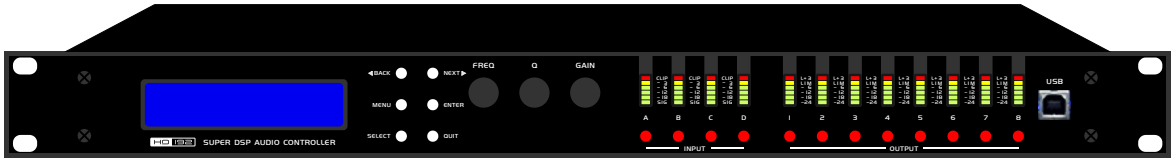
NDP Series

LOUDSPEAKER MANAGEMENT



User Manual

Introduction

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 dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacture'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 prong. The wide blade or the third prong are 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. Use only attachments/accessories specified by the manufacturer.
12. Use only with the 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 lighting storms or when unused for long periods of time.
14. Refer all servicing to qualified service personal. Sevicing 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. The apparatus shall be connected to a MAINS socket outlet with a protective earthing connection.
16. Where the MAINS plug or an appliance coupler is used as the disconnect device, the disconnect device shall remain readily operable.

The symbol, wherever is appears, alerts you to the presense of uninsulated dangerous voltage inside the enclosure-voltage that may be sufficient to constitute a risk of shock.

The symbol, wherever is appears, alerts you to important operating and maintenance instructions in the accompanying literature. Please read the manual.
To reduce the risk of electric shock, do not remove the top cover (or the rear section). No user serviceable parts inside. Refer servicing to qualified personnel.
To reduce the risk of fire to electric shock, do not expose this appliance to rain and moisture. The apparatus shall not be exposed to dripping or splashing liquids and no objects filled with liquids, such as vases, shall be placed on the apparatus.
These service instructions are for use by qualified service personal only.
To reduce the risk of electric shock do not perform any servicing other than that contained in the operation instructions. Repairs have to be performed by qualified service personal.

CAUTION

RISK OF ELECTRIC SHOCK
DO NOT OPEN
DO NOT EXPOSE TO RAIN, MOISTURE,
DRIPPING OR SPLASHING

Introduction

The NDP Series are powerful DSP based loudspeaker processors, ideally suited for install application, where they combine the functions of a multitude of conventional products in a compact 1U unit with extensive remote control capabilities. To achieve this, the NDP Series devices have three inputs, and four inputs and up to eight outputs.

Units offer “Routing” for free assign signal, which allows completely flexible routing of any output from any combination of inputs.

Each input has a gain control, polarity, variable delay line, noise gate, 31 band Graphic EQ, multi-type filters. Filter types included parametric equalisation, high & low shelving 6dB/12dB/variableQ, all-pass 90 &180, notch, band-pass, variableQ highpass & lowpass.

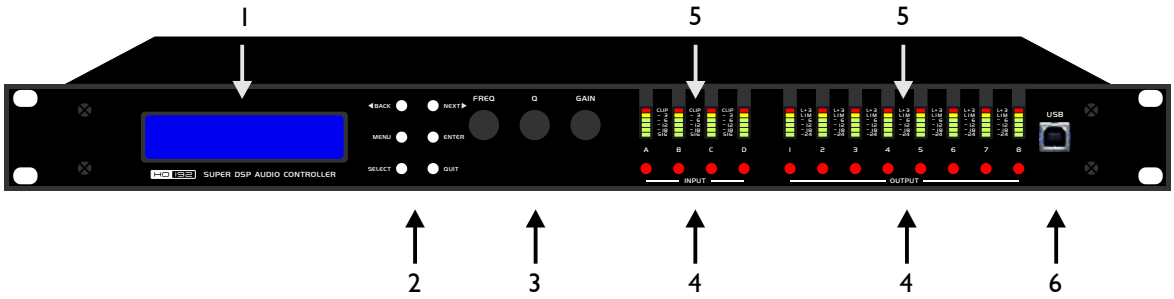
Each output has a gain control, polarity, variable delay line, highpass and lowpass crossover filters, multi-type filters, input signal source, a limiter. The crossover filters offer slopes of up to 48dB/Octave.

Security lock-out is avaiable for each parts.

Supply external device remote controls.

Remote port is USB, RS232 and RS485.

Front Panel

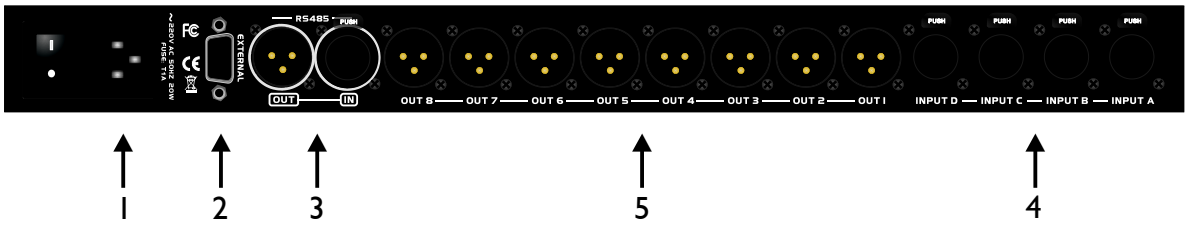


1. LCD Sreeen: Show, the name of last recalled memory on the bottom line of the screen, and current device model name on the top line. Also used to show all parameters as they are edited, and all menu selections.

2. BACK/ NEXT: Moves backwards or forward through list of parameters.
   MENU: Activates the main menu.
   SELECT: Select key.
   QUIT: Quit key.
   ENTER: Enter key.

