

User Manual

DSP 24 Digital Signal Processor



Safety instructions

When using this electronic device, basic precautions should always be taken, including the following:

- 1 Read all instructions before using the product.
- 2 Do not use this product near water (e.g., near a bathtub, washbowl, kitchen sink, in a wet basement or near a swimming pool etc).
- 3 Use this device when you are sure that DSP processor has a stable base and it is fixed securely.
- 4 This product, in combination with loudspeakers and amplifier may be capable of producing sound levels that could cause permanent hearing loss. Do not operate for a long period of time at a high volume level or at a level that is uncomfortable. If you experience any hearing loss or ringing in the ears, you should consult with otorhinolaryngologist.
- 5 The product should be located away from heat sources such as radiators, heat vents, or other devices that produce heat.
- 6 The product should be connected to a power supply that is described in the operating instructions or are marked on the product.
- 7 The power supply should be undamaged and never share an outlet or extension cord with other devices. Never leave device plugged into the outlet when it is not being used for a long period of time.
- 8 Care should be taken that objects do not fall into liquids and liquids would not be spilled on the device.
- 9 The product should be serviced by qualified service personnel if:
 - The power supply or the plug has been damaged.
 - Objects have fallen into or liquid has been spilled on the product.
 - The product has been exposed to rain.
 - The product has been dropped or the enclosure damaged.
- 10 There are some areas with high voltage inside, to reduce the risk of electric shock do not remove cover of the microphone receiver or power supply. The cover should be removed by the qualified personnel only.


 CAUTION RISK OF ELECTRIC SHOCK DO NOT OPEN	To reduce the risk of electric shock, do not remove screws. No user-serviceable parts inside. Refer servicing to qualified service personnel. To reduce the risk of fire, electric shock or product damage, do not expose this apparatus to rain, moisture, dripping or splashing and that no objects filled with liquids, such as vases, shall be placed on the apparatus.
---	---

Table of contents

Before you start

Introduction.....	2
Features.....	2

Operation

Front & rear panel functions.....	3
-----------------------------------	---

Software interface

Connecting to device & navigating windows.....	4
Audio setting.....	5
System setting.....	10

Specifications

General specifications.....	11
-----------------------------	----

Before you start

DSP24 – 2 inputs and 4 outputs DSP for line level audio signal processing and routing. Intuitive operation software gives easily understandable access to mandatory parameters of any audio system drive by DSP24. Device perfectly fits small size audio installations to mix and rout audio, split frequencies for two-way audio systems, adjust timing, add noise gate, set EQ or add audio limiter. Ideal for bars, small disco halls and high quality background music.

FEATURES

- Digital signal processor 2 x 4
- Balanced inputs and outputs
- 24 bit AD/DA converters
- 48 kHz sampling rate
- Gate, EQ, crossover, delay, limiter
- Type-B USB port to connect PC
- 10 preset memory
- Device booting preset
- Mounting brackets to 19" rack included

Operation

Front & rear panel functions

LED INDICATOR

LED indicator illuminates when device is ON. Switch device ON or OFF with the power switch on the back panel.

USB TYPE-B CABLE SOCKET

Connect your device with PC using type-B USB cable.

INPUT & OUTPUT CONNECTORS

Balanced XLR connectors for sound signal inputs and outputs. Use balanced sound cables

MAINS POWER CONNECTOR

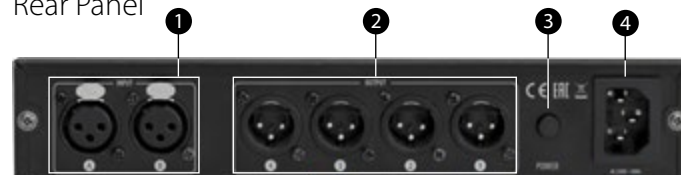
Connect device to mains power supply using provided power cable.

Front Panel



1. Power indicator LED | 2. USB type-B cable socket

Rear Panel



1. Signal input XLR connectors | 2. Signal output XLR connectors
3. Power switch | 4. Mains power connector

Software interface

Connecting to device & navigating windows

SYSTEM REQUIREMENTS

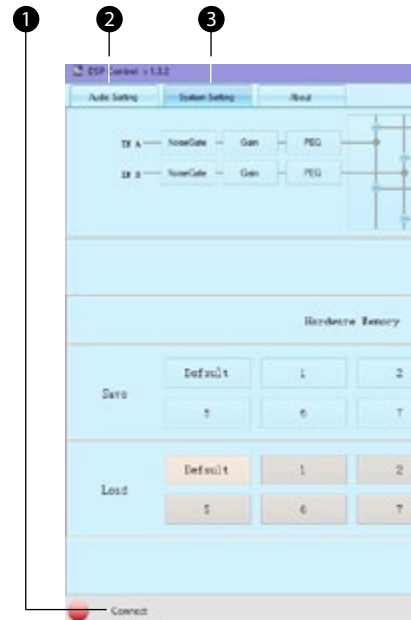
Included software works with Windows XP / WIN7 / WIN8 / WIN10 x64 or x32 operating system, and can run directly from PC without installation.

