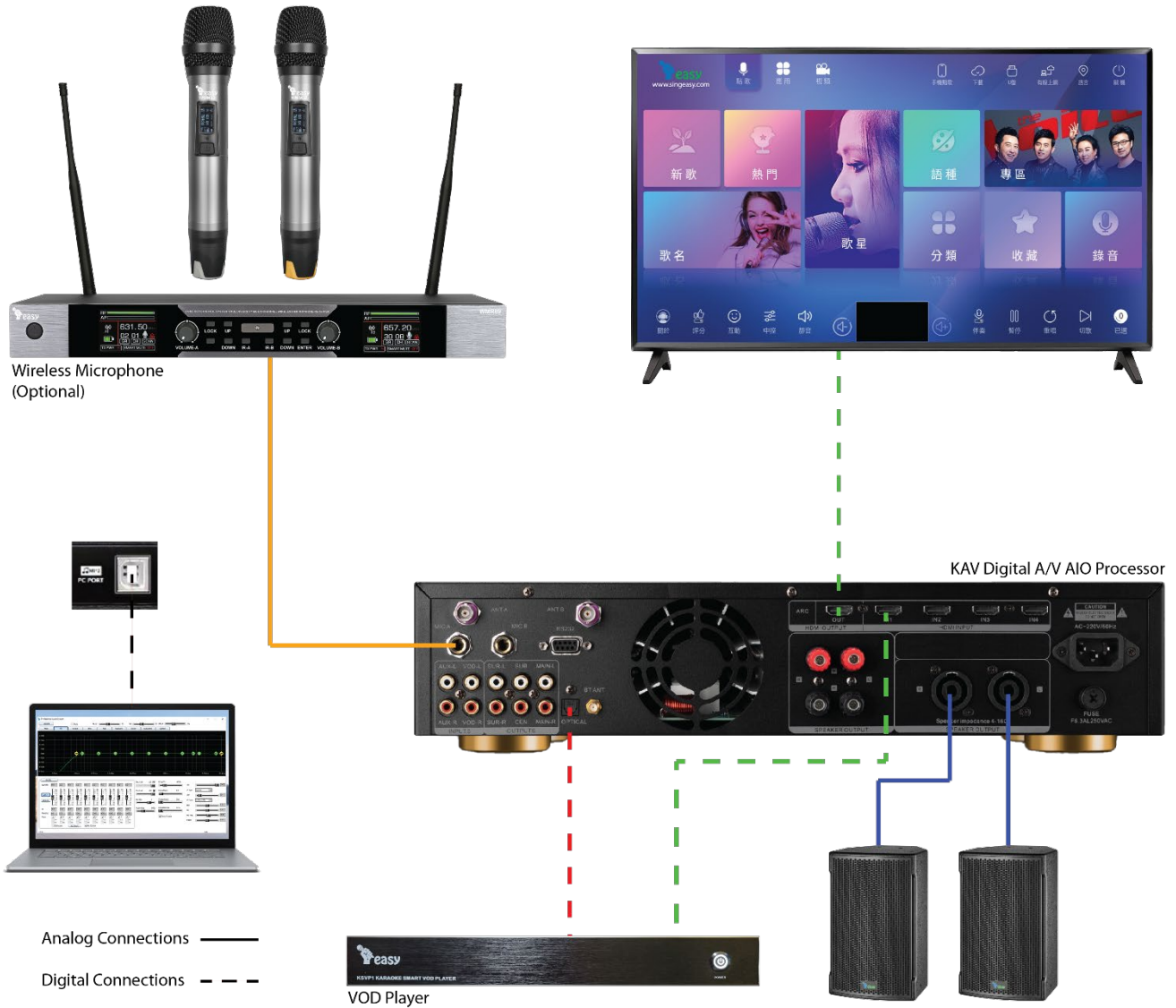
On the World Wide Web:
www.singeasy.com

Professional Contacts, Outside the US:
Contact the Sing Easy Distributor in your area. A complete list of Sing Easy international distributors is provided on our website @ www.singeasy.com

2.1 Quick Start

Please follow the proceeding steps to set up and running quickly. Before proceeding, ensure the power to the KAV Series and your amplifier(s) are turned off.

1. Connect the KAV Series to your system.

Wireless Microphone (Optional)

KAV Digital A/V AIO Processor

Analog Connections ———

Digital Connections — — —

VOD Player

2. Power on all audio output devices such as VOD player then power on the KAV digital A/V processor.
3. While playing back audio, slowly increase the volume of the KAV to the desired listening level.
4. When powering off the system, remember to first power off the amplifiers to avoid speakers clipping.

Note: It is recommended that the KAV digital A/V processor is calibrated on gain, crossover, EQ, and limiter settings adjusted for proper loudspeaker protection and performance.

2.2 Front Panel

Please follow the proceeding steps to set up and running quickly. Before proceeding, ensure the power to the KAV and your amplifier(s) are turned off.

1. **Power Switch**
   Use this switch to turn the power of the KAV on and off.

2. **LCD Screen**
   This LCD display allow you to navigate through the different menus within the KAV as well as allowing you to change inputs, adjusting the Music, Microphone, and Effects volumes and for editing the existing parameters display.
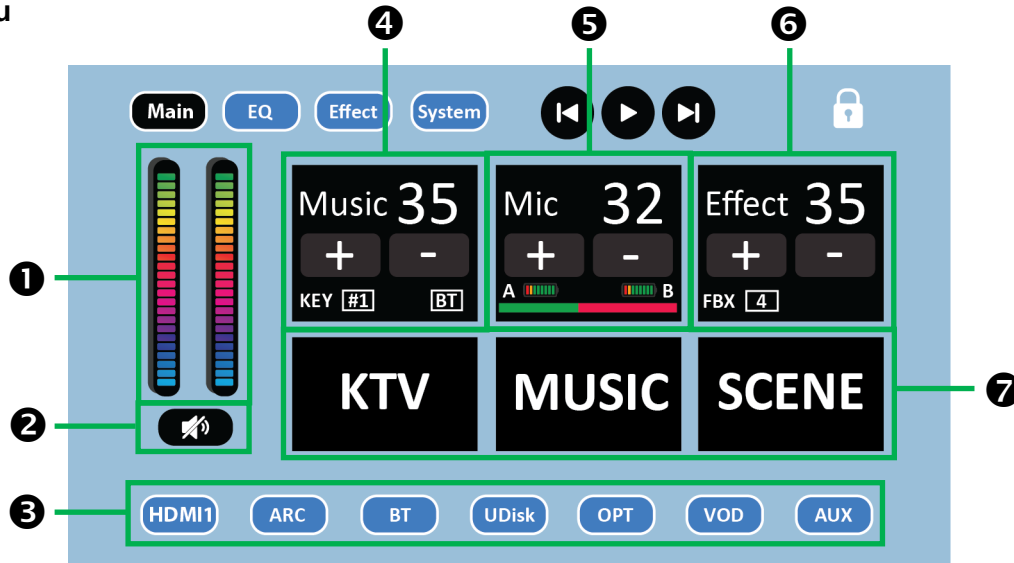
3. **USB Port for MP3 playback**

4. **USB port**
   This port allows you to connect the KAV to the computer.

