

USER MANUAL

AT-8080

8X8 CHANNELS DIGITAL AUDIO PROCESSOR



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.

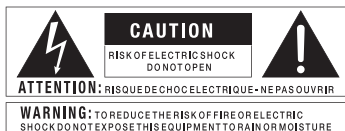
POWER ON/OFF SWITCH: If the equipment has a Power switch, the Power switch used in this piece of equipment DOES NOT break the connection from the mains.

MAINS DISCONNECT: The plug shall remain readily operable. For rack-mount 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 | All |
| L | LIVE | BROWN | BLACK |
| N | NEUTRAL | BLUE | WHITE |
| E | EARTH GND | GREEN/ YEL | GREEN |

WARNING

This device is equipped with high voltage elements. Do not open the shell if not necessary. Pay attention to the risk of electric shock when checking or modifying the device.

The responsibility of decline of quality or burn down of the device caused by owner's modifying or disoperation is not included in the warranty.

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 simultane-ously.

Table of Contents

| | |
|---|-----------|
| Section 1 - Introduction..... | 1 |
| 1.1 Brief Introduction..... | 1 |
| 1.2 Product Features..... | 1 |
| Section 2 – Quick Started..... | 2 |
| 2.1 System Connection..... | 2 |
| 2.2 Front Panel..... | 3 |
| 2.3 Rear Panel..... | 3 |
| 2.4 Touch screen, buttons and knobs..... | 4 |
| 2.5 Input Setting..... | 5 |
| 2.6 Level and Spectrum..... | 8 |
| 2.7 Output Setting..... | 8 |
| 2.8 System Setting..... | 10 |
| Section 3 – PC Connection and Setting..... | 13 |
| 3.1 Connection..... | 13 |
| 3.2 Software Setting..... | 13 |
| Section 4 – Appendix..... | 19 |
| 4.1 Technical Specifications..... | 19 |
| 4.2 Packing List..... | 19 |

Section 1-Introduction

1.1 Brief Introduction

Congratulations on your purchase of this Digital Audio Processor, which developed independently by our company, equipped with a touchable screen, 32 bit DSP, 6 ways analogue and 1 group of S/PDIF coaxial stereo input, 8 channels output, independently set EQ, high/low pass filter, limiter, compressor, noise gate, phase, delay and etc, especially route function, users can casually send inputs to specific outputs. With 1 U size, the device can be easily installed in standard device cabinets, and with WIFI, USB or RS232 connecting to PC; it can be conveniently used in daily life such as in multifunctional auditoriums, stages, pubs, large conference hall and etc.

Thank you for your trust and choosing on this Digital Audio Processor, hope you enjoy on using the device.