3. Rotary Encoders: Three velocity encoders adjust parameters.
4. EDIT (MUTE) : These buttons illuminate when pressed and edit parameters for that channel. When push about two seconds, mute/unmute for that channel.
5. Meters: Input meters show dB from clipping point of the analogue to digital converters. Output meters show dB from limiting. The yellow LED illuminates at the onset of limiting. The red LED illuminates at 3dB into limiting(i.e. 3dB of gain reduction).
6. USB: Type-B used for remote connection.

Rear Panel



1. Power Switch: turns the device's mains supply off and on.
2. RS232: RS232 standard via a 9 pin D-type connector, for connection to PC.
3. RS485: 3 pin XLR sockets. Used for transmission of remote control data over long distance or multiply device applications.
4. Audio Inputs: 3 pin XLR sockets are provided for each channel. All are fully balanced, pin 2 hot, 3 cold, 1 screen.
5. Audio Outputs: 3 pin XLR sockets are provided for each channel. All are fully balanced, pin 2 hot, 3 cold, 1 screen.

Diagram of input channels

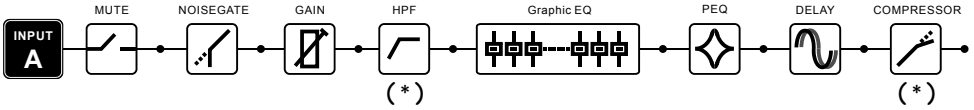
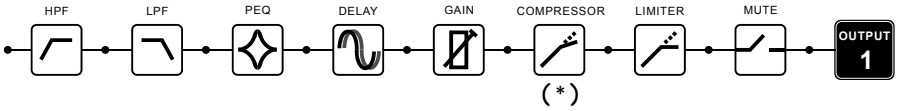


Diagram of output channels



(*)Note: Optional, depend on different devices.

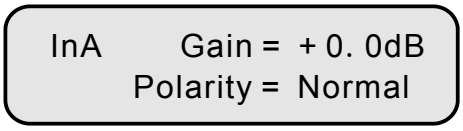
Main Frame

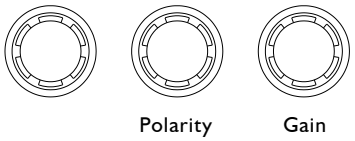
when display icon, means keypad will be locked.

push "ENTER" button three seconds, icon will disappear, keypad return active status.

Input Gain & Polarity

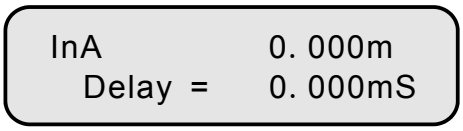
The range of the control over the input gain is -40dB ~ +6dB in 0.1dB steps.
The polarity (or phase) of each input may be switched individually.

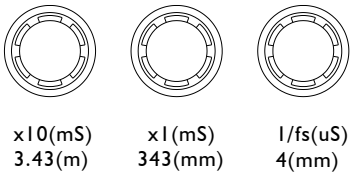




Input Delay

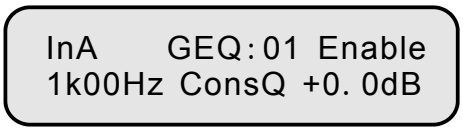
The maximum avaiable delay depend on different devices.
step can be x10 (ms), x1 (ms), 1/fs (0.005ms)

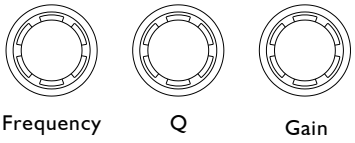




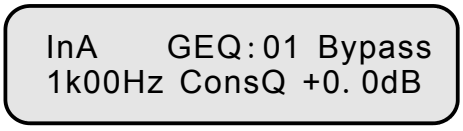
Input Graphic EQ

The equaliser can be 1/3 Octave, and a gain range of -12dB ~ +12dB in 0.1dB steps.
Q range of ConsQ（Constant-Q）,PropQ（Proportional-Q）.



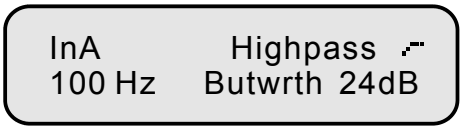


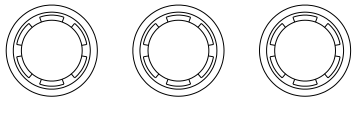
Pressing SELECT will bypass the entire Graphic EQ.



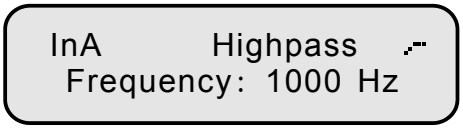
Input Highpass Filter (*Optional)

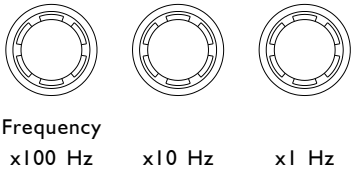
The highpass on each input has a frequency range of 20Hz ~ 32.5kHz in 1 Hz steps.
highpass slope can be 6dB, 12dB, 18dB, 24dB/Octave.
Filter type can be Butterworth, Linkwitz-Riley, Bessel.