5. **IR sensor**

2.3 Front Panel Touch Screen

The touch screen is divided into four menu tabs: Main, EQ, Effect, and System.

Main Menu

❶	**Volume output level**
	▪ Volume bar will show current output level

❷	**Mute**
	▪ Touch the icon to mute and unmute.

❸	**Music input selection**
	▪ Touch the icon HDMI1/2/3/4 to switch between different HDMI inputs
	▪ Touch the icon ARC to select ARC input (to connect to a TV or other device with ARC interface, set the audio output port to ARC and turn on the volume)
	▪ Touch the icon Bluetooth to select Bluetooth input
	▪ Touch the icon U Disk to playback USB MP3 music.
	▪ Touch the icon Optical to select Optical music input
	▪ Touch the icon VOD to select the VOD music input
	▪ Touch the icon AUX to select AUX music input

❹	**Music volume control**
	▪ To adjust the music volume, touch the left side "+" icon to increase the volume or touch the right side "-" icon to decrease the volume.
	▪ KEY is the rising and falling tone level display.
	▪ BT is the Bluetooth connection status display. Symbol turns blue for connected state.

| ❺	**Microphone volume control**
	▪ To adjust the microphone volume, touch the left side "+" icon to increase the volume or touch the right side "-" icon to decrease the volume.
	▪ AB microphone signal and battery display.

❻	**Effect volume control**
	▪ To adjust the effect volume, touch the left side "+" icon to increase the volume or touch the right side "-" icon to decrease the volume.
	▪ FBX shows the feedback suppression level.

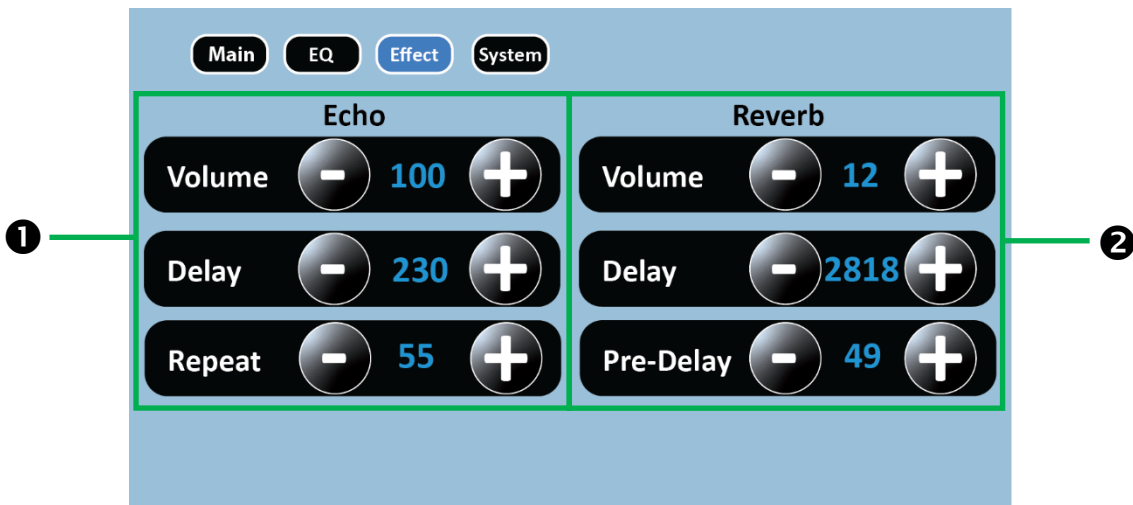| ❼	**Preset Modes**
	▪ **Singing:** Pop, Professional, Folk and Custom
	▪ **Listening:** Music, Movie, Drama and Custom
	▪ **Scene:** Conference, Scene 1, Scene 2 and Custom

EQ Menu
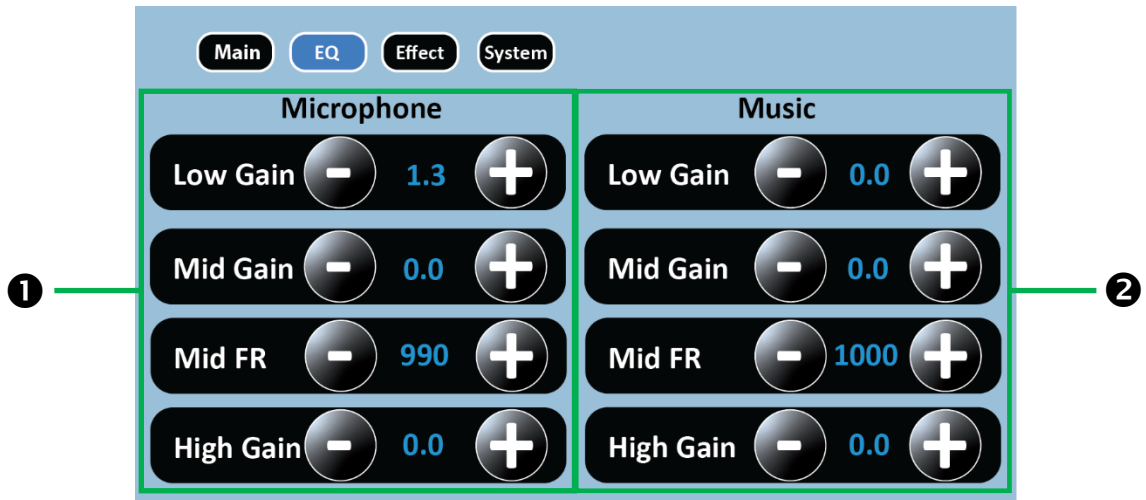
❶ Microphone EQ

Low Gain	-24dB to 24dB
Mid Gain	-24dB to 24dB
Mid Frequency Range	20Hz to 20KHz
High Gain	-24dB to 24dB

❷ Music EQ

Low Gain	-24dB to 24dB
Mid Gain	-24dB to 24dB
Mid Frequency Range	20Hz to 20KHz
High Gain	-24dB to 24dB

Effect Menu

| Main | EQ | Effect | System |

Echo — ❶

Volume	− 100 +
Delay	− 230 +
Repeat	− 55 +

Reverb — ❷

Volume	− 12 +
Delay	− 2818 +
Pre-Delay	− 49 +

❶	Echo Volume	Values: 0 to 100 Adjust the echo effect added to the original signal, the larger the value, the more noticeable effect
	Echo Delay	Values: 1 to 500ms Adjust the delay time of the echo effect, the larger the value, the longer the echo interval
	Echo Repeat	Values: 0 to 90 Adjust the echo repeat, the larger the value, the deeper echo

| ❷	Reverb Volume	Values: 0 to 100 Adjust the reverb effect is added to the original signal, the larger the value, the more obvious the effect is
	Reverb Delay	Values: 500 to 5000ms Adjust the reverb delay, the larger the value, the more spacious the space will be
	Reverb Pre-Delay	Values: 0 to 100ms Adjust the reverb pre-delay time for the reverb effect to be heard, the larger the value, the later the reverberation effect will appear, resulting in a more spacious effect