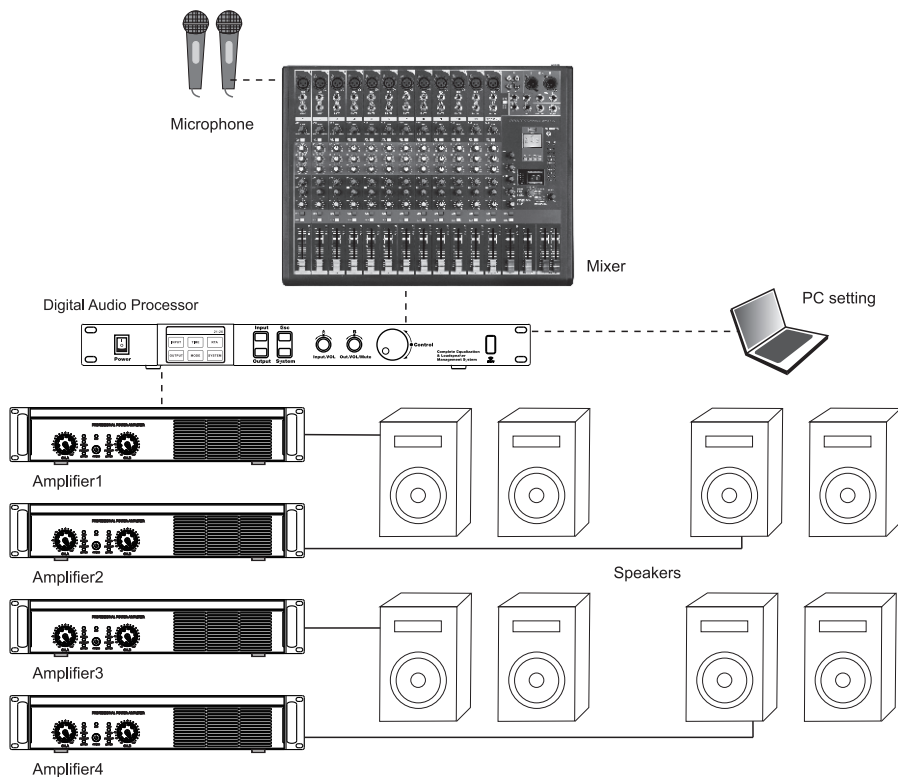
1.2 Product Features

- Equipped with a 2.75 inches and a pixel of 240*400 colorful touch screen.
- High power floating decimal 32 bit DSP technology.
- 6 ways analogue and 1 group of S/PDIF coaxial stereo input, each way can be independently set 7 bands parameter EQ, high/low pass filter, compressor, noise gate, phase, and route;
- 8 ways output, each way can be independently set 7 bands parameter EQ, with high/low pass filter, limiter, delay, phase;
- Easy to copy parameters between IN channels or between OUT channels.
- Connect with PC by RS232, USB or WIFI.
- 6 kinds of signal generator.
- Self-defined system password lock can avoid parameters being casually revised.
- 10 moderating effects can be stored.
- Suitable for multifunctional auditoriums, stages, pubs, large conference hall and etc.

Section 2-Quick start

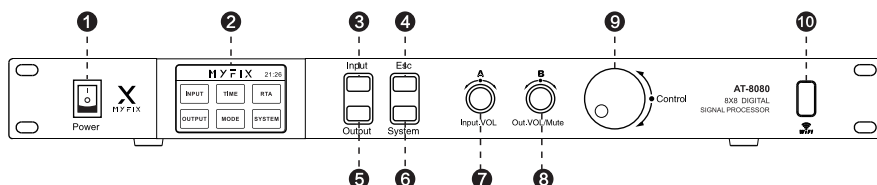
2.1 Connection Diagram

1. Please connect and boot devices as below steps, make sure all power should be cut off before proceeding;
2. Boot up digital audio processor before power amplifier;
3. Please make sure volume of amplifier is set on minimum when proceeding, and then connect amplifier to power;
4. Increase volume slowly to ideal value when signal going through digital audio processor and make sure amplifier is not clipping.



Please connect audio devices according to actual situation.

2.2 Front Panel



1.POWER

Power switch;

2.TFT-LCD touch screen

Operate system on it;

3.INPUT

Enter INPUT menu;

4.ESC

Return to main interface;

5.OUTPUT

Enter OUPUT menu;

6.SYSTEM

Enter SYSTEM menu;

7.INPUT.VOL

Adjust INPUT gain;

8.OUT.VOL/MUTE

Function switch/Adjust OUTPUT volume;

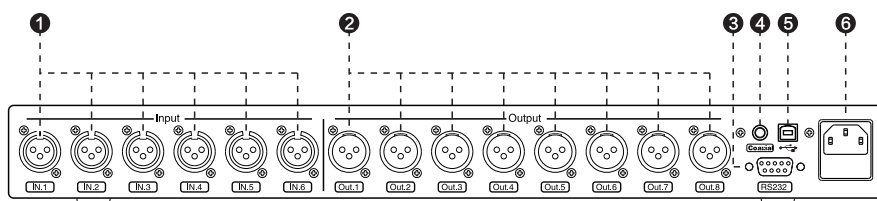
9.CONTROL

Set functions and parameters;

10.WIFI

WIFI connector port.

2.3 Rear Panel



1.INPUT 1~6

1~6 ways audio input ports;

2.OUTPUT 1~6

1~6 channels audio signal output ports;

3.RS232

Connect to PC RS232 port;

4.COAXIAL

Coaxial digital signal input port.

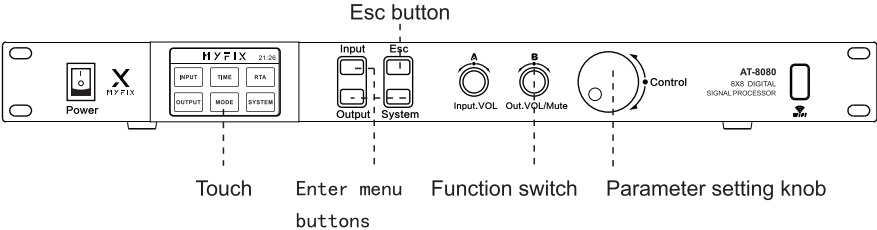
5.USB port

Connect to PC USB port;

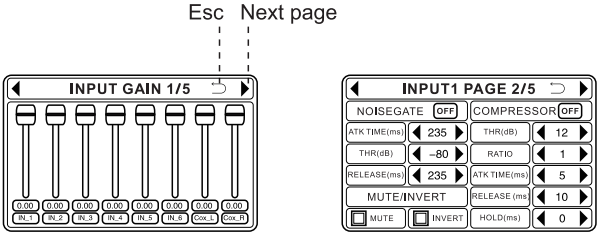
6.AC INPUT

Power supply cable port.

