

Fidek®

PURITY OF SOUND

 **FDD-3060II / FDD-4080II**
DIGITAL MATRIX PROCESSOR

USER'S MANUAL



First Audio Manufacturing (GuangZhou) Ltd.

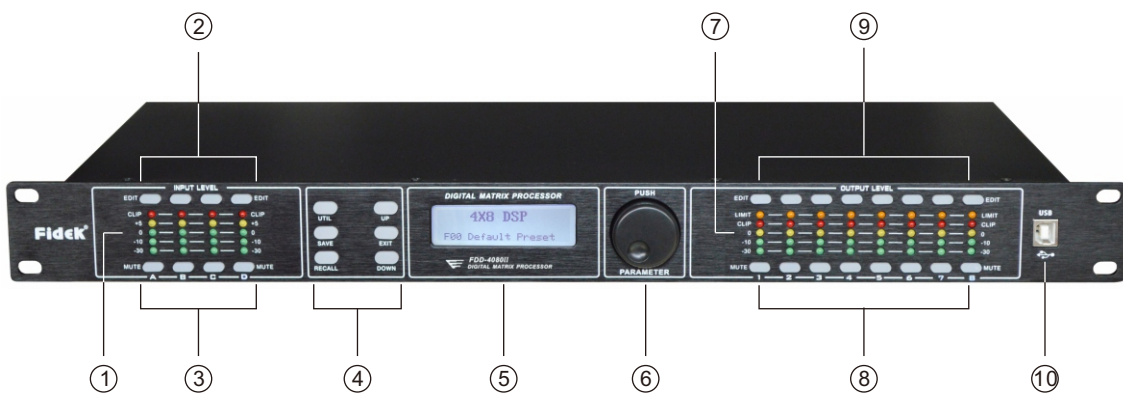
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FUNCTIONS

- 96kHz sampling rate, 32-SHARC DSP processor, 24-bit AD/DA convertor.
- Input processing includes Gain, Mute, Link, High-cut, Low-cut, Noise gate, 8PEQ, Phase, Delay.
- Output processing includes Crossover, 9PEQ, Gain, Mute, Compressor/Limiter, Phase, Delay, Link.
- Every input and output can do matrix assign freely.
- Adjustable PEQ frequency, Gain and Bandwidth, the gain step is 0.1dB, we can choose style: Peak, H-shelf, L-shelf, Low-cut, High-cut.
- The style of all High-cut, Low-cut filter and Distributor Unit: Butterworth, Linkwitz-Riley, Bessel, Slope is-6dB/oct ~-48dB/oct.
- Adjustable compressor/limiter threshold, ratio, attack time and release time, Adjustable threshold attack time, release time, keep time of all noise gate.
- The parameters of input and output adjusting are linkable, revisable input and output channels.
- All delay module's delay time can reach over 682ms the step is: 0.021ms.
- Parameter setting of each channel can copy freely, build-in signal generator.
- Input and Output on the front panel are equipped with 5-segment high precision level indicators, key indicators, security protection function.
- 30 user preset, 1 factory preset, device parameter and single preset file can save in computer; it also can download from computer and save in the device. The device itself can store multiple preset parameters and recall freely. PC operation software for one-click online made the operation more convenient.
- USB and RS232 controlling ports, Online remote control and 255 units linkable through RS485.

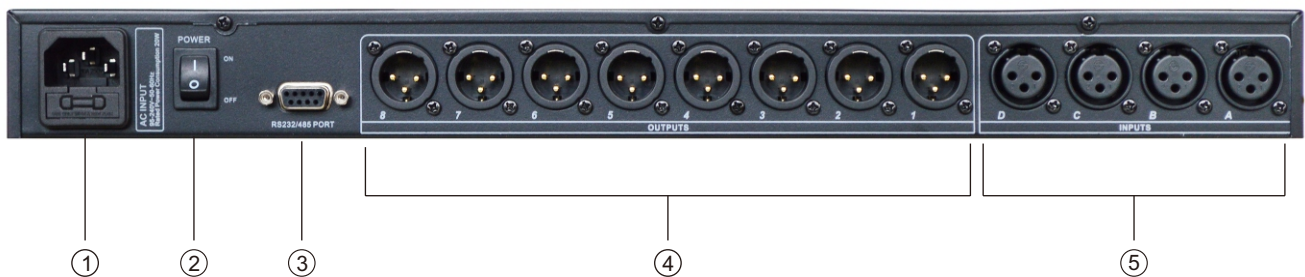
FRONT PANEL



- ① Input Level Indicators
5-segment high precision LED show the situation of current input channel's level.
- ② Input Edit Keys
Press to enter into relevant channel, parameters will show on the edit key and LCD.
- ③ Input Mute Keys
Mute channel by pressing and exit by pressing again.
- ④ Parameter edit keys
Choose all the system menu/input parameter/output parameter, exit by pressing "exit" key.
- ⑤ LCD
Show all the related operation parameter and status of current operation.
- ⑥ Parameter Edit Knob
Edit the whole menu and parameter setting confirm by press.