System Settings
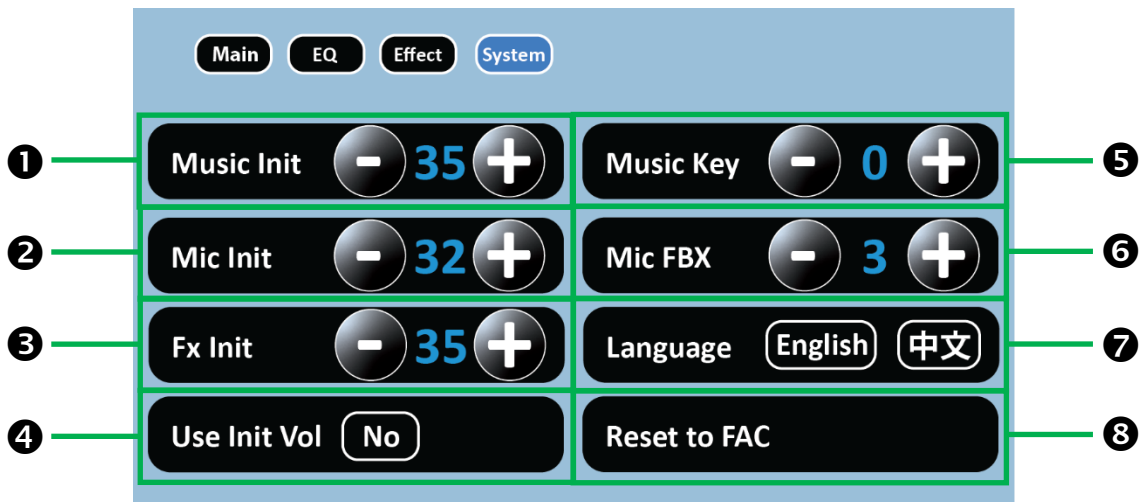
❶	Initial music volume	Values: 0 to 84
❷	Initial mic volume	Values: 0 to 84
❸	Initial effect volume	Values: 0 to 84#5
❹	Use initial volume	Values: Yes / No When initial volume mode is set to "Yes", initial volumes will be set automatically when amplifier is turned on. When initial volume mode is set to "No", the volume level will be according to the last volume level before the amplifier was turned off.

❺ Music pitch/key

Minor							N	Flat						
-7	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	7
b7	b6	b5	b4	b3	b2	b1	0	#1	#2	#3	#4	**#5**	#6	#7

| ❻ | FBX | Values: 0 to 4
Feedback suppression level |
| ❼ | Language | Values: English / Chinese |
| ❽ | Reset to FAC | Factory Reset |

2.4 Rear Panel
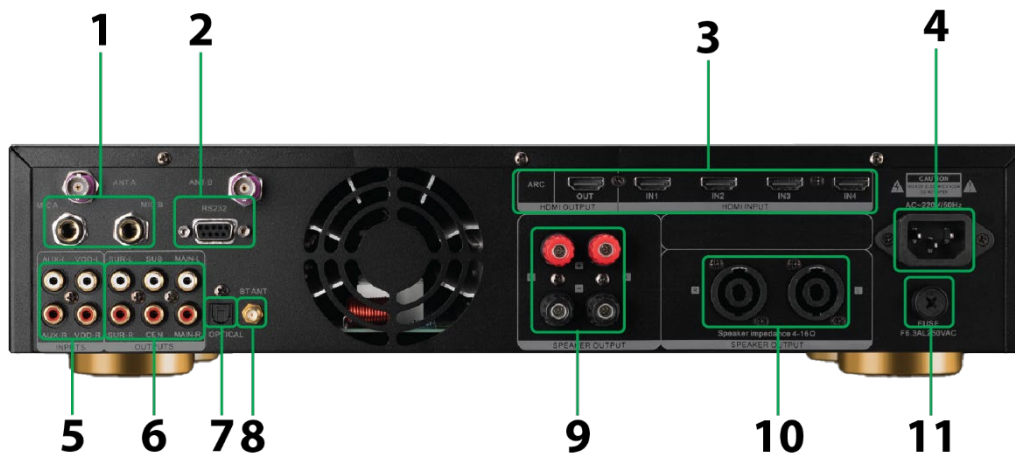
1. **Microphone Inputs**
   Connect your microphones to these 1/4" connections.

2. **RS232 USB Port**
   This port allows you to connect the KAV to the home automation controllers.

3. **Quad HDMI 2.0 Inputs & HDMI Output w/ Audio Return Channel (ARC)**
   Connect your Blu-Ray, DVD, VOD Player and TV to these HDMI ports.

4. **Power Jack**
   Connect the power cable to this jack.

5. **Audio Inputs**
   Connect your analog audio source to these RCA jacks.

6. **5.1 Outputs**
   Connect these outputs to an external amplifier.

7. **OPTICAL Input**
   Connect your digital audio source to the OPTICAL input.

8. **Antenna Jack**
   Connect the supplied BT antenna to the unit.

9. **Speaker Output (Binding Post)**
   Connect the banana plugs from the speakers to these binding posts.

10. **Speaker Output (NL4 Male)**
    Connect the NL4 Female from the speakers to these NL4 Male.

11. **Fuse**
    Replace the fuse in case of any overload and short-circuit faults.

2.5 Infrared Remote-Control

Remote-Control Keys

#	KEY	DESCRIPTION
❶	FBX	Feedback Suppression
❷	MUTE	Mute
❸	*	User Presets
❹	MUSIC- MUSIC+	Music Volume
	EFF- EFF+	Effects Volume
	MIC- MIC+	Microphone Volume
❺	SUR - SUR +	Surround Volume
❻	UP PLAY DOWN	Main Volume
❼	SUB - SUB +	Subwoofer Volume
❽	*	Input Selection
❾	# ♭ b	Pitch/Key
❿	MIC A- MICA+	Mic A Volume
	MIC B- MIC B+	Mic B Volume

REMOTE OVERVIEW
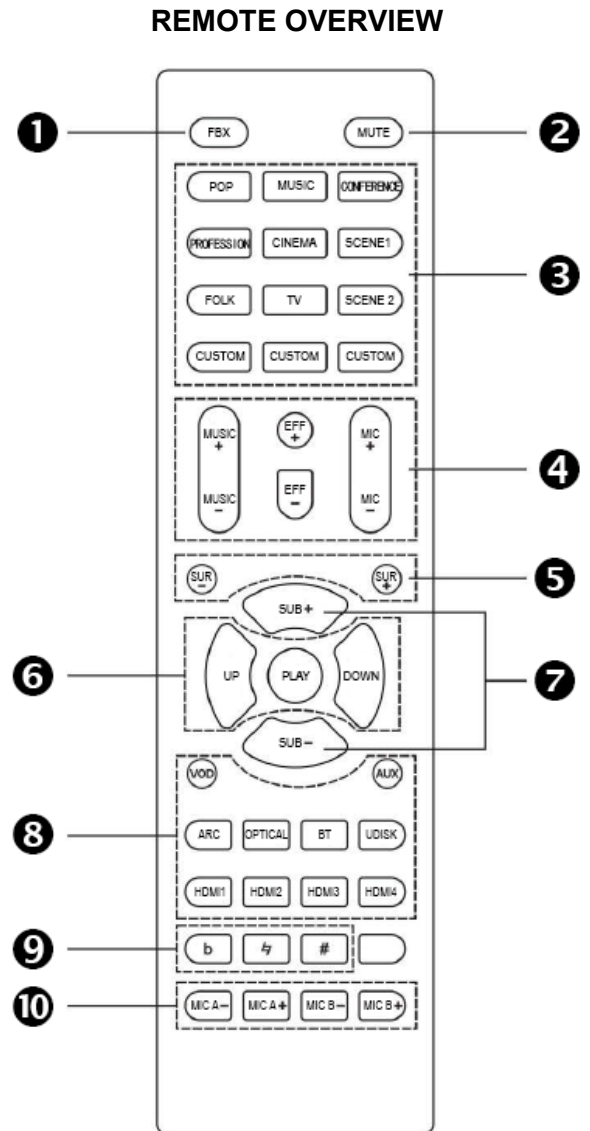
3.1 Input & Output Processing