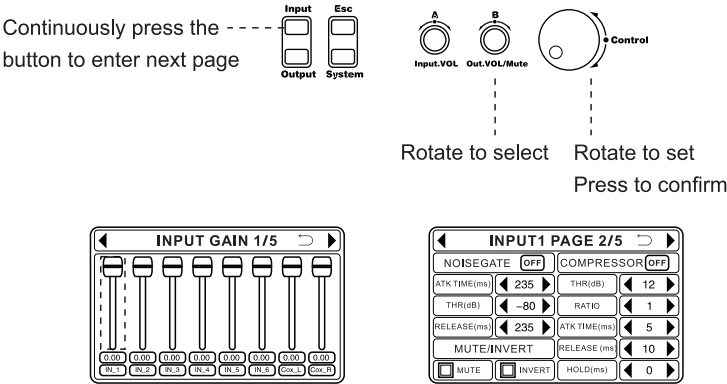
2.4 Touch screen, buttons and knobs



1.Users can touch screen to enter menus and set parameters;

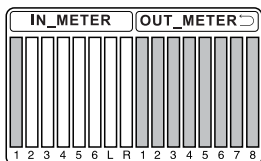


2.Users can also press buttons to enter menus, and rotate knobs to set parameters;

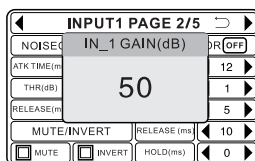


3.Shortcut Key

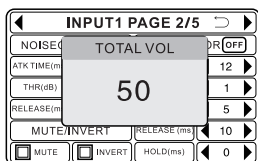
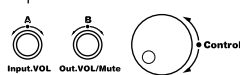
- (1) Press ESC button on main interface to enter METER and RTA page;
- (2) Press A/B knob on any page can quickly set gain of INPUT and OUTPUT channels;



Shortcut key to enter METER and RTA page

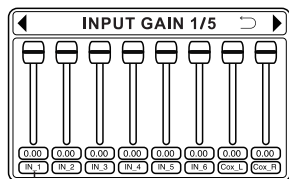


Shortcut key to set INPUT gain



Shortcut key to mute and OUTPUT gain

2.5 Input Setting

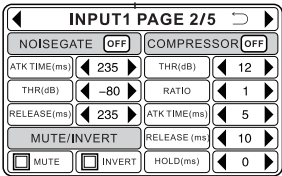


Enter channel setting

1.INPUT GAIN.

Quickly set gain of 1~8 Inputs;

Switch to set 1~8 channels



2. INPUT PAGE

NOISEGATE: A GATE that blocks input signal with a threshold value. Input signal can pass through if its value bigger than threshold, otherwise the GATE shut and signal will be block out.

ON/OFF: Turn ON or OFF noise gate.

ATK TIME: Range: 1~1000ms, attack time for NOISE GATE, set time from shutting to booting.

THR: Threshold, range:-100~-50dB, level value of signals that is allowed In;

RELEASE: Range: 1~1000ms, release time for NOISE GATE, set time from booting to shutting.

MUTE/INVERT

MUTE: Set specific channel to MUTE;

INVERT: Set specific channel phase;

COMPRESSOR

ON/OFF: Turn ON or OFF compressor;

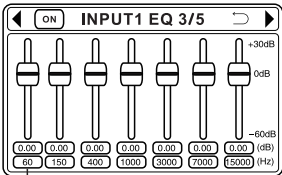
THR: Threshold, range:-25~-12dB, set level value of signal that triggers compressor starts to work;

RATIO: Range: 1~100, ratio between input and output signal level.

ATK ATIME: Range: 1~1000ms, time of compressor from off to work when input signal reaches threshold.

RELEASE: Range: 1~1000ms, time of compressor from on to off when input signal below threshold.

HOLD: Range: 1~1000ms, time of compressor on compressing when input signal reaches threshold.