- ⑦ Output Level Indicators
4-segment high precision LED and 1 compressor signal LED shows the status of output level and compressor on current channel.
- ⑧ Output Mute Keys
Mute channel by pressing and exit by pressing again.
- ⑨ Output Edit Keys
Press to enter into relevant channel edit status parameter will show on the edit, Key and LCD.
- ⑩ USB
Used to connect with PC and center-control equipment, remote control.

REAR PANEL



- ① Power Socket
The voltage is 95V-240V.
- ② Power on/off Switch
- ③ RS232/485 interface
Center-control by RS232, cascade control by RS485.
- ④ Output interface
Male XLR balanced output 1-8.
- ⑤ Signal input interface
Female XLR balanced input A-D.

OPERATION GUIDANCE

Below status after power on:	
4X8 DSP Processor 1.01	Power on, show brand, model and version.
4X8 DSP F00 Default Preset	After self-check, show brand, model and current user preset.
Press UTIL key, enter below setting status	
ID Number Select ID: 1	Press UTIL key one time, enter ID number setting: the ID number of the units, should be different when cas cade connection, the setting scale is 1-254. (If cas cade connection units are over 16 or long distance, a loaded 120 ohms resistance should be parallel connected by RS 485.
Unit unlock Password 1234	Press DOWN key one time, enter password setting: users can choose all the words or numbers to set the password they want, the initial password is "1234".

<p>LOCK Select OFF</p>	<p>Press DOWN key two times, enter password memory setting way. OFF mains that password does not memory. It can operate the panel follow-up afterunlocking the passedword at first time. ON mains that password memory. It always needs to unlock the password when open the unit every time.</p>
<p>In Source Select ANALOG INPUT</p>	<p>Press DOWN key three times, enter signal source selection: pink noise, white noise and sine wave 20Hz-20kHz.</p>
<p>Copy CH select InA InB</p>	<p>Press DOWN key four times, enter copy channel selection: input or output channel can copy freely.</p>
<p>LCD DISPLAY TIME 10 Second</p>	<p>Press DOWN key five times, enter delay unit setting: ms, m, ft can be chosen.</p>
<p>Press RECALL/SAVE key, enter below setting status</p>	
<p>Load preset F00 Default Preset</p>	<p>Press RECALL key, enter preset transfer. Users can transfer the saved Settings U01-U30 and the initial setting F00.</p>
<p>Store preset U01 Default Preset</p>	<p>Press SAVE key, enter preset save. Users can save the adjust status in U01-U30. Attention that the F00 factory preset can't save.</p>
<p>Press INPUT EDIT enter the settings as follows</p>	
<p>GAIN INA -60.0dB</p>	<p>Default preferred option is gain the scale is -60dB-+12dB.</p>
<p>PEQ:1 INA G: 0.0 FREQ: 50.7 BY Q: 3.00 TYPE: PEAK <input type="checkbox"/></p>	<p>Press DOWN key one time enter PEQ parameter setting PEQ current filter number Is 8 ,the scale of "F" is 20Hz-20kHz, "Q" is 0.4-128, "G" is -12dB - +12dB, the style of filter are Peak, Low-shelf, High-shelf, Low-cut, High-cut, Allpass1, Allpass2, Bypass(ON/OFF).</p>
<p>HI & LOW - PASS INA HP: 19.6 BYPASS LP: 20K15 BYPASS</p>	<p>Press DOWN key two times enter low-high pass parameter setting, the scale of the "HP" is 20Hz -20kHz, "LP" is 20Hz -20kHz, 3 different slanting rate for low/ high pass filter Butterworth, Bessel, Linkwitz-Riley, Slanting rate is -6dB--48dB.</p>
<p>DELAY INA 0.000ms 0.000ft 0.000m</p>	<p>Press DOWN key three times, enter delay parameter setting: the scale is 0-680mS, 0-234m, 0-769ft.</p>
<p>PHASE INA 0: <input checked="" type="checkbox"/> 180: <input type="checkbox"/></p>	<p>Press DOWN key four times, enter phasic adjust setting, adjustment scale is (0/180).</p>
<p>GATE INA TH: -90 Hold: 100ms AT: 1ms REL: 100ms</p>	<p>Press DOWN key five times, enter GATE adjust interface, "TH" scale is -60dB -0dB, "Hold" keeping time is 1-999ms, "AT" attached time is 1-999ms, "REL" release time is 10ms-300ms.</p>
<p>IN-LINK INA A: <input checked="" type="checkbox"/> B: <input type="checkbox"/> C: <input type="checkbox"/> D: <input type="checkbox"/></p>	<p>Press DOWN key six times, enter linking adjustment selection: If the current channel is INA, you can choose INB, INC, IND channel to adjust parameter simultaneously, together.</p>