The KAV provides the following processing on the respective inputs and outputs.

Input/Output	Available Processing
Music Audio Inputs	▪ Inputs Source (VOD, AUX, BT, UDISK, Optical, HDMI1, HDMI2, HDMI3, HDMI4 and ARC) ▪ Gain Control (Input1, Input2, BT, USB and Optical) ▪ 7 Band Parametric EQ ▪ HPF & LPF ▪ Pitch/Key ▪ Noise Gate
Mic Inputs (All)	▪ 10 Band Parametric EQ ▪ Mic A & B Volume ▪ Mic FBX ▪ Noise Gate ▪ Reverb & Echo ▪ Compressor (Threshold, Ratio, Attack & Release) ▪ HPF & LPF
Main Outputs (Left/Right)	▪ 7 Band Parametric EQ ▪ Speaker Alignment Delay & L/R Balance ▪ Reverb & Echo ▪ Compressor (Threshold, Ratio, Attack & Release) ▪ HPF & LPF ▪ Singing/Dance Mode
Surround Output	▪ 5 Band Parametric EQ ▪ Speaker Alignment Delay & L/R Balance ▪ Reverb & Echo ▪ Compressor (Threshold, Ratio, Attack & Release) ▪ HPF & LPF ▪ Singing/Dance Mode
Center Output	▪ 5 Band Parametric EQ ▪ Reverb & Echo ▪ Compressor (Threshold, Ratio, Attack & Release) ▪ HPF & LPF ▪ Singing/Dance Mode
Sub Output	▪ 5 Band Parametric EQ ▪ Reverb & Echo ▪ Compressor (Threshold, Ratio, Attack & Release) ▪ HPF & LPF ▪ Singing/Dance Mode

Note: Please use KAV Microsoft Windows Application to adjust above parameters.

3.2 PC Parameters

Double-click on KAV.exe to begin configuring detailed parameters.

KP800v1.exe

Connect the optional USB to RS232 cable between KAV and your PC then click Connect.

3.2.1 Music Parameters

Click on Music tab to tune the parameters.

Music is the control of the music inputs and parameters.

EQs allow you to shape the tone of the audio signal. Sometimes these EQs are needed at various stages of the signal path. The KAV has Input EQs for shaping the tone of the input sources.

Music Parameters
- Music EQ (7 Bands - 125Hz, 250Hz, 500Hz, 1KHz, 2KHz, 4KHz, 8KHz)
- Music Input1 Gain (-12dB to 0dB)
- Music Input2 Gain (-12dB to 0dB)
- Music BT Gain (-12dB to 0dB)
- Music UDISK Gain (-12dB to 0dB)
- Music Optical Gain (-12dB to 0dB)
- Music Input (VOD, AUX, BT, UDISK, Optical, HDMI1, HDMI2, HDMI3, HDMI4 and ARC)
- Music Pitch/Key (Minor b1, b2, b3, b4, b5, b6, b7; Flat 0; Sharp: #1, #2, #3, #4, #5, #6, #7)
- Noise Gate (OFF; -90dB to -50dB)
- LPF (20 to 20000Hz)
- LP Type (Bypass, Bessel 12dB/18dB/24dB, Butter 12dB/18dB/24dB, Link Riley 24dB)
- HPF (20 to 20000Hz)
- HP Type (Bypass, Bessel 12dB/18dB/24dB, Butter 12dB/18dB/24dB, Link Riley 24dB)
- Bass (-24dB to +24dB)
- Mid (-24dB to +24dB)
- Mid Freq (20 to 20000Hz)
- Treble (-24dB to +24dB)

3.2.2 Microphone Parameters

Click on Mic tab to tune the parameters.

Mic is the control of the microphone inputs and parameters.

Mic Parameters
- Mic EQ (10 Bands - 63Hz, 125Hz, 250Hz, 500Hz, 1KHz, 2KHz, 4KHz, 6.3KHz, 8KHz, 16KHz)
- Mic A Vol Vol (0 to 100)
- Mic B Vol Vol (0 to 100)
- Mic FBX (0 to 4)
    The FBE/FBX Feedback Elimination function was designed to provide an excellent feedback elimination processing, all of these feedback detection and suppression is done be FBE/FBX automatically completely. With FBE/FBX, the feedback is removed automatically to keep a good and live sound after suppression.
- Noise Gate (OFF; -90dB to -50dB)
- Comp TH (-50dB to 0dB)
    Threshold sets the signal level at which the Compressor starts to work. If the threshold level is set at -10 dB, only signals that pass above -10dB will be compressed; signals below the level will not be compressed.
- Comp Ratio (1:2 to 1:100)
    This parameter is the amount the unit compresses the signal level and indicates the difference between the signal increase before compression and the increase at the output level. A 2:1 ratio means if the incoming signal is 2 dB above threshold, the output signal after compression is 1 dB above threshold.
- Comp Attack (1ms to 90ms)
    This parameter defines the time it takes for the Compressor to start compressing when threshold is reached.
- Comp Release (0.1s to 2.5s)
    This parameter defines the time it takes for the Compressor to stop after the signal dips below threshold.
- Compression Bypass (On/Off)
    This parameter turns on or off the compression algorithm.
- LPF (20 to 20000Hz)
- LP Type (By pass, Bessel 12dB/18dB/24dB, Butter 12dB/18dB/24dB, Link Riley 24dB)
- HPF (20 to 20000Hz)
- HP Type (By pass, Bessel 12dB/18dB/24dB, Butter 12dB/18dB/24dB, Link Riley 24dB)
- Bass (-24dB to +24dB)
- Mid (-24dB to +24dB)
- Mid Freq (20 to 20000Hz)
- Treble (-24dB to +24dB)

3.2.3 Reverb Parameters

Click on Reverb tab to tune the parameters.

Reverb is the ambient sound of various live environments such as clubs, studios, concert halls, etc. Much like the Echo effect, it is used for enhancing the sound of vocals to make them more interesting.