Enter EQ setting page

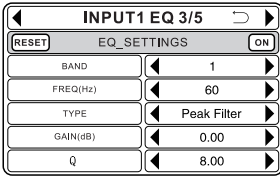
3. INPUT EQ

ON/OFF: Turn ON or OFF EQ setting;

BAND: 1~7 bands;

FREQUENCY: 20~20000Hz;

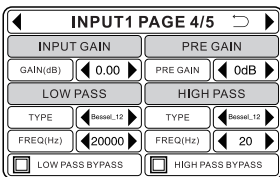
TYPE: Peak Filter/ Low_Shelf/ High_Shelf;



GAIN: Range: -15~15dB, set gain of specific frequency band;

Q: Range:0.05~20, set width of frequency band, smaller value creates wider EQ curves (covering wider range of frequency); bigger value creates narrower EQ curves (covering narrower range of frequencies).

RESET: Reset specific channel EQ parameters to factory default.



4. INPUT PAGE

INPUT GAIN: Range: -40~0dB, set selected channel gain;

PRE GAIN: Range: -6~0dB, pre set attenuator, attenuate 6dB of input signal before digital processing.

LOW PASS

Turn on low pass filter and set a frequency, then signal that lower than set frequency can go through, and higher one will be decayed.

TYPE: Bessel_12/Butter_12/Bessel_24;

FREQ: 20~20000Hz

LOW PASS BYPASS: Turn off low pass filter by ticking.

HIGH PASS

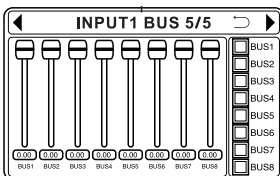
Turn on high pass filter and set a frequency, then signal that higher than set frequency can go through, and lower one will be decayed.

TYPE: Bessel_12/Butter_12/Bessel_24;

FREQ: 20~20000Hz

HIGH PASS BYPASS: Turn off low pass filter by ticking.

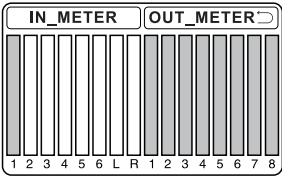
Switch to set 1~8 channels



1.INPUT BUS

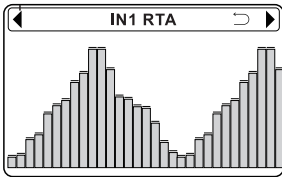
INPUT CHANNELS GAIN: Range: -40~0dB, set gain from INPUT 1~8 to BUS 1~8;

2.6 Level Meter and RTA



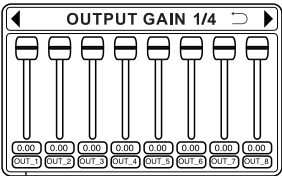
METER: Level meter of each input and output channels

Switch to input and output channels



RTA: 31 segments of frequency spectrum;
Users can switch to monitor audio spectrum of each input and output channels.

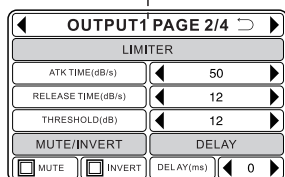
2.7 Output Setting



1.OUTPUT GAIN
Quickly set gain of 1~8 Outputs;

Enter Output setting page

Switch to set 1~8 input channels



2.LIMITER

It is used to compress and limit input signal that is higher than threshold;

ATK TIME: Range: 1~1000ms, attack time for LIMITER, set time from off to work.

RELEASE TIME: Range: 5~23dB/s, time for limiter exit from compressing state when input signal level down to threshold.

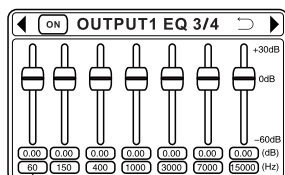
THRESHOLD: Range: -24~-12dB, signal level value of signals that triggers limiter;

MUTE/INVERT

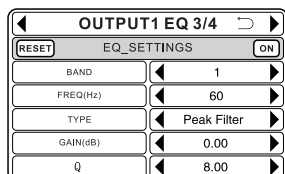
MUTE: Set specific channel to MUTE;

INVERT: Set specific channel phase;

DELAY: Range: 0~70ms, set delay time of specific output channel, synchronize time of every output signal.



Enter EQ setting page



3.OUTPUT EQ

ON/OFF: Turn ON or OFF EQ setting;

BAND: 1~7 bands;

FREQUENCY: 20~20000Hz;

TYPE: Peak Filter/ Low_Shelf/ High_Shelf;

GAIN: Range: -15~15dB, set gain of specific frequency band;

Q: Range: 0.05~20, set width of frequency band, smaller value creates wider EQ curves (covering wider range of frequency); bigger value creates narrower EQ curves (covering narrower range of frequencies).