Press OUTPUT EDIT enter the settings as follow	
GAIN OUT1 +0.0dB	Default preferred option is gain, the scale is- 60dB--12dB.
PEQ: 1 OUT1 G:0.0 FREQ:40.2 BY Q:3.00 YPTE: PEAK <input type="checkbox"/>	Press DOWN key one time, enter PEQ PARAMETER SETTING: "PEQ" current number is 9, the scale of "F" is 20Hz-20kHz, "Q" is 0. 4-128 "G" is -12dB - +12dB, the style of filter are Peak, Low-shelf, High-shelf, High-cut, Low-cut, Allpass1, Allpass2, Bypass(ON/OFF).
HI&LOW-PASS OUT1 HP: 19.6 BYPASS LP: 20K15 BYPASS	Press DOWN key two times, enter low-high pass parameter setting: the scale of "HP" is 20Hz-20kHz, "LP" is 20Hz- 20kHz, 3 different slanting rate for low/high pass filter: Butterworth, Bessel, Linkwitz-Riley, Slanting rate is -6dB--48dB.
MATRIX OUT1 A: <input checked="" type="checkbox"/> B: <input type="checkbox"/> C: <input type="checkbox"/> D: <input type="checkbox"/>	Press DOWN key three times, enter matrix setting, all the output channel can choose one or several input signal freely.
DELAY OUT1 0.000ms 0.000m 0.000ft	Press DOWN key four times, enter delay parameter setting: the scale is 0-680 mS, 0-234m, 0-769ft .
PHASE OUT1 0: <input checked="" type="checkbox"/> 180: <input type="checkbox"/>	Press DOWN key five times, enter phase parameter setting: the scale is °0/180°.
COMPRESSOR OUT1 TH:+20.0 RAT:1.0 AT: 50ms REL: 500ms	Press DOWN key six times, enter compressor setting: the scale of threshold is -60dB ~+20dB, startup time is 1-999ms, attached time is 10-3000ms, ratio is 1:1, 1:10-LIMIT.
OUTLINK OUT1 1: <input checked="" type="checkbox"/> 2: <input type="checkbox"/> 3: <input type="checkbox"/> 4: <input type="checkbox"/> 5: <input type="checkbox"/> 6: <input type="checkbox"/> 7: <input type="checkbox"/> 8: <input type="checkbox"/>	Press DOWN key seven times, enter linking adjustment: select the corresponding channel can adjust the parameters.

PC SOFTWARE ONLINE SPECIFICATION

Notice: User manual, PC software are on the attached CD, due to the software upgrades time by time, Please do control your DSP processor ONLY by this CD!

USB connection steps



PC or laptop



DSP Processor

USB cord

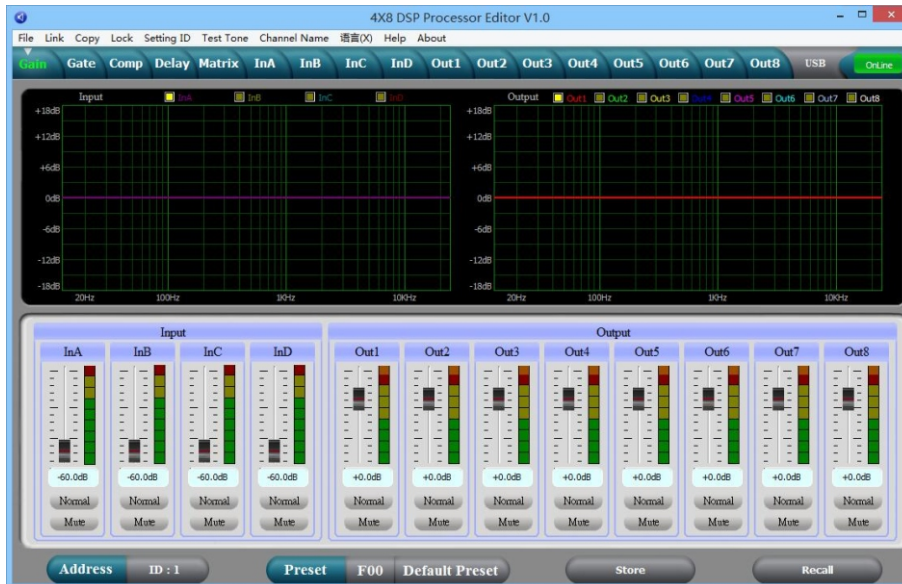
USB connection

1, Click the PC software on the CD, press next step to continue according to the instruction until Finish setup, then exit.



