Digital Loudspeaker Processor

OPERATORS MANUAL

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PLEASE PRINT CLEARLY

SRA #: _____(If sending product to Crown factory service.) Model: _____ Serial Number: _____ Purchase Date: _____

PRODUCT RETURN INFORMATION

Individual or Business Name: _____

Phone #: _____ Fax #: _____ E-Mail: _____

Street Address (please, no P.O. Boxes): _____

City: _____ State/Prov: _____ Postal Code: _____ Country: _____

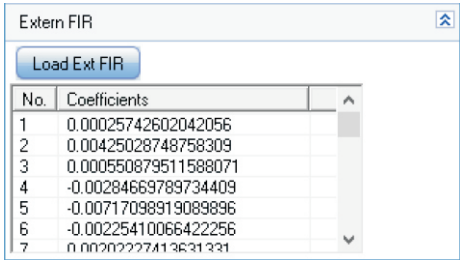
Nature of problem: _____

_____ _____

_____ _____

Other equipment in your system: _____

Extern FIR



Extern FIR: Loads a third-party designed FIR filter, with a maximum of 512 taps. The file format is CVS or TXT format. Currently, it supports four types of files separated by newlines, ; and tabs.
For example:

1. One coefficient per row

0.005791627277212020
0.001949235810485730
0.00426126167688734
0.0000861887085788015
0.00405059809548511
0.00205768974409155
0.0062171502654014
0.0021349639177031

2.separated by,

0.0004271060040174, 0.0004609990282511, 0.0004575997438668,
0.0005455244240080, 0.0006067348761361, 0.0009687869537323,
0.0013703925668641, 0.0014939821833005, 0.0016766008433541,

3.separated by;

0.0004271060040174; 0.0004609990282511; 0.0004575997438668;
0.0005455244240080; 0.0006067348761361; 0.0009687869537323;
0.0013703925668641; 0.0014939821833005; 0.0016766008433541;

4.separated by tab

0.0004271060040174 0.0004609990282511 0.0004575997438668
0.0005455244240080 0.0006067348761361 0.0009687869537323
0.0013703925668641 0.0014939821833005 0.0016766008433541

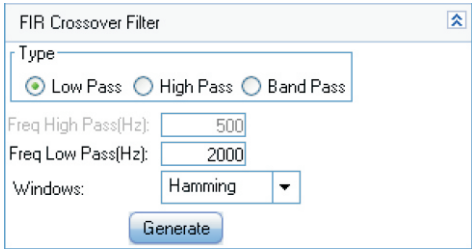
Note: If there is a file that cannot be imported, please try to export the file using the above format on third-party software.

FIR Crossover Filter

FIR Crossover Filter is used to design a linear phase frequency divider. It can design a low-pass filter, high-pass filter, and band-pass filter.

Input frequency range, number of taps, and window function, and then you can design it. Different window functions have different filtering characteristics.

The advantage of using FIR as a frequency divider is that because of the linear phase characteristics of FIR, high frequency and low frequency can be coupled together relatively well.



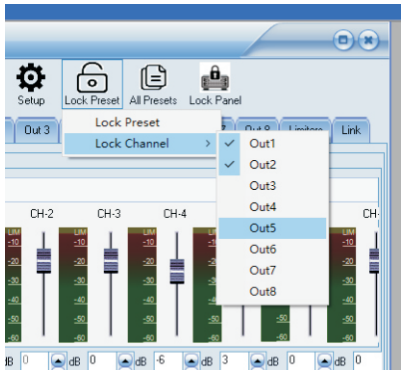
Important Safety Instructions

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 ventilation openings. Install in accordance with the manufacturers 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 prong. The wide blade or the 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 where they exit from the apparatus.**
11) **Only use attachments/accessories specified 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) **Use the mains plug to disconnect the apparatus from the mains.**
16) **WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPARATUS TO RAIN OR MOISTURE.**

17) **DO NOT EXPOSE THIS EQUIPMENT TO DRIPPING OR SPLASHING AND ENSURE THAT NO OBJECTS FILLED WITH LIQUIDS, SUCH AS VASES, ARE PLACED ON THE EQUIPMENT.**
18) **THE MAINS PLUG OF THE POWER SUPPLY CORD SHALL REMAIN READILY OPERABLE.**

Lock Preset and Lock Channel



Lock Preset : lock a preset. After clicking the lock button, a password input dialog box will appear. After entering a 6-digit password, the preset will be locked. Please remember the password. If you forget the password, please contact the supplier. After locking, the parameters cannot be viewed or modified.