CONNECTING TO DEVICE

Connect device to PC using USB type-B cable. Run DSP Control software the computer. Click "Connect" button (1) in the lower left corner.

SWITCHING WINDOWS

The software has two main windows for audio and device settings. Click on the tabs "Audio Setting" (2) or "System Setting" (3) to switch window.



Software interface

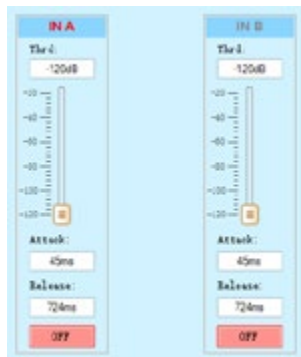
Audio setting

NAVIGATING SETTINGS

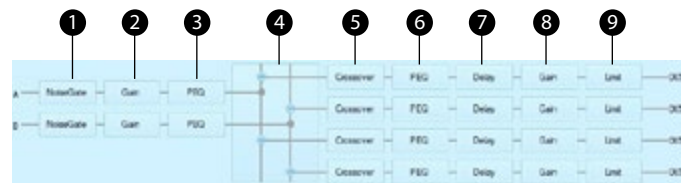
The DSP Control software gives a visual representation of the signal path. Click on the setting button for the selected channel to enter adjustment screen.

1. NOISE GATE

Set the threshold level, attack and release time for channel input noise gate.



Audio signal path



- 1. Noise gate | 2. Input gain | 3. Input equalizer
- 4. Signal routing matrix | 5. Crossover | 6. Output equalizer
- 7. Output delay | 8. Output gain | 9. Limiter

Software interface

Audio setting

2. INPUT GAIN

Set the signal input gain using the slider, or by entering specific value in dB. Here the channel can be muted or phase-inverted.



3. INPUT EQUALIZER

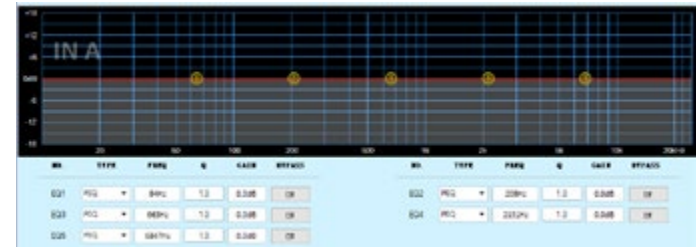
Input channels have separate 5-band equalizers. Each band can be set as parametric (PEQ), low or high shelf (LSLV / HSLV).

Click and hold left button on the yellow circle with a band number and drag it in the frequency plot to set the frequency and gain. Use right mouse button to change Q setting for PEQ band.

Every parameter can also be set by entering specific values in the chart.

EQ BYPASS button mutes and unmutes all EQ bands at once.

EQ RESET button restores all EQ settings to the default values.

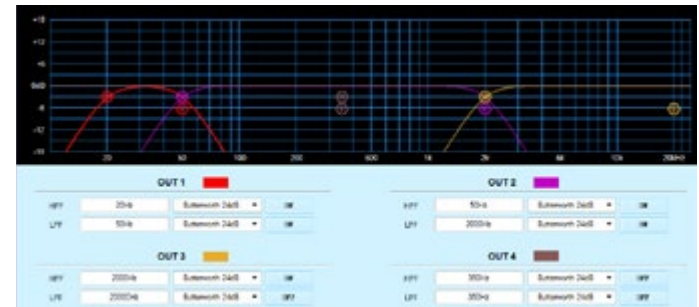


4. SIGNAL ROUTING MATRIX

Note: routing is completely flexible and allows both inputs to go to any number of outputs. Unrouted input signals will not be audible, also when sent to the same output signals from both inputs will be summed.

DSP 24 can function as a crossover, with separate settings for each output.

Set the high-pass and low-pass filters for each output by entering a number in the chart and selecting roll-off curve shape from the list.



Software interface

Audio setting

6. OUTPUT EQUALIZER

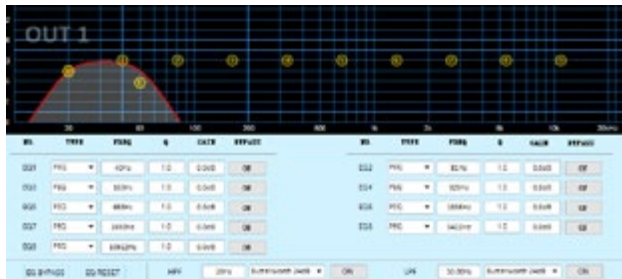
Output channels have separate 9-band equalizers. Each band can be set as parametric (PEQ), low or high shelf (LSLV / HSLV).