2, Connect the processor to the computer by USB, after turning on the device, the computer will searching new hardware automatically, during setup new hardware there will show the. Warnings: hardware setup success and can be used.

3, Open PC controlling software, PC software will find USB and connect device, after that the on-Line key change into green at the top right corner and show “Online”, you can operate the Processor by controlling software, Click “Online” button before exit.



PC SOFTWARE INTERFACE SPECIFICATIONS

THE FIRST: VOLUME CONTROL INTERFACE



1, Menu

File	Open and save preset parameter, the whole data upload to the computer and download to the device.
Link	Input and output channels can be set freely to adjust all of the parameters.
Copy	Parameter copy freely between the input and Output channels.
Lock	Setting password of the panel to ensure the safety of the device.
Setting ID	To cascade control more than 255 device by setting different ID.
Test Tone	Buid-in signal generator, outputting pink noise, white noise and sine wave.
Channel Name	The whole channel name are revisable.
Language	Chinese and English menu is switchable.
Help	RS232 control protocol codes for reference.

2, Spectrum Area:

You can choose PEQ and phase freely which show the input and output channels.

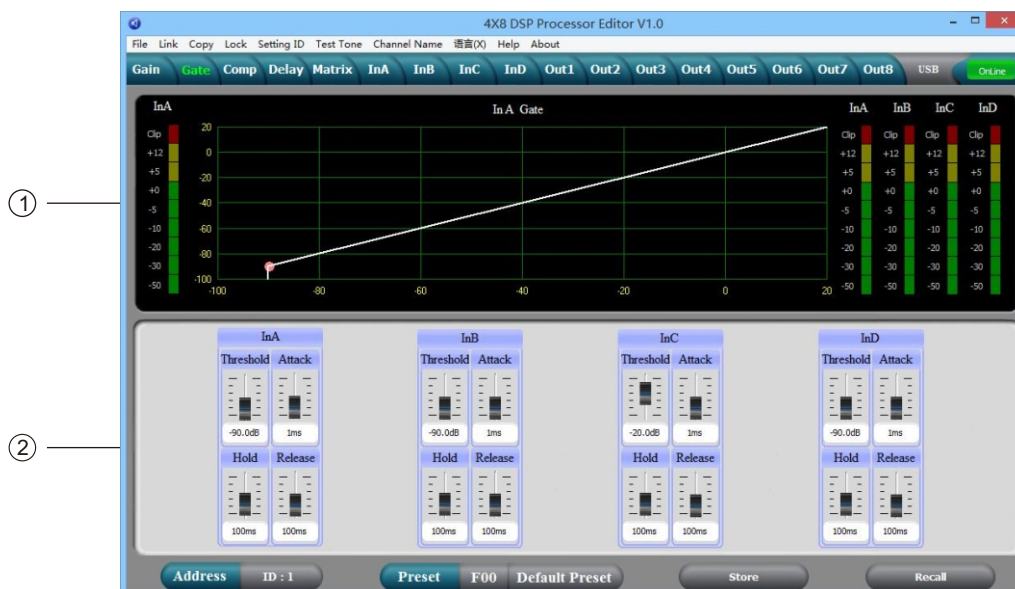
3, The Volume Control Area:

Gain, Phase, Mute control for all input & output channels.

4, Preset Operation Area:

Save or convert preset parameter and show current preset parameter status.