Pressing ENTER will switch the fine tuning frame of frequencey(1 Hz) or corase tuning frame of frequencey(10 Hz)

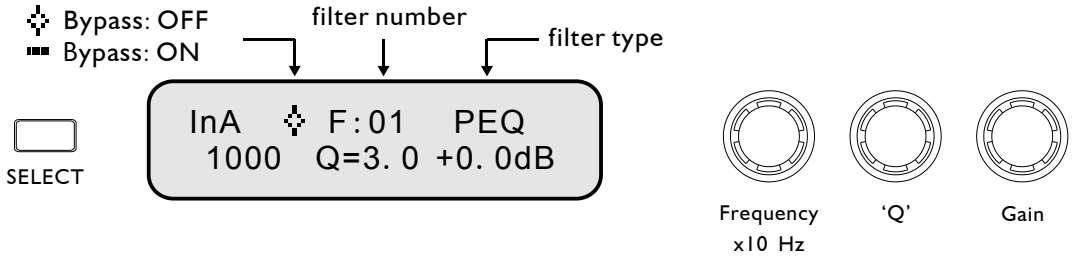




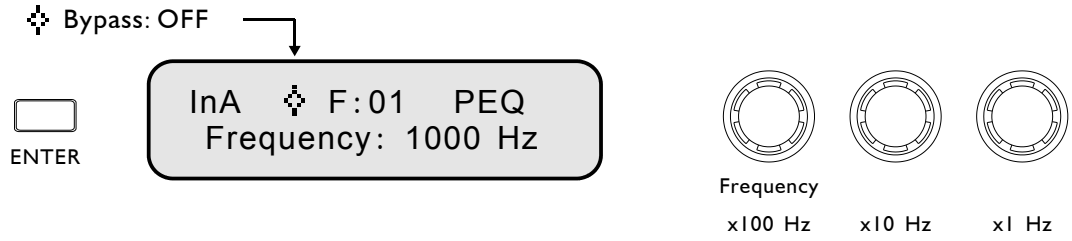
Input Parametric EQ

Pressing SELECT will bypass the All bands EQ.

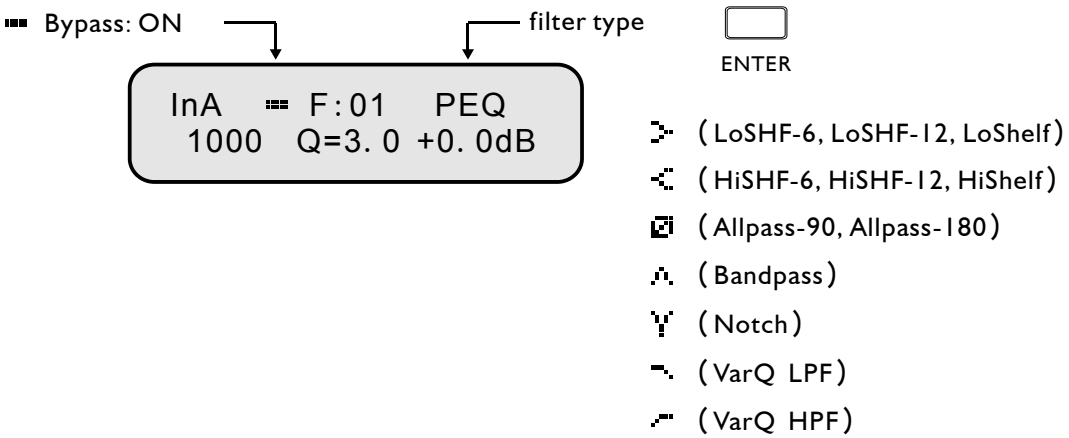
The range of frequency is 20Hz to 32.5kHz in 1 Hz steps.
The range of Q is 0.4 to 128.
The range of BW is 0.011 to 3.0 (Octave).
The range of gain is -30dB to +15dB in 0.1dB steps.
Pressing SELECT will bypass the current band EQ.



Pressing ENTER will switch the fine tuning frame of frequencey(1 Hz) or corase tuning frame of frequencey(10 Hz)

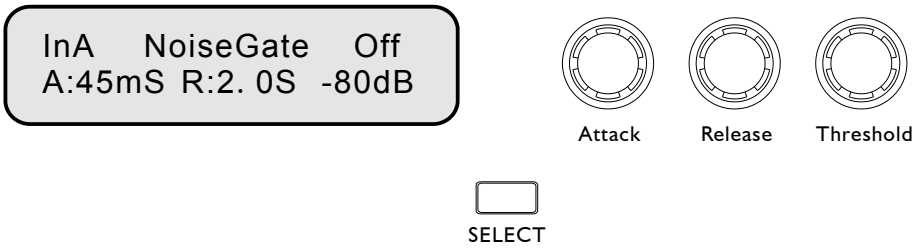


While filter was in BYPASS ON, Changing the filter type is achieved by pressing ENTER.



Input NoiseGate

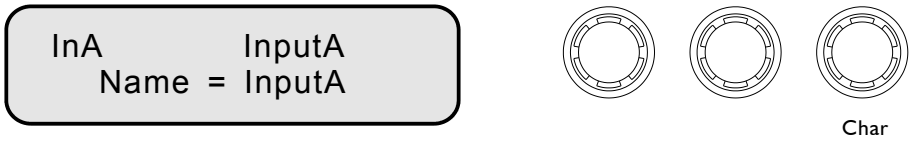
The NoiseGate on each input has adjustable attack time, release time and threshold.
The range of attack time 1 to 100mS.
The range of release time 0.1 to 2.0 second.
The range of threshold -80dB to -40dB in 1dB steps.



Pressing SELECT will switch the NoiseGate On or OFF.

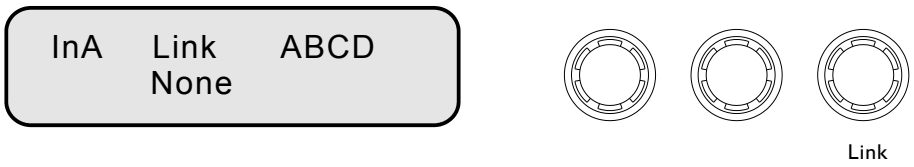
Input Channel Name

For edit channel name by pressing ENTER. Cursor will blink on first character position.
Turn rotary encoder and modify character, move cursor position by pressing BACK or NEXT.
Pressing ENTER again for confirm and store channel name.