Reverb Parameters
The Reverb algorithm contains the following parameters:
- Reverb PEQ (5 Bands - 125Hz, 250Hz, 1KHz, 2.5KHz, 8KHz)
- Reverb Level (0 - 100) - This parameter adjusts the overall level of the reverb effect
  Use this parameter to add just the right amount of reverb effect to the source signal
- Reverb Decay/Time (500 ms - 5000 ms)
  This parameter adjusts the amount of time that it takes for the reverb to die out. Higher values create the illusion of a larger space or harder more reflective surfaces.
- Reverb Predelay (0 - 100 ms, range is preset dependent)
  This parameter adjusts the amount of delay time before the reverb effect becomes audible. Higher values can create the illusion of a much larger room as it mimics the time that it would take for reflections from very distant surfaces to reach the listeners ears.
- Reverb Lowpass (4000 Hz - 16000 Hz)
  This parameter adjusts the frequency of the reverb low pass filter. Lower values will allow the lower frequencies to pass through the reverb effect creating a fuller, darker reverb, whereas higher values will begin cutting off lower frequencies, which can make a reverb sound thinner and sit better in a busy mix.
- Reverb HPF (20 Hz - 1000 Hz)
  This parameter adjusts the frequency of the reverb high pass filter. Lower values yield a darker sounding reverb, whereas higher values create a brighter sounding reverb effect.
- Reverb Direct (0 - 100)
  This parameter adjusts the overall level of the microphone input.

3.2.4 Echo Parameters

Click on Echo tab to tune the parameters.

The Echo effect consists of delays which generate the artificial echos. In an echo effect, the processed signal is mixed with the unprocessed signal and is used to make a singer's voice sound more interesting. Echo has adjustable time, feedback and level for producing that sought after karaoke effect.

Echo Parameters

The Echo algorithm contains the following parameters:

- Echo EQ (5 Bands - 125Hz, 250Hz, 1KHz, 2.5KHz, 8KHz)
- Echo Eff Level (0 - 100)
    This parameter adjusts the overall level of the echo effect. Use this parameter to add just the right amount of echo effect to the source signal.
- Effect Direct/Dry Level (0 - 100)
    This parameter adjusts the overall level of the microphone input.
- Echo Left Ch Delay (1ms – 500ms; referring to L channel)
    This parameter adjusts the amount of delay which occurs before you begin to hear any repeats.
- Echo Right Ch Delay (1ms – 500ms; referring to R channel)
    This parameter adjusts the amount of delay which occurs before you begin to hear any repeats.
- Echo Left Ch Pre-Delay (-50% - 50%; referring to L channel)
    This parameter adjusts the amount of delay which occurs before you begin to hear the first- repeats.
- Echo Right Ch Pre-Delay (-50% - 50%; referring to R channel)
    This parameter adjusts the amount of delay which occurs before you begin to hear the first- repeats.
- Echo Repeat (0 - 90)
    This parameter adjusts how many times the delay will be repeated. The higher the value of this parameter, the longer the delay effect will be heard before fading out.
- Echo Lowpass (4000 Hz - 16000 Hz)
    This parameter adjusts the frequency of the echo low pass filter. Higher values allow more of the high frequencies to pass, creating a brighter Echo effect. Lower values will begin to cut off the higher frequencies, creating a darker sounding echo effect.
- Echo Highpass (20 Hz - 1000 Hz)
    This parameter adjusts the frequency of the echo high pass filter. Lower values (or Off) allow more of the low frequencies to be passed through the effect and yield a fuller sounding echo, whereas higher values begin to cut off lower frequencies, creating a thinner sounding echo effect which can make the effect sit better in a busy mix.

3.2.5 Main Output Parameters

Click on Main tab to tune the parameters.

3.2.6 Surround Output Parameters

Click on Surround tab to tune the parameters.

3.2.7 Center Output Parameters

Click on Center tab to tune the parameters.

3.2.8 Subwoofer Output Parameters

Click on Subwoofer tab to tune the parameters.

EQs allow you to shape the tone of the audio signal. Sometimes these EQs are needed at various stages of the signal path. The KAV has Output EQs for equalizing the overall sound system. The KAV provides 7 Band EQs on the left, right and 5 Band EQs on the surround, center and subwoofer outputs.

EQ
The EQ algorithm contains the following parameters:
- Gain (-24dB to +24dB) - Sets the level of the selected EQ band.
- Q (0.7 to 99.9) - This parameter adjusts the width of the PEQ filter. Lower values, create wider EQ curves (covering a wider range of frequencies) and higher values create narrower EQ curves (covering a much smaller range of frequencies for more surgical EQ work). This parameter is only available in bands that are set to the 'PEQ' type, as listed above.
- Main EQ (7 Bands - 125Hz, 250Hz, 500Hz, 1KHz, 2KHz, 4KHz, 8KHz)
- Surround EQ (5 Bands - 125Hz, 250Hz, 1KHz, 2.5KHz, 8KHz)
- Center EQ (5 Bands - 125Hz, 250Hz, 1KHz, 2.5KHz, 8KHz)
- Subwoofer EQ (5 Bands - 31Hz, 63Hz, 125Hz, 250Hz, 500Hz)
- Filter Type (P "PEQ", LS "Low shelf", HS "High shelf") - The Type selector allows you to select which type of filter you would like to use on each band.
  1. PEQ: Manipulates a set range of frequencies, out in both directions from the center frequency, with the 'Q' parameter determining the width.
  2. LP shelf: Manipulates all frequencies below the set frequency.
  3. HP shelf: Manipulates all frequencies above the set frequency.
- Band Frequency (20 Hz to 20K Hz) - Selects the center frequency, for each band, at which the EQ gain or attenuation will be applied.
  1. PEQ Frequency Range: 20 Hz to 20K Hz.
  2. Low Shelf Frequency Range: 20 Hz to 20K Hz.
  3. High Shelf Frequency Range: 20 Hz to 20K Hz.
- EQ Bypass - This option when turned on will set all the EQs for that output off like it is flat.
- EQ Reset - Resets the EQ

Output (Main & Surround)
- L ch Vol (OFF, -37dB to +12dB) - Sets the left channel volume.
- R ch Vol (OFF, -37dB to +12dB) - Sets the right channel volume.
- L Delay (0ms/0.0m to 50ms/17.0m) - This parameter sets how much delay will be applied to the left channel output.
- R Delay (0ms/0.0m to 50ms/17.0m) - This parameter sets how much delay will be applied to the right channel output.
- Lch Mute - This parameter mutes the left channel.
- Rch Mute - This parameter mutes the right channel.

Output (Center)
- Output Vol (OFF, -37dB to +12dB) - This parameter sets the center channel volume.
- Output Delay (0ms/0.0m to 50ms/17.0m) - This parameter sets how much delay will be applied to the center output.
- Mute - This parameter mutes the center channel.

Output (Subwoofer)
- Ouput Vol (OFF, -37dB to +12dB) - This parameter sets the subwoofer volume.
- Output Delay (0ms/0.0m to 50ms/17.0m) - This parameter sets how much delay will be applied to the subwoofer output.
- Mute - This parameter mutes the subwoofer channel.