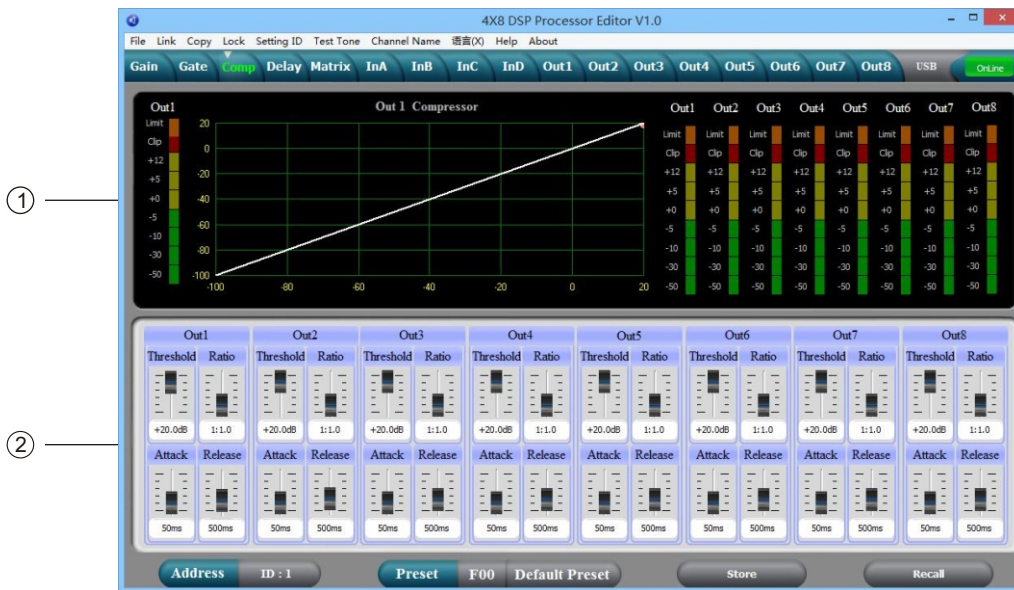
THE SECOND : NOISE GATE INTERFACE



1, display the current noise gate status curve and input channels level indicators.

2, all input channels noise gate parameters can be set. Noise gate threshold(-60~0dB), attach time(1~999ms), keep time(1~999ms), release time(10~3000ms) can be adjustable continuously for input.

THE THIRD: COMPRESSOR INTERFACE



- 1, Show compression status, level indicators and impression status of all channels.
- 2, Set the whole compression parameters for output channel, the compression range is -60dB– +20dB, rate is 1:1, 1:10, LIMIT, start time is: 0-200ms, recovery time is 0-999ms.

THE FOURTH: DELAY INTERFACE



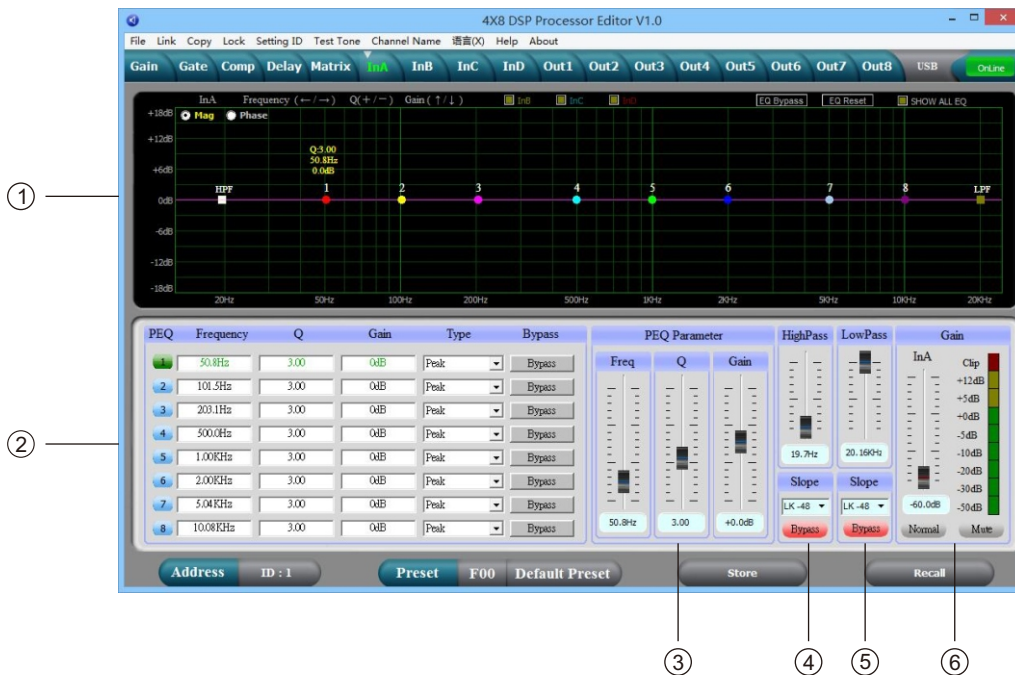
- 1, Show the delay parameter status of all channels.
- 2, Can adjust delay parameter of all channels, the scale is 0-680ms, there are millisecond, meter and feet units for converting.