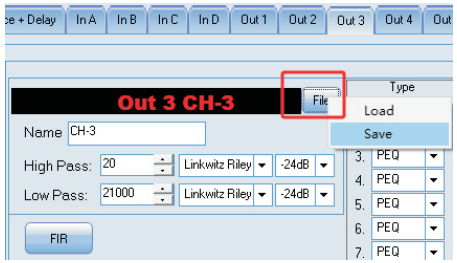
Lock Channel : locks an output channel. Similarly, after entering a 6-digit password, the preset will be locked. The locked channel cannot be viewed or modified.

Note: The mute function can still be modified after locking.

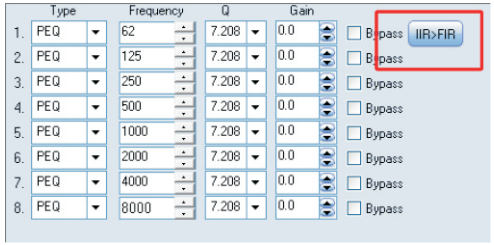
Speaker preset manager

There is a File button on each channel page, click on this button to see save and load. After adjusting the parameters according to the characteristics of a speaker, it can be saved as a file for direct loading and use next time.

Note: Load file does not affect routing settings of this channel.



IIR EQ to FIR



Conventional EQ can be converted to achieve similar functions with FIR, which has the advantage of being able to achieve linear phase. The disadvantage is that the delay is large, and the low-frequency processing is not good, and it is only suitable for processing high-frequency signals

If you have designed the EQ, click this button, it will automatically switch to FIR, you need to pay attention to the volume before conversion, make sure that the FIR takes effect correctly, and slowly increase the volume to prevent the crossover from failing and burning out the speaker

Press NEXT→

```
 01      Eq: 1  PEQ
1K00 Q=0.71 +0.0dB
```

EQ filter , press FUN button to switch filter parameters(filter type filter frequency, bandwidth or Q, etc)

Press NEXT→

```
 01         Limiter
Threshold=+20dBu
```

Limiter threshold ,in dBu

Press NEXT→

```
 01         Limiter
At:20ms Re:200ms
```

Limiter attack time and release time

Panel Menu

Press MENU button

```
MAIN MENU
XoverSubMenu
```

Press NEXT→

```
MAIN MENU
System subMenu
```

Press ENTER

```
XOVER MENU
Load Xover
```

Press ENTER

```
SYSTEM MENU
Lock Panel
```

Press NEXT→

```
XOVER MENU
Store Xover
```

Press NEXT→

```
SYSTEM MENU
Version info
```

Press NEXT→

```
XOVER MENU
Copy Xover
```

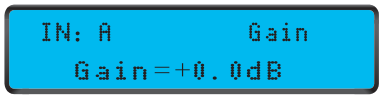
Press NEXT→

```
XOVER MENU
Erase Xover
```

Press NEXT→

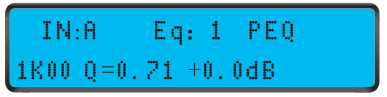
```
XOVER MENU
Lock Xover
```

Input Channel Menu



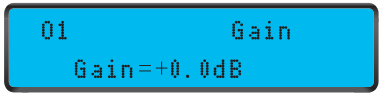
Press channel button (A , B ,C ,D ,1,2..) in long time, enter this edit menu. press short time will mute/unmute .

Press NEXT→



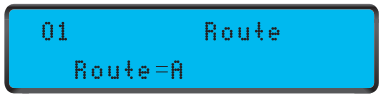
EQ filter , press FUN button to switch filter parameters(filter type filter frequency, bandwidth or Q, etc)

Output Channel Menu



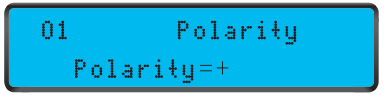
Press channel button (A , B ,C ,D ,1,2..) in long time, enter this edit menu. press short time will mute/unmute .

Press NEXT→



Source selection, A or B or A+B

Press NEXT→



Polarity selection, + or -

Press NEXT→

Delay selection, in millisecond.