Mixer
- Mic Direct Level (0% to 100%) - This parameter sets microphone direct level.
- Music Level (0% to 100%) - This parameter sets music level.
- Reverb Level (0% to 100%) - This parameter sets reverb level.
- Echo Level (0% to 100%) - This parameter sets echo level.

Compressor
- Comp TH (-50dB to 0dB)

  Threshold sets the signal level at which the Compressor starts to work. If the threshold level is set at -10 dB, only signals that pass above -10dB will be compressed; signals below the level will not be compressed.
- Comp Ratio (1:2 to 1:100)

  This parameter is the amount the unit compresses the signal level and indicates the difference between the signal increase before compression and the increase at the output level. A 2:1 ratio means if the incoming signal is 2 dB above threshold, the output signal after compression is 1 dB above threshold.
- Comp Attack (1ms to 90ms)

  This parameter defines the time it takes for the Compressor to start compressing when threshold is reached.
- Comp Release (0.1s to 2.5s)

  This parameter defines the time it takes for the Compressor to stop after the signal dips below threshold.
- Compression Bypass (On/Off)

  This option when turned on will set all the Compressions for that output off like it is flat.

Xover/Crossover
- LPF (20 to 20000Hz)
- LP Type (By pass, Bessel 12dB/18dB/24dB, Butter 12dB/18dB/24dB, Link Riley 24dB)
- HPF (20 to 20000Hz)
- HP Type (By pass, Bessel 12dB/18dB/24dB, Butter 12dB/18dB/24dB, Link Riley 24dB)

Auto Sing/Dance Mode
- Auto Sing/Dance mode is used to switch between using the system in a dance environment (Dance Mode) or for karaoke use (Sing Mode). When Sing Mode is turned on, the subwoofer can be reduced for karaoke use. When Dance Mode is turned on, the subwoofer can be enhanced for dance club use. This feature makes it very easy to use the live sound system for both purposes.

  Sing/Dance Mode can either be engaged manually or automatically. The Sing Mode Timer allows you to automatically decrease ultralow frequency output after a period when the microphones are not used.

DANCE MICROPHONE THRESHOLD AND DANCE MICROPHONE TIME MUST BE SET IN SYSTEM SETTINGS PAGE.

3.2.9 System Settings Parameters

Click on System tab to change system settings.

Volume Config		
Music Max Vol	0 to 84	Music maximum volume:
Mic Max Vol	0 to 84	Microphone maximum volume:
Effect Init Level	0 to 99	Effect initial volume
Music Init Vol	0 to 84	Music initial volume
Mic Init Vol	0 to 84	Microphone initial volume
UDisk Record Vol	1 to 6	
USB Record Vol	1 to 6	

Dance Mode		
Dance Mic Thres	-60 to 0dB	Dance microphone threshold, in automatic mode, when the signal level of the microphone is higher than the thousand-shot threshold, the subwoofer enters the singing mode
Dance Mic Time	1 to 30s	Dance microphone time, in automatic mode, the subwoofer switches from singing mode to dancing mode when the signal level of the microphone is low and the trigger threshold is maintained for a set time.

Language		
Language	English/中文	Switch between languages.

Lock key		
Lock key password	Default password is 0000	Change lock key password
Unlock or Lock		Switch between unlock or lock modes
Lock key new password		Set lock key new password

Admin mode		
Admin password	Default password is 000000	Set admin password
User mode or Admin mode		Switch between user or admin modes
Admin new password		Set admin new password

BT Name		
BT New Name		Modify the Bluetooth name
Reset		Restore factory Bluetooth name

Equipment Mode		
Preset Names		**KTV:** Popular, Profession, Folk, Custom
		Enjoy Music: Music, Cinema, TV, Custom
		Scene: Conference, Scene 1, Scene 2, Custom
Recall		To recall a user preset
Save		To save a user preset
Reset All Settings		To reset all settings

PC Mode		
Save To PC		To save existing parameters to PC
Upload to Equipment		To upload exiting parameters to equipment
Mass Upload to Equip		To upload exiting parameters to multiple devices

4.1 RS232 Commands

The KAV Series is built-in bi-directional RS-232 serial interface allows system control and query through a high-end controller or PC.

KAV RS232 PIN OUTS (RS232)

Pin 5: Ground (GND)
Pin 3: Transmit Data (TXD)
Pin 2: Received Data (RXD)
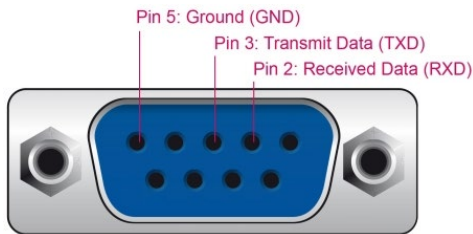
RS232 PIN OUTS (DB-9)

1 2 3 4 5
6 7 8 9

A male DB-9 connector viewed from the front. Reverse or back view of male connector for Female Connector.

DTE Pin Assignment (DB-9 Male)		
1	DCD	Data Carrier Detect
2	RxD	Receive Data
3	TxD	Transmit Data
4	DTR	Data Terminal Ready
5	GND	Ground (Signal)
6	DSR	Data Set Ready
7	RTS	Request to Send
8	CTS	Clear to Send
9	RI	Ring Indicator

DCE Pin Assignment (DB-9 Female)		
1	DCD	Data Carrier Detect
2	TxD	Transmit Data
3	RxD	Receive Data
4	DSR	Data Set Ready
5	GND	Ground (Signal)
6	DTR	Data Terminal Ready
7	CTS	Clear to Send
8	RTS	Request to Send
9	RI	Ring Indicator

COMMUNICATION PORT SETTING

The communication baud rate is 9600, and the communication format is: 8 data bits, 1 stop bit, and no parity bit.

USB Serial Port (COM3)Properties

General | Port Settings | Driver | Details | Everits

Bits per second: 9600
Data bits: 8
Parity: None
Stop bits: 1
Flow control: None
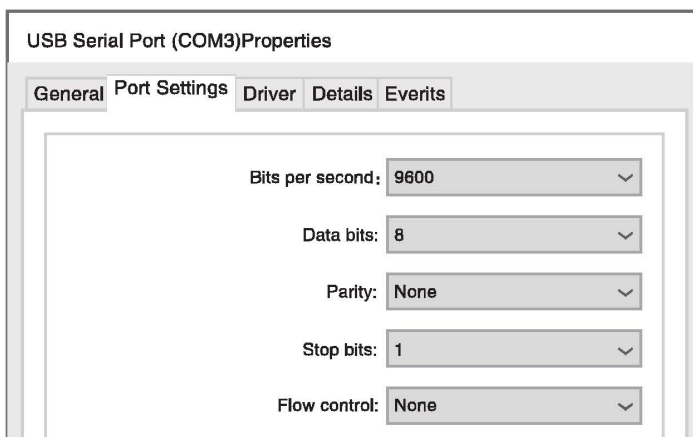
CONTROL COMMANDS

Note: Data format is 4-digit Hexadecimal value.