THE FIFTH: MATRIX INTERFACE



- 1, Show connections of the device, users can enter and edit relevant channel by clicking the square , every channel name is revisable.
- 2, All output channels can choose any input channels.

THE SIXTH: INPUT INTERFACE



- 1, Select "Mag" interface, you can adjust the PEQ, High-cut, Low-Cut of the input channel, select "PHASE" interface, you can adjust the current phase channel, also you can choose the non-current PEQ and phase curve to show in sync.

- 2, Adjustable Gain, Mute, Q , Frequency, Type of all PEQ, Bypass key is optional, we can choose PEQ style: Balance, High-shelf, Low-shelf, High-cut, Low-cut, Phase 180° , Phase 360° .
- 3, The Gain, Q, Frequency of PEQ can be adjusted by putter, and can be controlled by pressing the UP, DOWN, LEFT, RIGHT key on the keyboard.
- 4, Low-cut frequency 20HZ-20KHZ is adjustable, you can choose slope rate: Butterworth, Bessel, Linkwitz-Riley, the scale is: -6dB-- -48dB.
- 5, High-cut frequency 20HZ-20KHZ is adjustable, you can choose slope rate : Butterworth, Bessel, Linkwitz-Riley, the scale is: -6dB-- -48dB.
- 6, The Gain, Mute, Phase of the input channel can control separately, as same as the level display Light.

THE SEVENTH: OUTPUT INTERFACE



- 1, Select "Mag" interface, you can adjust the PEQ, High-cut, Low-Cut of the output channel, select "PHASE" interface, you can adjust the current phase channel, also you can choose the non-current PEQ and phase curve to show in sync.
- 2, Adjustable Gain, Mute, Q , Frequency, Type of all PEQ, Bypass key is optional, we can choose PEQ style: Balance, High-shelf, Low-shelf, High-cut, Low-cut, Phase 180° , Phase 360° .
- 3, The Gain, Q, Frequency of PEQ can be adjusted by putter, and can be controlled by pressing the UP, DOWN, LEFT, RIGHT key on the keyboard.
- 4, Low-cut frequency 20HZ-20KHZ is adjustable, you can choose slope rate: Butterworth, Bessel, Linkwitz-Riley, the scale is: -6dB-- -48dB
- 5, High-cut frequency 20HZ-20KHZ is adjustable, you can choose slope rate : Butterworth, Bessel, Linkwitz-Riley, the scale is: -6dB-- -48dB.
- 6, The Gain, Mute, Phase of the output channel can control separately, as same as the level display light.

SPECIFICATION

System Specification	Frequency Response	20Hz~20kHz, -0.3dBu
	S/N Ratio	>115 dBu
	Distortion (THD)	<0.005at1kHz (0dBu)
	Cross-talk	<100dB below full scale
Input Section	Type	Balanced XLR
	Max. Input Level	+18dBu
	Impedance	1M/Ω Stereo; 500kΩ/MONO
Output Section	Type	Balanced XLR
	Max. Output Level (bypass)	+18dBu
	Impedance	<500 Ω
Digital Processing	24-bit sigma - delta converters	
	96kHz Sampling Rates	
Display	Dot matrix screen display For Parameters Setting And Function Select	
Power Supply	AC~95V-240V FUSE 250VAC/2A FAST	
Dimension (LxWxH)	48.2x20.5x4.4CM	
Weight	2.3kg	

ACCESSORIES

- 1, CD (Include PC software and user's manual).
- 2, One USB cord.
- 3, One electrical cord.