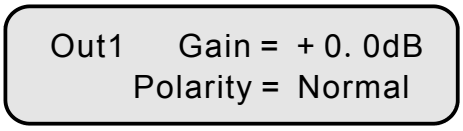
Input Link

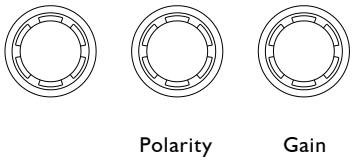
Set link value for channel, while modify parameters, the channel of have same link value will modify together.



Output Gain & Polarity

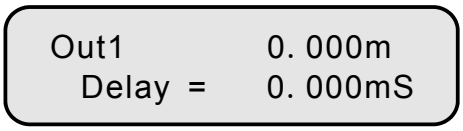
The range of the control over the output gain is -40dB ~ +15dB in 0.1dB steps.
The polarity (or phase) of each output may be switched individually.

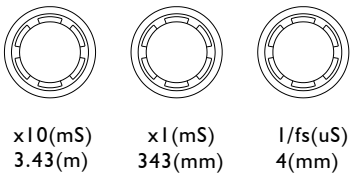




Output Delay

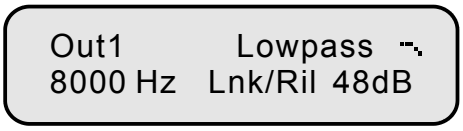
The maximum avaiable delay depend on different devices.
step can be x10 (ms), x1 (ms), 1/fs (0.005ms)

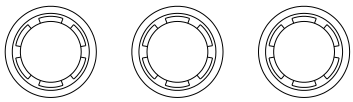




Output Highpass/Lowpass Filter

The highpass/lowpass filter on each input has a frequency range of 20Hz ~ 32.5kHz in 1 Hz steps.
Crossover slope can be 6dB, 12dB, 18dB, 24dB, 36dB, 48dB/Octave.
Filter type can be Butterworth, Linkwitz-Riley, Bessel.





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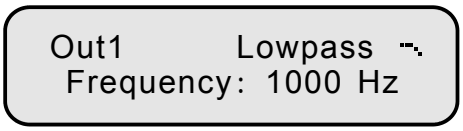
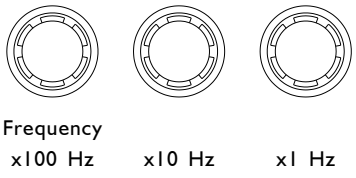
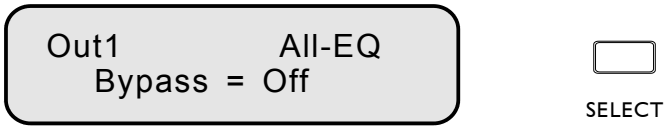


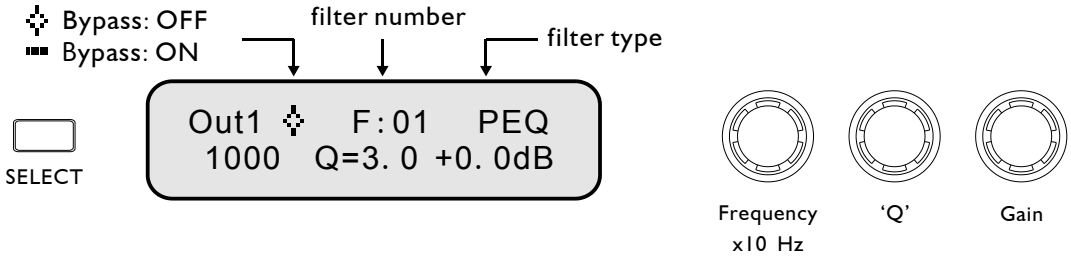


Output Parametric EQ

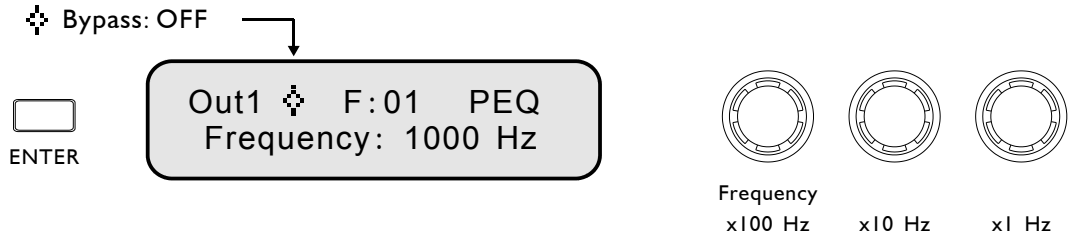
Pressing SELECT will bypass the All bands EQ.



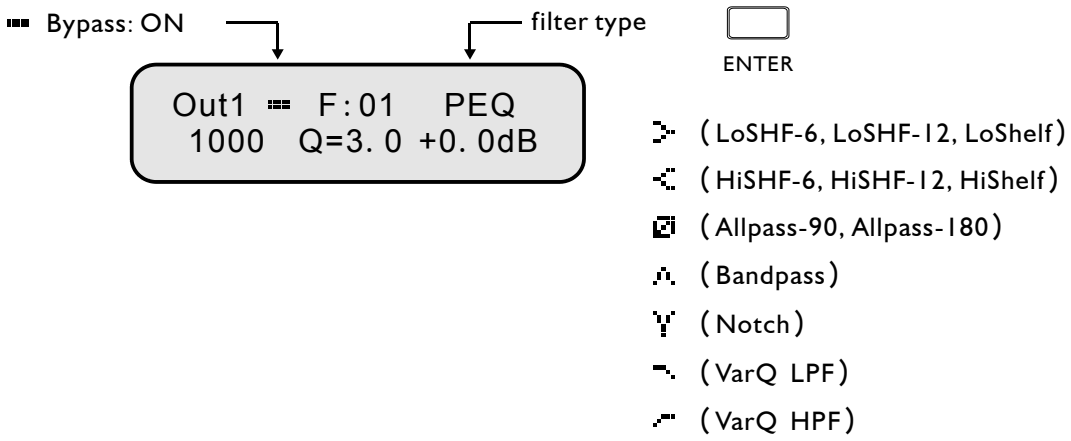
The range of frequency is 20Hz to 32.5kHz in 1 Hz steps.
The range of Q is 0.4 to 128.
The range of BW is 0.011 to 3.0 (Octave).
The range of gain is -30dB to +15dB in 0.1dB steps.
Pressing SELECT will bypass the current band EQ.