#	FUNCTION	COMMAND			
1	Memory recall (xx: 00-09, HEX, Decimal 01-10)	3c	70	xx	C3
2	Music volume value (xx: 00-54, HEX, Decimal 00-84)	3c	71	xx	C3
3	Microphone volume value (xx: 00-54, HEX, Decimal 00-84)	3c	72	xx	C3
4	Effect volume value (xx: 00-54, HEX, Decimal 00-84)	3c	73	xx	C3
5	Input source selection xx: 01, Switch input signal IN1 xx: 02, Switch input signal IN2 xx: 03, Switch input signal BT xx: 04, Switch input signal USB music playback xx: 05, Switch input signal OPT xx: 06, HDMI1 xx: 07, HDMI2 xx: 08, HDMI3 xx: 09, HDMI4 xx: 0a, ARC	3c	74	xx	C3
6	Main output left channel volume down	3c	79	00	C3
7	Main output left channel volume up	3c	79	01	C3
8	Main output right channel volume down	3c	79	02	C3
9	Main output right channel volume up	3c	79	03	C3
10	Surround output left channel volume down	3c	79	04	C3
11	Surround output left channel volume up	3c	79	05	C3
12	Surround output right channel volume down	3c	79	06	C3
13	Surround output right channel volume up	3c	79	07	C3
14	Center output channel volume down	3c	79	08	C3
15	Center output channel volume up	3c	79	09	C3
16	Subwoofer output channel volume down	3c	79	0a	C3
17	Subwoofer output channel volume up	3c	79	0b	C3
18	Microphone A volume down	3c	79	0c	C3
19	Microphone A volume up	3c	79	0d	C3
20	Microphone B volume down	3c	79	0e	C3
21	Microphone B volume up	3c	79	0f	C3
22	Mute	3c	79	3a	C3
23	Unmute	3c	79	3b	C3
24	Bluetooth or USB playback - previous track	3c	79	3c	C3
25	Bluetooth or USB playback - play/stop	3c	79	3d	C3
26	Bluetooth or USB playback - next track	3c	79	3e	C3
27	Advanced Feedback suppression up	3c	79	3f	C3
28	Advanced Feedback suppression down	3c	79	30	C3
29	Adjust music volume up	3c	79	31	C3
30	Adjust music volume down	3c	79	32	C3
31	Adjust microphone volume up	3c	79	33	C3
32	Adjust microphone volume down	3c	79	34	C3
33	Adjust effect volume up	3c	79	35	C3
34	Adjust effect volume down	3c	79	36	C3
35	Pitch/key up	3c	79	37	C3
36	Pitch/key down	3c	79	39	C3
37	Reset pitch/key	3c	79	38	C3

QUERY AND RETURN COMMANDS

Note: Data format is 4-digit HEX value.

#	FUNCTION	COMMAND			
1	User mode query	3c	75	00	C3
2	User mode return (xx: 00-0b, HEX, respectively 01-12)	3c	80	xx	C3
3	Music volume query	3c	75	01	C3
4	Music volume return (xx: 00-54, HEX, Decimal 00-84)	3c	81	xx	C3
5	Microphone volume query	3c	75	02	C3
6	Microphone volume return (xx: 00-54, HEX, Decimal 00-84)	3c	82	xx	C3
7	Effect volume query	3c	75	03	C3
8	Effect volume return (xx: 00-54, HEX, Decimal 00-84)	3c	83	xx	C3
9	Input source query	3c	75	04	C3
10	Input source value return xx: 01, Switch input signal IN1 xx: 02, Switch input signal IN2 xx: 03, Switch input signal BT xx: 04, Switch input signal USB music playback xx: 05, Switch input signal OPT xx: 06, HDMI1 xx: 07, HDMI2 xx: 08, HDMI3 xx: 09, HDMI4 xx: 0a, ARC	3c	84	xx	C3
11	Tone query	3c	75	05	C3
12	Pitch/key value return (xx: 00-0e, HEX, respectively 00: b7 / 01: b6 / 02: b5 / 03: b4 / 04: b3 / 05: b2 / 06:b1 07: 00 08: #1 / 09: #2 / 0a: #3 / 0b: #4 / 0c: #5 / 0d: #6 / oe: #7)	3c	85	xx	C3
13	Advanced Feedback suppression query	3c	75	06	C3
14	Advanced Feedback suppression return (xx: 00-04)	3c	86	xx	C3
15	Microphone A volume query	3c	75	07	C3
16	Microphone A volume return (xx: 00-64, HEX, Decimal 00-100)	3c	87	xx	C3
17	Microphone B volume query	3c	75	08	C3
18	Microphone B volume return (xx: 00-64, HEX. Decimal 00-100)	3c	88	xx	C3
19	Main output left channel volume query	3c	75	09	C3
20	Main output left channel volume return (xx: 00-63, HEX, respectively off, -37db ~ 12db/Interval 0.5db)	3c	89	xx	C3
21	Main output right channel volume query	3c	75	0a	C3
22	Main output right channel volume return (xx: 00-64, HEX, respectively off, -37db ~ 12db/Interval 0.5db)	3c	8a	xx	C3

QUERY AND RETURN COMMANDS

Note: Data format is 4-digit HEX value.

#	FUNCTION	COMMAND			
23	Surround output left channel volume query	3c	75	0b	C3
24	Surround output left channel volume return (xx: 00-63, HEX, respectively off, -37db ~ 12db/Interval 0.5db)	3c	8b	xx	C3
25	Surround output right channel volume query	3c	75	0c	C3
26	Surround output right channel volume return (xx: 00-64, HEX, respectively off, -37db ~ 12db/Interval 0.5db)	3c	8c	xx	C3
27	Center output channel volume query	3c	75	0d	C3
28	Center output channel volume return (xx: 00-63, HEX, respectively off, -37db ~ 12db/Interval 0.5db)	3c	8d	xx	C3
29	Subwoofer output channel volume query	3c	75	0e	C3
30	Subwoofer output channel volume return (xx: 00-64, HEX, respectively off, -37db ~ 12db/Interval 0.5db)	3c	8e	xx	C3
31	Mute query	3c	75	0f	C3
32	Mute value return xx: 00, Note muted 01, Mute	3c	8f	xx	C3

5.1 Cleaning Instructions

Cleaning and maintenance
Note the following information when cleaning and maintaining products of the Evolution Wireless Digital series.

Caution
Liquids can damage the products' electronics.
Liquids entering the product housing can cause a short-circuit and damage the electronics.
- Keep all liquids away from the products.
- Do not use any solvents or cleansing agents.
- Disconnect the products from the power supply system and remove rechargeable batteries and batteries before you begin cleaning.
- Clean all products only with a soft, dry cloth.

- Note the special cleaning instructions below for the following products.

Cleaning the sound inlet basket of the microphone module
- Unscrew the top sound inlet basket from the microphone module by turning it counterclockwise.
- Remove the foam insert.

You can clean the sound inlet basket in two ways:
- Use a slightly damp cloth to clean the top sound inlet basket from the inside and outside.
- Use a brush and rinse with clean water.

- If necessary, clean the foam insert with a mild detergent or replace the foam insert.
- Dry the top sound inlet basket and foam insert.
- Reinsert the foam insert.
- Screw the sound inlet basket back onto the microphone module.