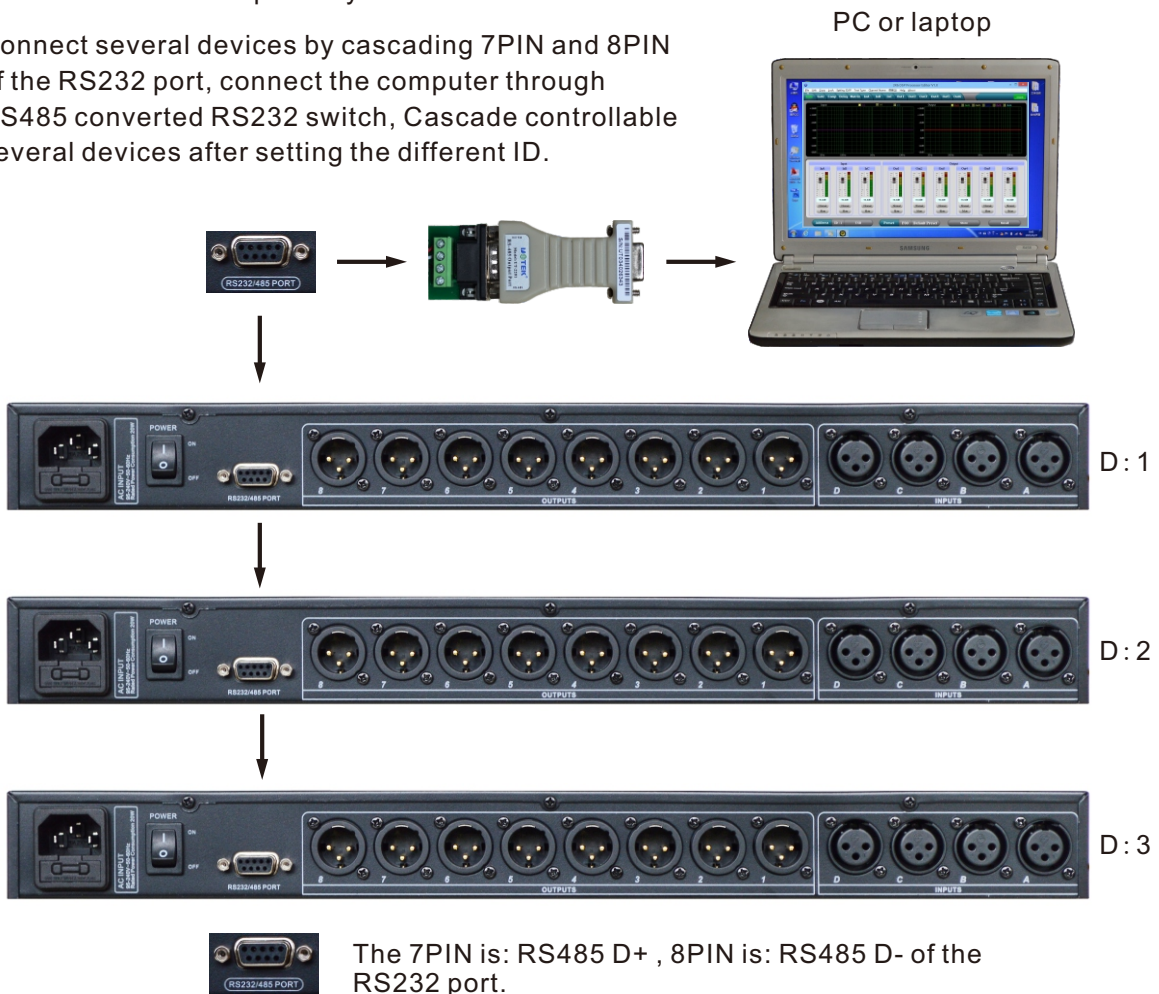
REAR PANEL CONTROL PORT CONNECTION

1, RS232 connection port: Central control and connect to PC through RS232 port.



2, RS485 cascade contro port: Parallel connect several devices by RS485, you can choose different ID to cascade control separately.

- (1), Connect several devices by cascading 7PIN and 8PIN of the RS232 port, connect the computer through
- (2), RS485 converted RS232 switch, Cascade controllable several devices after setting the different ID.



EXTEND REMOTE CONTROL PROTOCOL

1, Control package Format

	0	1	2	3	4	5	6	7	8
	DLE	STX	Device Assress	CMD	Data1	Data2	Date3	STX	DLE
Packet	0x7B	0x7D	1~254	0x41~0x4A	0x??	0x??	0x??	0x7D	0x7B

2, Command Detail

(1) Gain Control(0x41)

	0	1	2	3	4	5	6	7	8
	DLE	STX	Device Assress	CMD	In/Out	Channel	+/-	STX	DLE
Packet	0x7B	0x7D	1~254	0x41	In:0 Out:1	0~3	+:0, -:1	0x7D	0x7B

Example (increase input channel 1 gain): 7B7D01410000007D7B

(2) Mute Control(0x42)

	0	1	2	3	4	5	6	7	8
	DLE	STX	Device Assress	CMD	In/Out	Channel	No/Yes	STX	DLE
Packet	0x7B	0x7D	1~254	0x42	In:0 Out:1	0~3	No:0 Yes:1	0x7D	0x7B

Example (input channel 1 mute): 7B7D01420000017D7B

(3)Load Preset Control(0x43)

	0	1	2	3	4	5	6	7	8
	DLE	STX	Device Assress	CMD	Factory/User	Preset	0x30	STX	DLE
Packet	0x7B	0x7D	1~254	0x43	F:0 U:1	0~31	0	0x7D	0x7B