Pressing ENTER will switch the fine tuning frame of frequencey(1 Hz) or corase tuning frame of frequencey(10 Hz)

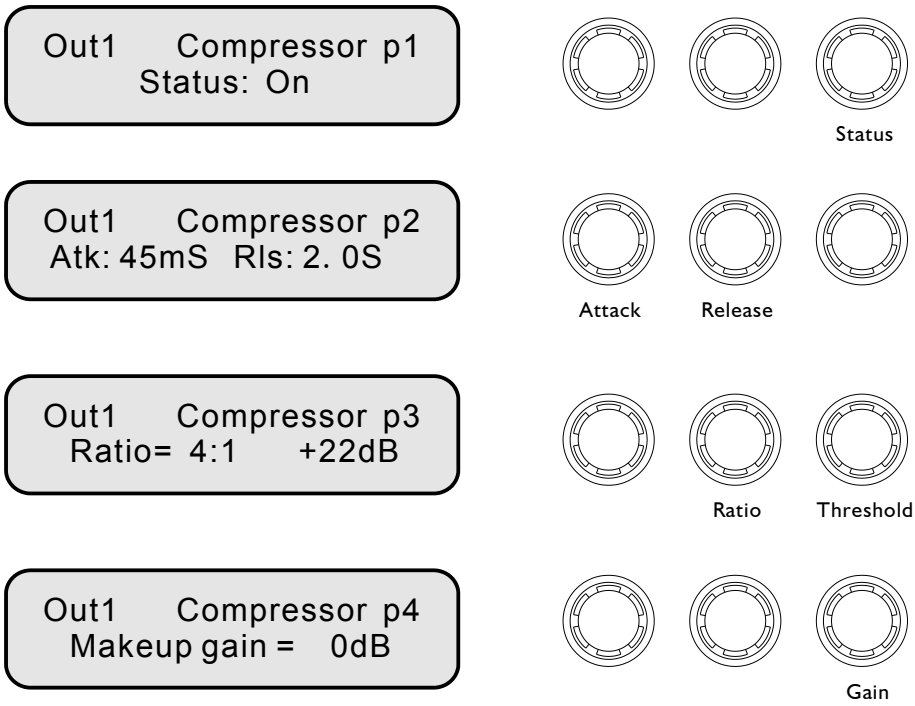


While filter was in BYPASS ON, Changing the filter type is achieved by pressing ENTER.



Output Compressor (*Optional)

The compressor on each output has adjustable attack time, release time, threshold, ratio and makeup gain.
The range of bypass On/Off.
The range of attack time 1 to 100mS.
The range of release time 0.1 to 2.0 second.
The range of threshold -20 to +22dBu in 1dB steps.
The range of ratio 1:1 ~ 16:1.
The range of makup gain 0 to +12dB in 1dB steps.

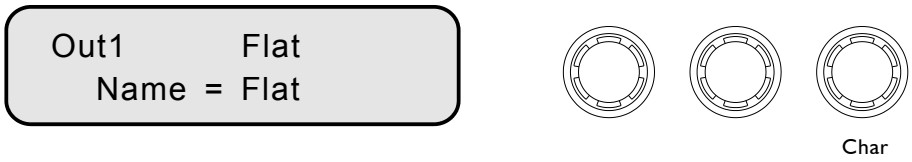


Output Limiter

The limiter on each output has adjustable attack time, release time and threshold.
The range of attack time 1 to 100mS.
The range of release time 0.1 to 2.0 second.
The range of threshold -20 to +22dBu in 1dB steps.

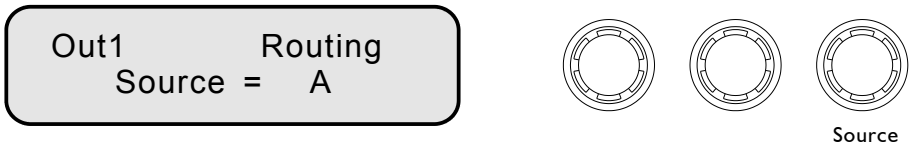
Output Channel Name

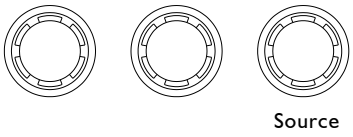
For edit channel name by pressing ENTER. Cursor will blink on first character position.
Turn rotary encoder and modify character, move cursor position by pressing BACK or NEXT.
Pressing ENTER again for confirm and store channel name.



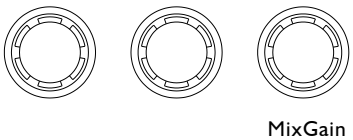
Routing

The source on each output, can assign signal rounting from input channel, create free Xover combination.



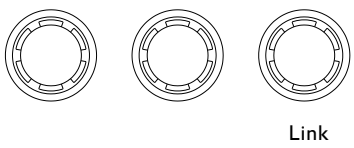


Pressing ENTER will switch each input channel mix gain.