RESET: Reset specific channel EQ parameters to factory default

◀

OUTPUT1 PAGE 4/4

▶

| | | | |
|--|---------------|---|---------------|
| OUT GAIN | | TOTAL VOL | |
| GAIN(dB) | ◀ 0.00 ▶ | VOL | ◀ 100 ▶ |
| LOW PASS | | HIGH PASS | |
| TYPE | ◀ Bessel_12 ▶ | TYPE | ◀ Bessel_12 ▶ |
| FREQ(Hz) | ◀ 20000 ▶ | FREQ(Hz) | ◀ 20 ▶ |
| <input type="checkbox"/> LOW PASS BYPASS | | <input type="checkbox"/> HIGH PASS BYPASS | |

4.OUTPUT PAGE

OUT GAIN: Range: -40~0dB, set selected channel gain;
TOTAL VOL: Range: 0~100, set total volume of 8 channels output;

LOW PASS

Turn on low pass filter and set a frequency, then signal that lower than set frequency can go through, and higher one will be decayed.

TYPE: Bessel_12/Butter_12/Bessel_24;

FREQ: 20~20000Hz

LOW PASS BYPASS: Turn off low pass filter by ticking.

HIGH PASS

Turn on high pass filter and set a frequency, then signal that higher than set frequency can go through, and lower one will be decayed.

TYPE: Bessel_12/Butter_12/Bessel_24;

FREQ: 20~20000Hz

HIGH PASS BYPASS: Turn off low pass filter by ticking.

2.8 System Setting

◀

SYS 1/10(GENERATOR)

▶

OFF

SWEEP FREQ

| | | | |
|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| START(Hz) | ◀ 20 ▶ | STOP(Hz) | ◀ 20000 ▶ |
| STEP | ◀ 500 ▶ | CYCLES | ◀ 1 ▶ |
| GAIN(dB) | ◀ 0.00 ▶ | BUS | |
| <input type="checkbox"/> BUS1 | <input type="checkbox"/> BUS2 | <input type="checkbox"/> BUS3 | <input type="checkbox"/> BUS4 |
| <input type="checkbox"/> BUS5 | <input type="checkbox"/> BUS6 | <input type="checkbox"/> BUS7 | <input type="checkbox"/> BUS8 |

1.SWEEP FREQ

ON/OFF: Turn ON or OFF sweep frequency.

START: Range: 20~20000Hz;

STOP: Range: 20~20000Hz;

STEP: 2~10000Hz;

CYCLES: 1~500;

GAIN: -40~0dB;

BUS: Sweep Frequency testing signal can send to specific BUS by ticking.

◀

SYS 2/10(GENERATOR)

▶

OFF

SINE

| | | | |
|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| FREQ(Hz) | ◀ 1000 ▶ | | |
| GAIN(dB) | ◀ 0.00 ▶ | | |
| BUS | | | |
| <input type="checkbox"/> BUS1 | <input type="checkbox"/> BUS2 | <input type="checkbox"/> BUS3 | <input type="checkbox"/> BUS4 |
| <input type="checkbox"/> BUS5 | <input type="checkbox"/> BUS6 | <input type="checkbox"/> BUS7 | <input type="checkbox"/> BUS8 |

2.SINE

ON/OFF: Turn ON or OFF sine;

FREQ: Range: 20~20000Hz;

GAIN: -40~0dB;

BUS: Sine testing signal can send to specific BUS by ticking.

| | |
|-------------------------------|-------------------------------|
| SYS 3/10(GENERATOR) | |
| OFF SQUARE | |
| FREQ(Hz) | 1000 |
| GAIN(dB) | 0.00 |
| BUS | |
| <input type="checkbox"/> BUS1 | <input type="checkbox"/> BUS2 |
| <input type="checkbox"/> BUS3 | <input type="checkbox"/> BUS4 |
| <input type="checkbox"/> BUS5 | <input type="checkbox"/> BUS6 |
| <input type="checkbox"/> BUS7 | <input type="checkbox"/> BUS8 |

3.SQUARE

ON/OFF: Turn ON or OFF square;

FREQ: Range: 20~20000Hz;

GAIN: -40~0dB;