From time to time, you should also clean the microphone module contacts:
- Wipe the contacts of the microphone module with a soft, dry cloth.

Cleaning the bodypack transmitter contacts
Wipe the contacts with a dry cloth.

6.1 F.A.Q.

Before submitting the device for repair, please check the below frequently asked questions.

FAULT	REASON	SOLUTION
No sound output and the display does not light up	The power plug is not plugged in properly	Connect the power plug correctly and ensure good contact
	AC 220V fuse blown	Unplug the power cable, replace the fuse with the same specification
No sound output but display is lighted up	The output speaker signal is not connected properly	Check the speaker's connection, reconnect and ensure good contact
	Main volume set to minimum	Turn up the main volume
	The unit is set to mute	Unmute
	No output from the input source	Check the input source, reconnect and ensure good contact
Audio can only be listened on one side	The speaker cable is not properly connected	Check the speaker cables connection and ensure good contact
	Of one the input signal cable is wrongly inserted or loosen	Check the input cables then reconnect and ensure good contact
	Damaged signal cable	Replace the damaged signal cable, reconnect, and make sure good contact

Note: If the fault can't be resolved, please send the equipment to a nearby dealer for troubleshooting.

7.1 Hardware Block Diagram
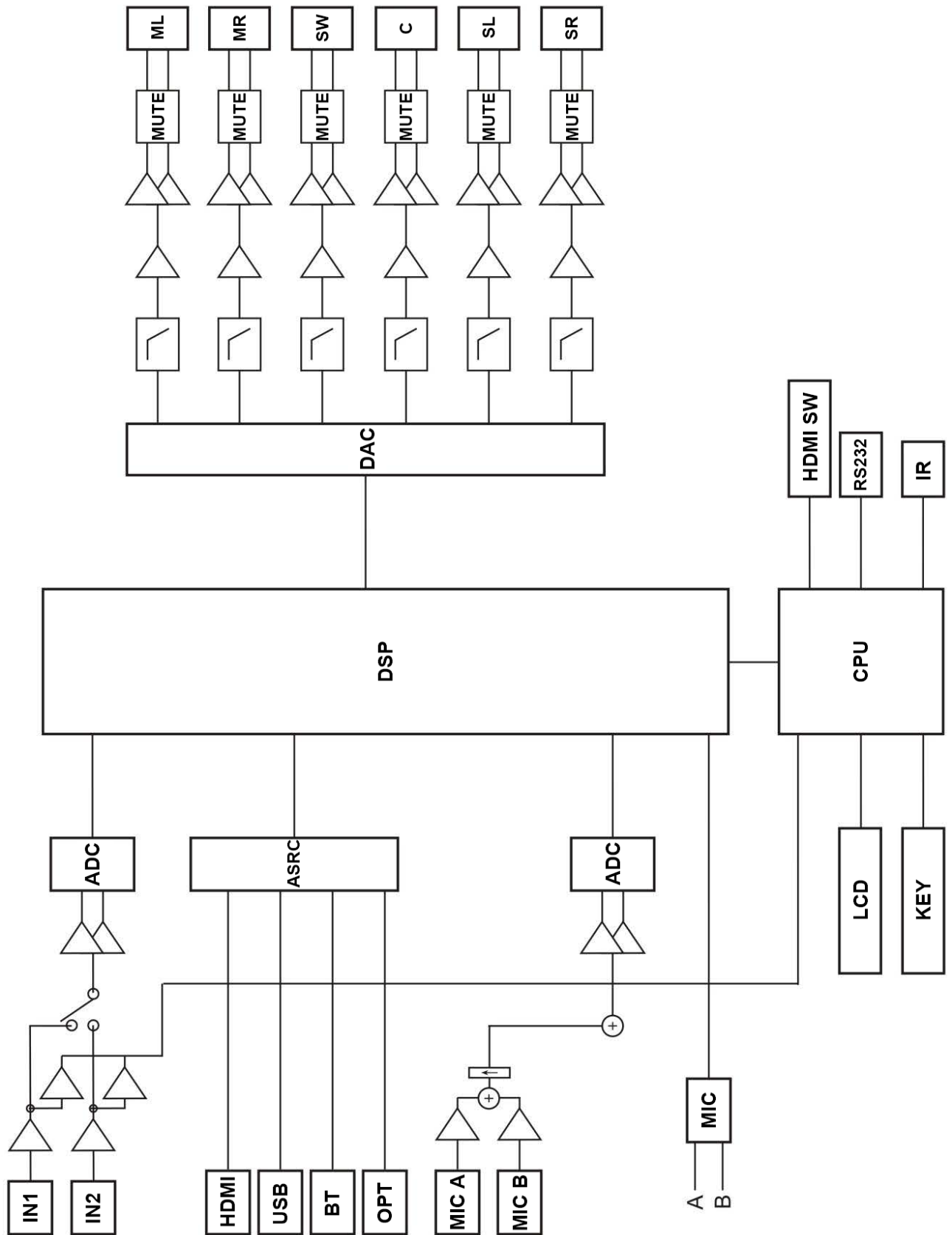
7.2 Specifications

	KAV450	KAV650
Processor	32-bit	
Analog / Digital Signal Conversion	24 bit, 48 KHz	
Channels	2	2
Stereo, 8Ω per channel	450W	650W
Frequency Response	20Hz - 20kHz (± 1.5 dB)	
Signal to Noise Ratio	>98dB	
Damping Factor	>300	
Total Harmonic Distortion	≤0.05% at 1kHz	
Dynamic Range	ADC 105dB / DAC 103dB	
Noise	<-85dBu	<-90dBu
Wireless Microphone Distance	>30m	
Bluetooh Distance	>10m	
Remote Control Distance	>8m	
Feedback Suppression Levels	4	
Video Inputs	4 x HDMI 2.0	
Audio Inputs	VOD, AUX and Optical	
Line Input Impedance	24 K Ohm	
Maximum Input Level	Music: 3Vrms/8dBV Mic: 180mVrms/-15dBV	
Video Outputs	HDMI 2.0 w/ Audio Return Channel (ARC)	
Audio Outputs	5.1 Channel Output	
Speaker Outputs	2 x Binding Post and 2 x NL4 Male	
Maximum Output Level	56Vrms/8Ω	69Vrms/8Ω
Wireless Modulation	Wideband FM	
Wireless Frequency Ranges	650 to 680.1 MHz (470 to 960 MHz available on custom order)	
Wireless Microphone Distortion	0.03%	
Wireless Power Requirements	3V (2 AA size 1.5 V batteries)	
Wireless Operating Time	Approx. 6 hours	
Infrared Receiver Carrier	Frequency: 38 KHz	
Infrared Receiver Format	NEC	
Computer Connection	USB 2.0	
Power Requirements	AC 220V ± 10% 50Hz	
Power Consumption	520W	800W
Net Weight	13Kg	14Kg
Gross Weight	17Kg	19Kg
Dimensions (W x H x D)	429 × 102 × 386mm	

Note: The design and specifications are subject to change without notice for improvement.