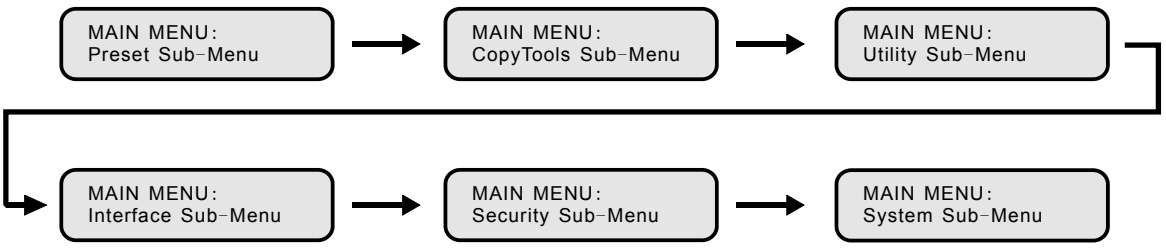
Output Link

Set link value for channel, while modify parameters, the channel of have same link value will modify together.



Menu System

Pressing MENU will enter menu system.
Pressing BACK / NEXT will navigate sub-menu, Pressing ENTER will enter sub-menu.



Preset Sub-menu

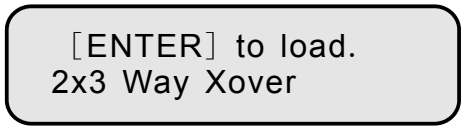
Load Preset.
Save Preset.
Delete Preset.
Rename Preset.

Load Preset

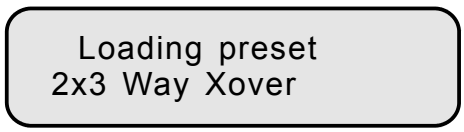
Pressing ENTER will enter Load Preset sub-menu.

Turn rotary encoder to change preset index
(F: factory preset, U: user preset)

Confirm and continue

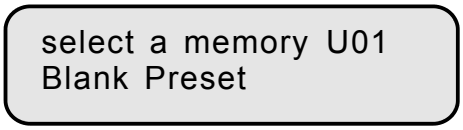


Pressing ENTER for confirm and load preset.

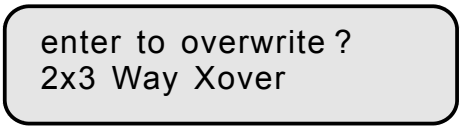


Save Preset

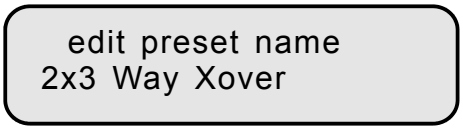
Pressing ENTER will enter Save User Preset sub-menu.



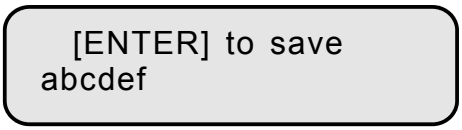
Turn rotary encoder to change preset index (01-50)
Pressing ENTER.



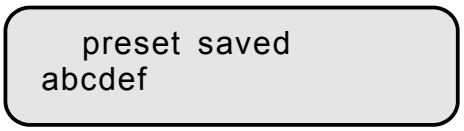
Pressing ENTER for confirm and overwrite preset.
Pressing QUIT for exit.



Preset name length is 16 character.
Turn rotary encoder and modify character, move cursor position by pressing BACK or NEXT.
Pressing ENTER again for confirm and store preset name.
Pressing QUIT for exit.



Pressing ENTER for confirm and Save preset.

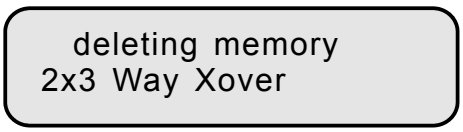


Delete Preset

Pressing ENTER will enter Delete User Preset sub-menu.

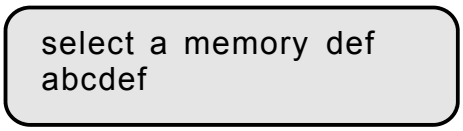
Turn rotary encoder to change preset index,
Pressing ENTER.

Pressing ENTER for confirm and delete preset.

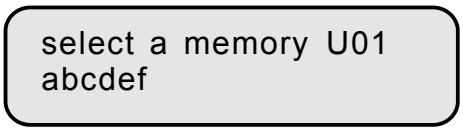


Rename Preset

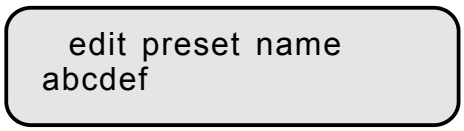
Pressing ENTER will enter Rename Preset sub-menu.



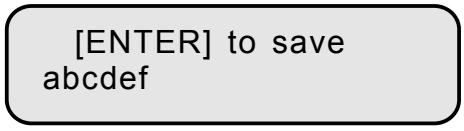
Turn rotary encoder to change preset index
(def: current presett)



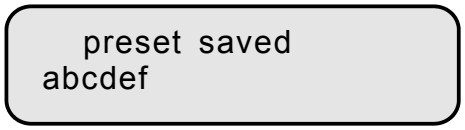
(U: user presett)
Pressing ENTER.



Preset name length is 16 character.
Turn rotary encoder and modify character, move cursor position by pressing BACK or NEXT.
Pressing ENTER again for confirm and store preset name.
Pressing QUIT for exit.

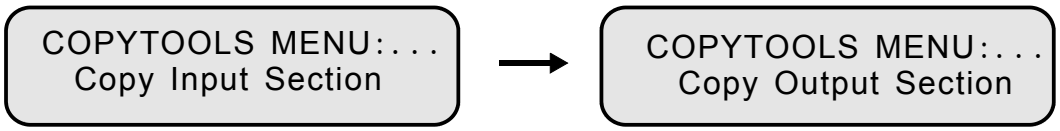


Pressing ENTER for confirm and Save preset name.