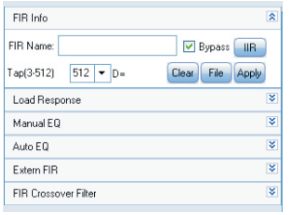
Press NEXT→

High pass filter , press FUN button to switch filter parameters(filter type filter frequency, filter slope, etc)

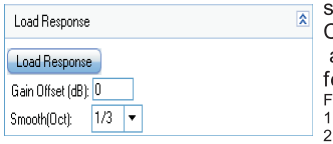
Press NEXT→

Low pass filter , press FUN button to switch filter parameters(filter type filter frequency, filter slope, etc)

Design FIR Filter

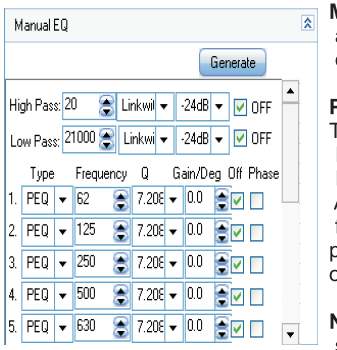


FIR name: The name of the FIR
ByPass: Turn FIR on or off
IIR : Return to the IIR page
Tap : FIR number of taps, 3-512 taps can be set.
Clear: clears the FIR
File : Load/Save FIR settings
Apply: Apply the FIR to the processor



Load Response: Load the response characteristics of a speaker or speaker. This response file can only be in CVS or TXT format, which contains frequency, amplitude, phase and other information, similar to the following

Frequency (Hz)	Magnitude (dB)	Phase (degrees)	Coherence
1.464844	-55.68	-172.70	0.40
2.929688	-40.59	-110.52	0.67
4.394531	-46.02	-29.66	0.41
5.859375	-35.32	77.44	0.61
7.324219	-51.27	-107.86	0.23

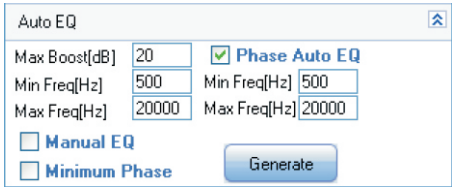


Manual EQ: Use the IIR EQ method to design FIR. There are 2 crossovers and 15 EQs. You can use these filters to design the amplitude response and phase response you want.

Phase equalization:
There is a Phase check box at the end of each EQ.
If it is not selected, then the EQ will act on the amplitude.
If it is selected, the EQ will act on the phase not amplitude.
At this time, this EQ is a phase equalizer, which is different from an all-pass filter,phase correction, the shape of this phase equalization can be Bell shape, or Shelf filter shape, or bandpass shape, etc. just like a normal EQ.

Note: FIR has poor performance in processing low-frequency signals and is generally used to process high frequencies.

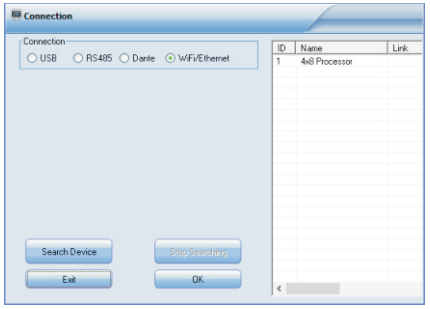
Auto EQ: When you have loaded a measured speaker response, you can use the Auto EQ function. This function will generate a FIR filter that is symmetrical to the measured response at 0dB. After the designed FIR is applied to the processor, you will get a relatively flat response



Max Boost: Limit the maximum boost/reduce level, when in Auto EQ
Min Freq: FIR action frequency range, lower limit
Max Freq: FIR frequency range, upper limit.

Phase Auto EQ: Turn on/off automatic phase equalization. Similarly, phase equalization also has a range. Use Min Freq and Max Freq to set this range.
Manual EQ: In addition to automatic equalization, manual correction can also be added.
Minimum Phase: Minimum phase FIR. When this option is turned on, it is not a linear phase, and phase equalization cannot be achieved, but at this time the delay can be reduced.

SOFTWARE CONNECTION



There are several connection methods, USB, RS485, Dante, Wifi, Ethernet.Ethernet or Wi-Fi connection is recommended

USB distance is too short and not recommended. It cannot be connected with a USB cable of more than 3 meters.

Wifi connection instructions

The name of the Wifi AP is similar to ProAudio_1234, the password is **proaudio8899**

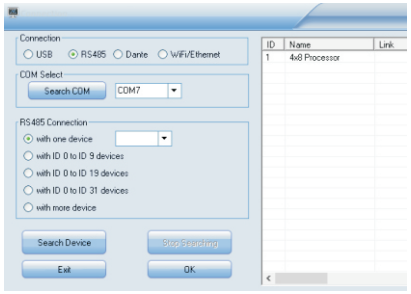
Please turn off your Pc useless connections, such as wired networks, many PCs have both wifi and ethernet connections at the same time, you need to turn off ethernet first, otherwise you can't search the devic . Disable the network adapter in the Windows settings

Ethernet connection instructions

Please connect to the router with a network cable instead of a switch, because connected to the router, the router's DHCP service will assign an IP address, if connected to a switch, then you need to set your network card to a static IP address, the default IP subnet mask is 192.168.1.255, you can also modify the IP address on the device to match your original network.Disable the useless network adapter in the Windows settings ,see wifi instructions.