Example (recall user preset U00):7B7D01430100007D7B

(4) Input Volume Control (0x44)

	0	1	2	3	4	5	6	7	8
	DLE	STX	Device Assress	CMD	Channel	HI-VOL	LO-VOL	STX	DLE
Packet	0x7B	0x7D	1~254	0x44	00~07	0x??	0x??	0x7D	0x7B

Example (InA volume +0.0dB) : 7B7D01440001187D7B

(5) Output Volume Control (0x45)

	0	1	2	3	4	5	6	7	8
	DLE	STX	Device Assress	CMD	Channel	HI-VOL	LO-VOL	STX	DLE
Packet	0x7B	0x7D	1~254	0x45	00~07	0x??	0x??	0x7D	0x7B

Example (Out2 volume -3.0dB) : 7B7D01450100FA7D7B

(6) Get Now Gain(0x48)

	0	1	2	3	4	5	6	7	8
	DLE	STX	Device Assress	CMD	In/Out	Channel	0x30	STX	DLE
Packet	0x7B	0x7D	1~254	0x48	In: 0 Out: 1	0~3	0	0x7D	0x7B

Example (read input channel 1 gain parameter):7B7D01480000007D7B

MCU Return:0x00 ~ 0x90=-60dB ~ +12dB,0.5dB/Step

(7) Get Now Mute(0x49)

	0	1	2	3	4	5	6	7	8
	DLE	STX	Device Assress	CMD	In/Out	Channel	0x30	STX	DLE
Packet	0x7B	0x7D	1~254	0x49	In: 0 Out: 1	0~3	0	0x7D	0x7B

Example (read input channel 1 mute parameter):7B7D01490000007D7B

MCU Return: 0x00 or 0x01=Un-Mute or Mute

(8) Get Now Preset(0x4A)

	0	1	2	3	4	5	6	7	8
	DLE	STX	Device Assress	CMD	0x30	0x30	0x30	STX	DLE
Packet	0x7B	0x7D	1~254	0x4A	0	0	0	0x7D	0x7B

Example (read preset parameter):7B7D014A0000007D7B

MCU Return: 0x00~0x32=0:F00, 1~32:U00~U31

Communication parameter	Bits per second	115200	Stop bits	1
	Data bits	8	Step	>=20ms
	Parity	None	ID	1

SAFETY INSTRUCTION



Intended to alert the user to the presence of uninsulated “dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



Intended to alert the user of the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

CAUTION: Risk of electrical shock — **DO NOT OPEN!**

CAUTION: To reduce the risk of electric shock, do not remove cover. No user serviceable parts inside. Refer servicing to qualified service personnel.

WARNING: To prevent electrical shock or fire hazard, this apparatus should not be exposed to rain or moisture, and objects filled with liquids, such as vases, should not be placed on this apparatus. Before using this apparatus, read the operating guide for further warnings.

IMPORTANT SAFETY INSTRUCTIONS

WARNING: When using electrical products, basic cautions should always be followed, including the following:

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with a dry cloth.
7. Do not block any of the ventilation openings. Install in accordance with manufacturer’s instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves or other apparatus (including amplifiers) that produce heat.
9. 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 plug. The wide blade or third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point they exit from the apparatus.
11. Only use attachments/accessories provided by the manufacturer.
12. Use only with a cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. 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.
15. Never break off the ground pin. Write for our free booklet “Shock Hazard and Grounding.” Connect only to a powersupply of the type marked on the unit adjacent to the power supply cord.

- 16. If this product is to be mounted in an equipment rack, rear support should be provided.
- 17. Exposure to extremely high noise levels may cause a permanent hearing loss. Individuals vary.

Considerably insusceptibility to noise-induced hearing loss, but nearly everyone will lose some hearing if exposed to sufficiently intense noise for a sufficient time. The U.S. Government's Occupational and Health Administration (OSHA) has specified the following permissible noise level exposures:

Duration Per Day In Hours	Sound Level dBA, Slow Response
8	90
6	92
4	95
3	97
2	100
1½	102
1	105
½	110
1/4 or less	115

According to OSHA, any exposure in excess of the above permissible limits could result in some hearing loss. Ear plugs or protectors to the ear canals or over the ears must be worn when operating this amplification system in order to prevent a permanent hearing loss, if exposure is in excess of the limits as set forth above. To ensure against potentially dangerous exposure to high sound pressure levels, it is recommended that all persons exposed to equipment capable of producing high sound pressure levels such as this amplification system be protected by hearing protectors while this unit is in operation.

SAVE THESE INSTRUCTIONS!