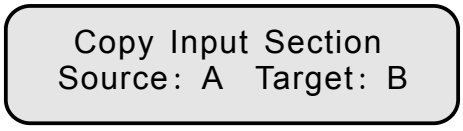


CopyTools Sub-menu

Pressing BACK / NEXT will navigate sub-menu, Pressing ENTER will enter sub-menu.

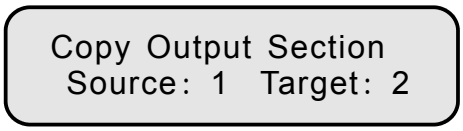


Copy Input Section



On Copy Input Section screen, Turn rotary "FREQ" encoder change source channel, Turn rotary "Q" encoder change target channel.
Pressing ENTER to confirm and copy intput channel parameters.

Copy Output Section



On Copy Output Section screen, Turn rotary "FREQ" encoder change source channel, Turn rotary "Q" encoder changetarget channel.
Pressing ENTER to confirm and copy output channel parameters.

Utility Sub-menu

LCD Contrast

Turn rotary encoder to change LCD contrast, Pressing ENTER to confirm and save.

LED Brightness

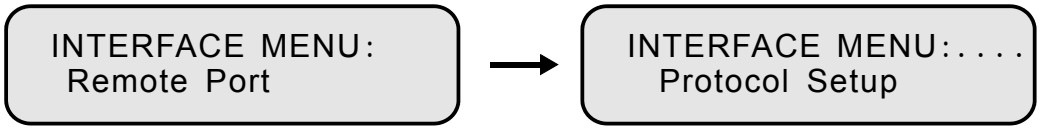
Turn rotary encoder to change LED brightness, Pressing ENTER to confirm and save.

Filter Q or BW

Select filter Q or Bandwidth display unit. Turn rotary encoder to change parameter.

Interface Sub-menu

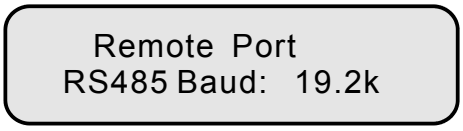
Pressing BACK / NEXT will navigate sub-menu, Pressing ENTER will enter sub-menu.



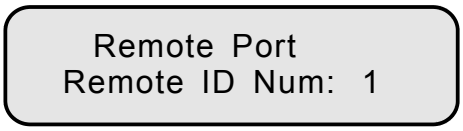
Interface Setup

Pressing ENTER will enter interface setup sub-menu.

Select communication port:
USB(default), RS232 or RS485.

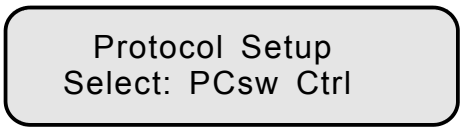


While select RS485.
Need assign a remote Baudrate.
4.8k, 9.6k, 19.2k, 38.4k.



While select RS485.
Need assign a remote ID number(1-32).

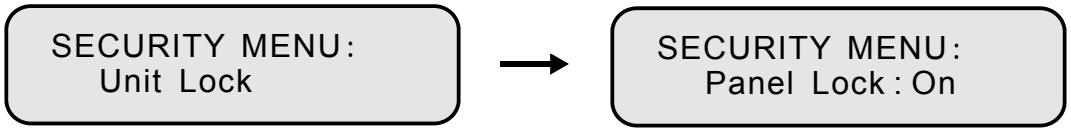
Protocol Setup



Select control protocol.
PCsw: select PC control.
ESRP: select external simple control device.
Normally use RS232 or RS485.

Security Sub-menu

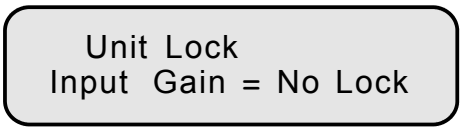
Pressing BACK / NEXT will navigate sub-menu, Pressing ENTER will enter sub-menu.



Select panel lock On/Off.
if panel has no operation, after 1 minutes,
panel operation will be locked.
LCD will display a icon .

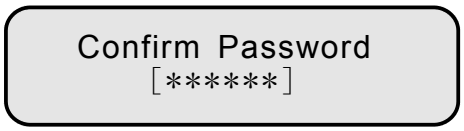
To exit panel lock, push "ENTER" button
two seconds, panel lock icon will be disappear.

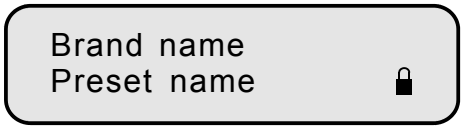
In "User Specific" setting, you can free set up
lock status depend on each function part.



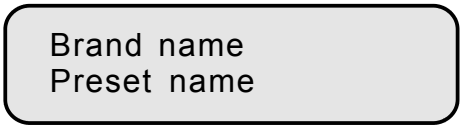
Turn rotary encoder and modify parameter.
Pressing BACK / NEXT will navigate sub-menu
Pressing ENTER to enter next sub-menu.

Lock Step





Unlock Step



Pressing ENTER will enter password.
Turn rotary encoder and modify character, move cursor position by pressing BACK or NEXT.
Pressing ENTER for enter password again.
while twice time password match, system will lock unit.

Lock status setting:
No Lock: without lock out.
Control: cannot change.
Display: cannot view.