BUS: Square testing signal can send to specific BUS by ticking

| | |
|-------------------------------|-------------------------------|
| SYS 4/10(GENERATOR) | |
| OFF PULSE | |
| FREQ(Hz) | 1000 |
| GAIN(dB) | 0.00 |
| DUTY(%) | 30 |
| BUS | |
| <input type="checkbox"/> BUS1 | <input type="checkbox"/> BUS2 |
| <input type="checkbox"/> BUS3 | <input type="checkbox"/> BUS4 |
| <input type="checkbox"/> BUS5 | <input type="checkbox"/> BUS6 |
| <input type="checkbox"/> BUS7 | <input type="checkbox"/> BUS8 |

4.PULSE

ON/OFF: Turn ON or OFF pulse;

FREQ: Range: 20~20000Hz;

GAIN: -40~0dB;

DUTY: 0%~100%

BUS: Pulse testing signal can send to specific BUS by ticking

| | |
|-------------------------------|-------------------------------|
| SYS 5/10(GENERATOR) | |
| OFF WHITE NOISE | |
| GAIN(dB) | 0.00 |
| BUS | |
| <input type="checkbox"/> BUS1 | <input type="checkbox"/> BUS2 |
| <input type="checkbox"/> BUS3 | <input type="checkbox"/> BUS4 |
| <input type="checkbox"/> BUS5 | <input type="checkbox"/> BUS6 |
| <input type="checkbox"/> BUS7 | <input type="checkbox"/> BUS8 |

5.WHITE NOISE

ON/OFF: Turn ON or OFF white noise;

GAIN: -40~0dB;

BUS: White noise testing signal can send to specific BUS by ticking

| | |
|-------------------------------|-------------------------------|
| SYS 6/10(GENERATOR) | |
| OFF PINK NOISE | |
| GAIN(dB) | 0.00 |
| BUS | |
| <input type="checkbox"/> BUS1 | <input type="checkbox"/> BUS2 |
| <input type="checkbox"/> BUS3 | <input type="checkbox"/> BUS4 |
| <input type="checkbox"/> BUS5 | <input type="checkbox"/> BUS6 |
| <input type="checkbox"/> BUS7 | <input type="checkbox"/> BUS8 |

6.PINK NOISE

ON/OFF: Turn ON or OFF pink noise;

GAIN: -40~0dB;

BUS: Pink noise testing signal can send to specific BUS by ticking.

| | |
|----------------|------|
| SYS 7/10(TIME) | |
| YEAR | 2019 |
| MONTH | 1 |
| DATE | 15 |
| HOUR | 3 |
| MINUTE | 3 |
| SET | ESC |

7.TIME: Date and time setting

| | |
|----------------------|---|
| SYS 8/10(MODE) | |
| DEVICE MODE SETTINGS | |
| LOAD MODE | 1 |
| SAVE MODE | 1 |
| INIT MODE | 1 |
| LOAD | |
| SAVE | |

8.DEVICE MODE SETTING

LOAD MODE: Load pre-set user modes, 10 factory default pre-set mode for selection.

SAVE MODE: Save setting mode, total 10 modes.

INIT MODE: Initial mode when boot the device, 10 factory default pre-set mode for selection.

| | | | |
|-------------------|--------|---------|-------|
| SYS 9/10 | | | |
| RS232 SETTINGS | | | |
| BAUDRATE | 115200 | | |
| SYSTEM SETTINGS | | | |
| SYSTEM KEY | LOCK | NEW PSW | ***** |
| USER MODE | USER | RESTORE | OFF |
| TOUCH CALIBRATION | | | |

9.RS232 SETTING

BAUDRATE: Select corresponding Baudrate when connect device with PC by RS232 port.

SYSTEM SETTINGS

SYSTEM KEY: System key can lock some authorized functions, which can only be operated after entering system password. Factory preset password: 00000;

NEW PSW: Entering correct password and then set a new 5 digits one;

USER MODE: USER/ADMIN operation mode for selection, some settings can only be set on ADMIN mode;

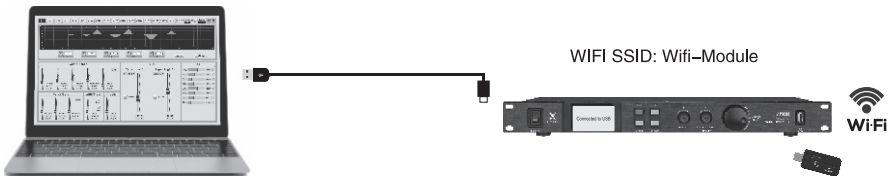
PRESTORE: Restore to factory settings after entering system password;