Noted:when the device has been connected to the router and DCHP has assigned an IP, then this IP will be saved and used as the default IP address for the next boot

Rs485 connection instructions



The Search COM function only supports the FT232 chip's usb to RS485 adapter. If clicking this button does not work, please manually select a serial port.

In the following options, determine the range of search ID range, respectively, search one, 0-9, 0-19, etc. and the last one to search all.

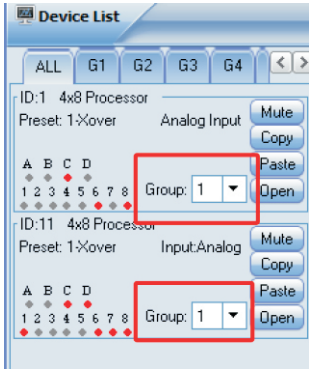
Each device has a random ID, if there are two same ID when connecting multiple devices, then one of them will not be searched out, and the ID can be changed in the device menu to prevent duplication.

DEVICE GROUP

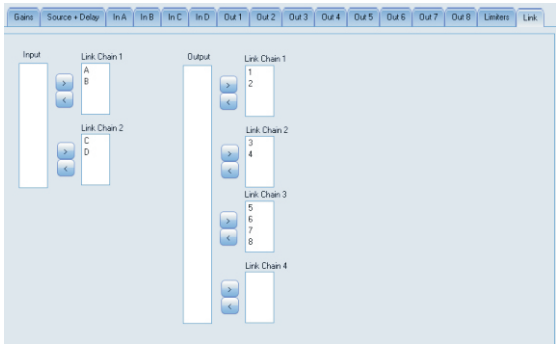
For multiple devices, several devices can be grouped, as shown in the figure on the right, in the Group box, select the group number, the same type of devices can be added to the same group, if the types are different, they cannot be added.

For example, in the figure on the right, 2 x 4*8 Processors are added to Group 1, click the G1 tab above, and you can see that there are 2 devices in Group 1.

When two devices are added to the same group, the operation on one of them will also affect the other devices in the same group



Channel Link



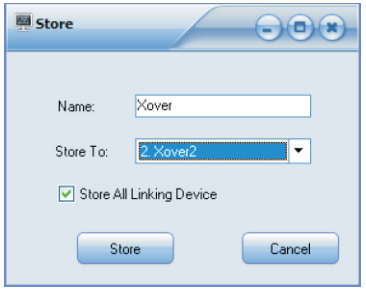
The channel link function can link the channels, as shown in the figure, channel AB link, channel CD link, output channel 5,6,7,8 link.

When the channel is linked, the parameters of the channel change and the other channels will change in the same way.

For example, if you adjust the volume of output channel 5, then channels 6, 7, and 8 will also become the same volume because they are already linked.

Use the < and > buttons to edit the channels of each Link group, > button to add ,< button to remove.

Store and Recall Preset

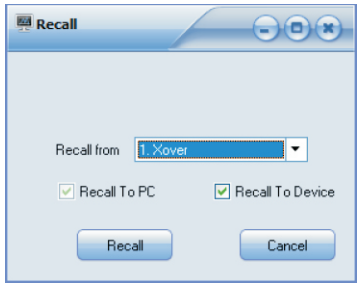


Click the Store and Recall buttons in the toolbar to see the Store and Recall dialogs

After entering a name and selecting a preset position, click the Store button and the parameters will be saved.

Store All Linking Device:
If the device has a group, it will be saved to all devices in the same group,For example, if there are 2 devices in group 1, the parameters will be saved to the 2 devices.

Note: The saved group will be used as the default preset for the next launch.



Recall To Device: If this option is not checked, the parameters will only appear in the PC software and will not update the current device state. If checked, the parameter is immediately updated to its current state This option is for, if you just want to check the parameters inside the device and don't want the sound to change, then uncheck it.

Note: Any recall operation, or change of any parameter, even the simplest mute state, will be saved as the parameter for the next startup, The parameter state before the shutdown device is the parameter state for the next startup.