	Xover Only	Xover + Trim	Xover + Trim + Mute	Changes Only	Changes + View	Changes + Mutes	EVERYTHING
Input Gain	No Lock	No Lock	No Lock	Control	Display	Control	Display
Input Phase	No Lock	No Lock	No Lock	Control	Display	Control	Display
Input Delay	No Lock	No Lock	No Lock	Control	Display	Control	Display
Input Noisegate	No Lock	No Lock	No Lock	Control	Display	Control	Display
Input HPF*	No Lock	No Lock	No Lock	Control	Display	Control	Display
Input Compressor*	No Lock	No Lock	No Lock	Control	Display	Control	Display
Input PEQs	No Lock	No Lock	No Lock	Control	Display	Control	Display
In GraphEQ	No Lock	No Lock	No Lock	Control	Display	Control	Display
Output Gain	No Lock	Display	Display	Control	Display	Control	Display
Output Phase	Display	Display	Display	Control	Display	Control	Display
Output Delay	Display	Display	Display	Control	Display	Control	Display
Output Xover	Display	Display	Display	Control	Display	Control	Display
Output PEQs	Display	Display	Display	Control	Display	Control	Display
Out Compressor*	Display	Display	Display	Control	Display	Control	Display
Output Limiter	Display	Display	Display	Control	Display	Control	Display
Input Links	No Lock	No Lock	No Lock	Control	Display	Control	Display
Input Mutes	No Lock	No Lock	No Lock	No Lock	No Lock	Control	Control
Input Name	No Lock	No Lock	No Lock	Control	Control	Control	Control
Output Links	Display	Display	Display	Control	Display	Control	Display
Signal Routing	Display	Display	Display	Control	Display	Control	Display
Output Mutes	No Lock	No Lock	Control	No Lock	No Lock	Control	Control
Output Name	Control	Control	Control	Control	Control	Control	Control
Menu System	No Lock	No Lock	No Lock	No Lock	No Lock	No Lock	Control
Memory Store	No Lock	No Lock	No Lock	No Lock	No Lock	No Lock	Control
Memory Load	No Lock	No Lock	No Lock	No Lock	No Lock	No Lock	Control
File Operation	No Lock	No Lock	No Lock	No Lock	No Lock	No Lock	Control

(*)Note: Optional, depend on different devices.

System Sub-menu

MAIN MENU:
System Sub-Menu

SYSTEM MENU:
Load Preset Option

Load Preset Option

Load Preset Option
Status : Without Mute

Without Mute: Load preset parameters directly (default).
With Mute: Mute all outputs, load preset all parameters, Unmute all outputs.

SYSTEM MENU:
Load Preset Mute

Load Preset Mute

Load Preset Mute
Status : LoadMute

AutoMute: Force all output mute on after loading preset.
LoadMute: Load output MUTE status in preset stored (default).

Change device title name on LCD screen top line.

SYSTEM MENU:
Device Name

[ENTER] to edit
Speaker Processor

Pressing ENTER to edit.

Set device name
Speaker Processor

Device name length is 16 character.
Turn encoder and modify character.
move cursor position by pressing BACK or NEXT.

Pressing ENTER for confirm.
Pressing QUIT for exit.

[ENTER] to store
Speaker Processor

Pressing ENTER again for confirm and store.

System Status will display firmware and hardware version infomation.

SYSTEM MENU:
System Status

FirmwareVersion 1.00
HardwareVersion 1.00

Specifications

ANALOG INPUTS

Number of Inputs:	2/3/4 electronically balanced.
Impedance:	> 10k ohms.
CMRR:	> 55dB @ 1kHz.

ANALOG OUTPUTS

Number of Outputs:	4/6/8 electronically balanced.
Impedance:	< 60ohms
Min. Load:	600ohm
Max. Level:	+22dBu

ADC/DAC PERFORMANCE

ADC Dynamic Range:	> 114dB, 20Hz ~ 20kHz (A-Weight)
DAC Dynamic Range:	> 114dB, 20Hz ~ 20kHz (A-Weight)

SYSTEM PERFORMANCE

Digital Audio Sample Rate:	192kHz
Frequency Response:	+/- 0.5dB, 20Hz ~ 35kHz
Signal to noise ratio:	> 110dB (A-Weight)
Distortion:	< 0.006% @1kHz, +4dBu
Latency:	0.33mS (4 in 8 Out / 4 In 6 Out / 3 In 6 Out) @192k

PARAMETERS

Input Gain:	-40dB ~ +6dB in 0.1dB steps
Output Gain:	-40dB ~ +15dB in 0.1dB steps.
Delay:	1300mS(Input), 680mS(Output), depend on different devices. Min Step Size: 0.005mS(2mm).
Graphic EQ	31 per Input.
Multi-Type Filters:	15 per Input, 15 per Output. Freq. Range: 20Hz ~ 32.5kHz, 1 Hz steps. Filter Q: 0.4 ~ 128, BW: 0.011 ~ 3.0 (Octave). Filter Type: Parametric Equaliser HiShelf-6dB, HiShelf-12dB, HiShelf-Q. LoShelf-6dB, LoShelf-12dB, LoShelf-Q. Variable Q Highpass, Lowpass. Bandpass, Notch, Allpass-90, Allpass-180.
High and Lowpass Filters	Freq. Range: 20Hz ~ 32.5kHz, 1 Hz steps. Slope: 6/12/18/24/36/48 dB/Octave. Type: Butterworth, Linkwitz-Riley, Bessel.
Limiters	Threshold: -20 ~ +22dB, 1dB steps. Attack time: 1 ~ 100mS. Release time: 0.1 ~ 2.0 second.

DISPLAY

Character LCD:	20 x 2

CONNECTORS

Inputs:	3 pin female XLR
Output:	3 pin male XLR
USB:	Type-B
RS232:	9 pin DEE connector
RS485:	3 pin XLR
Power:	3 pin IEC

POWER SUPPLY

Power Voltage:	~220VAC @50/60Hz
Power Consumption:	< 20 watts

PHYSICAL

Weight:	2.5kg. Net (3.5kg. Shipping)
Dimensions:	1.75"(44mm)H x 19"(482mm) W x 11.2"(285mm)D