TOUCH CALIBRATION: Using this function when touching mistake appears. After entering system password, red circles appear, please click their center in turns;

Section 3 – PC Connection and Setting

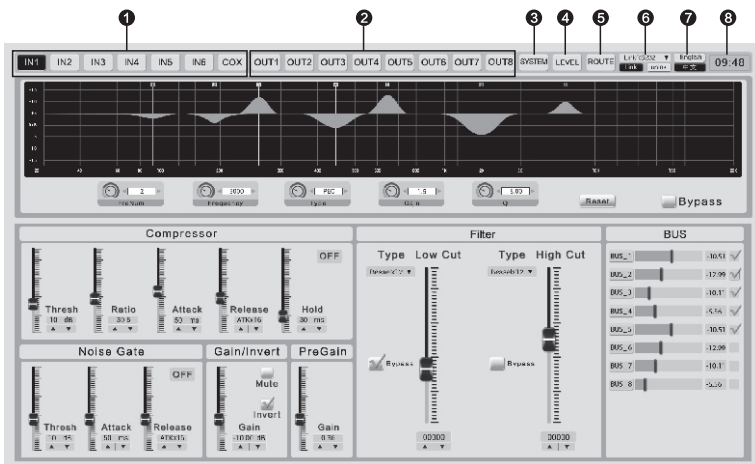
3.1 Connection

1. Please use software on PC without driver installation (System Requirement: Windows XP/Vista/7/8/10);
2. Connect device with PC via USB/RS232/WIFI connector (optional accessory);
3. Users can adjust parameters and set functions on Software GUI on PC after successfully connecting, meanwhile, no operation can be done on device



3.2 Software Setting

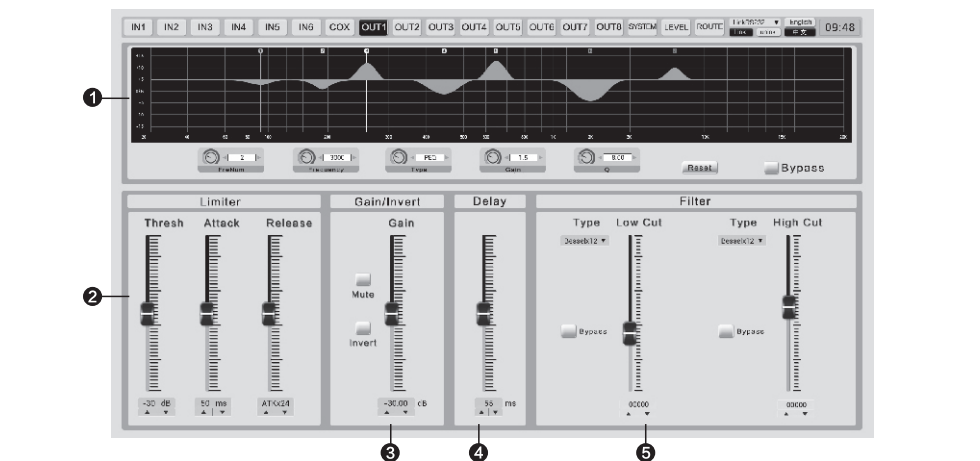
PC Software Setting



- ### Input Channels (check more details on Page 5)

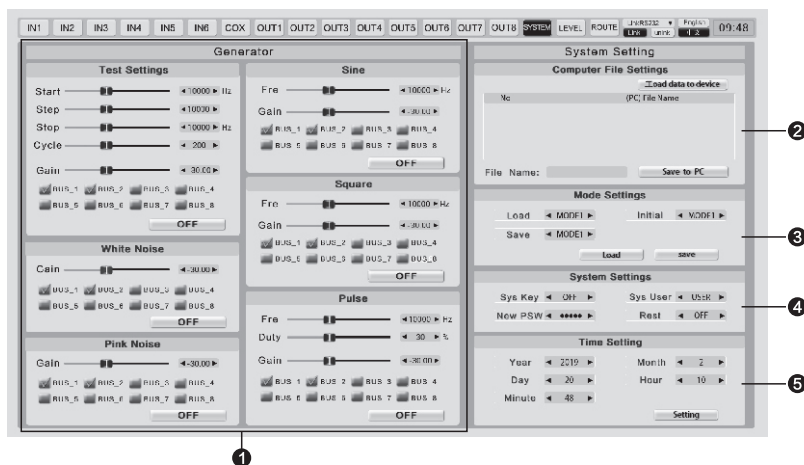


- ## 8.BUS



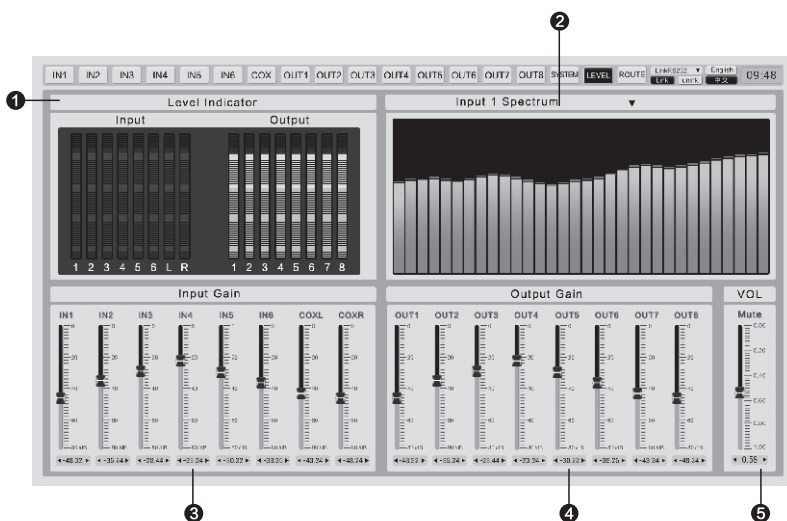
- 1.EQ;
- 2.Compressor;
- 3.Gain/Invert;
- 4.Delay;
- 5.Filter

System Setting (check more details on page 10)



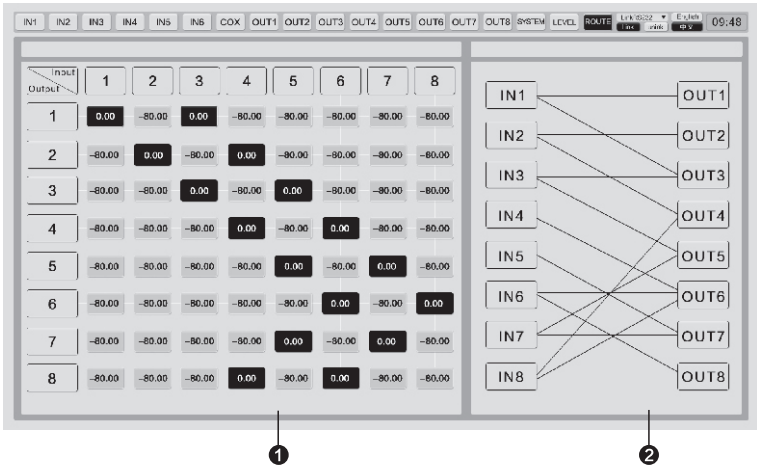
1. Generator;
2. Upload/backup parameters, users can save modified settings to PC, or download parameters from PC to device.
3. Mode Settings;
4. System Password Settings;
5. Time Settings.

Level



- 1.Level Indicator;
- 2.31 bands Spectrum;
- 3.Input Gain settings;
- 4.Output Gain settings;
- 5.Total Output Volume setting

Route Setting



1. Routing Bus from input to output, users can quickly send input to specific output ones.
2. Route Chart, shows paths of inputs sending outputs with different color.

Section 4 – Appendix

4.1 Technical Specifications

ANALOGUE INPUT:

SNR: 115dB

THD: $\leq 0.01\%$

Frequency Response: 20-20KHz(± 1 dB)

Max Input Level: +7dBu

Max Output Level: +12dBu

Output Impedance: 300 Ω

Input Impedance: 10K

AD: 192KHz 24bit

DA: 192KHz 24bit

COAXIAL INPUT:

SNR: 120dB

THD: $\leq 0.005\%$

Frequency Response: 20-20KHz(± 1 dB)

Max Input Level: +2dBu

Max Output Level: +12dBu

Output Impedance: 300 Ω

Input Impedance: 10K

AD: 192KHz 24bit

DA: 192KHz 24bit

4.2 Packing List

Digital Audio Processor $\times 1$

Owner's Manual $\times 1$

Power Cable $\times 1$

Cable with USB Port $\times 1$

Touch Screen Pen $\times 1$



세븐스테이지

경기도 성남시 분당구 판교로 723 (아탑동) 분당테크노파크 B동 604-2호
T. 031-709-1061 F. 031-709-1062
www.7stage.co.kr