Click and hold left button on the yellow circle with a band number and drag it in the frequency plot to set the frequency and gain. Use right mouse button to change Q setting for PEQ band.

Every parameter can also be set by entering specific values in the chart.

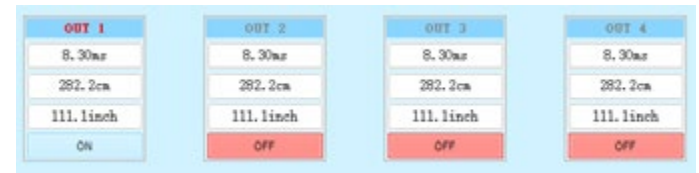
EQ BYPASS button mutes and unmutes all EQ bands at once.

EQ RESET button restores all EQ settings to the default values.



7. OUTPUT DELAY

Set a delay for each output channel. Delay range is 0.01-8.30 ms., value can also be entered in milliseconds or in centimetres or inches.

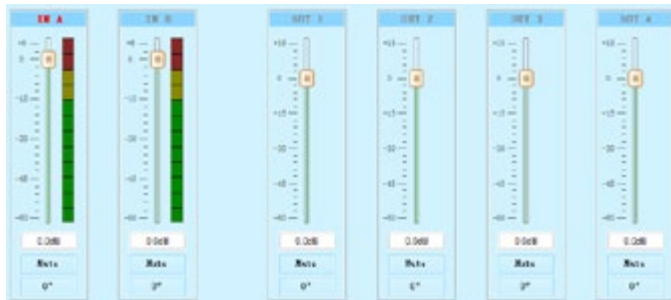


Software interface

Audio setting

8. OUTPUT GAIN

Set the output level using the slider, or by entering specific value in dB. Here the output can be muted or phase-inverted.



9. LIMITER

Set a limiter for each output channel with a threshold fader or by entering a specific number in dB. Limiter release time has a range of 9-8686 ms.



Software interface

System setting

HARDWARE MEMORY

DSP 24 can save 9 user defined presets in internal memory.

Click a preset button in the "Save" section to enter new preset name and save parameters.

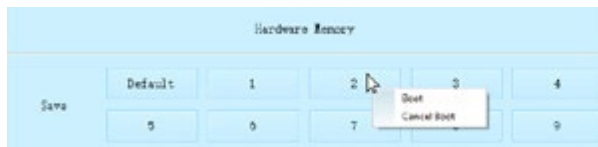
Click a preset button in the "Load" section to restore saved parameters.

DEVICE BOOT PRESET

By default, DSP 24 will boot with last set parameters. Alternatively, it can load a specific preset after power-up.

To select boot preset, right-click preset button in the "Save" section and select "Boot". Device will load selected preset every time it powers on.

To cancel boot preset, right-click any preset button in the "Save" section and select "Cancel Boot".



PARAMETERS: EXPORTING & IMPORTING

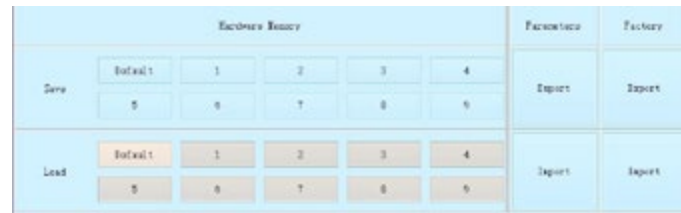
Current device parameters can be exported as a file to PC for future use or for easy configuration of multiple DSP 24 devices.

Click "Export" button in the "Parameters" column to export a file, click "Import" to load file from PC.

FACTORY: EXPORTING & IMPORTING

All device presets can be exported as a single file to PC for future use or for easy configuration of multiple DSP 24 devices.

Click "Export" button in the "Factory" column to export a file, click "Import" to load file from PC.



General Specifications

DSP24 Digital Signal Processor

Power supply	~ 230 V / 50 Hz
Power consumption	5W
Input type	Balanced XLR
Input impedance	10 k Ω
Output type	Balanced XLR
Output impedance	1 k Ω
Maximum output level	+8 dBu
Maximum gain	-60 dBu
Frequency response	20 Hz – 20 kHz
Distortion	< 0.01% (0 dBu / 1 kHz)
Sampling rate	48 kHz
AD/DA converter	24 bit

Dynamic range	100 dBu
Weight	1,1 kg
Dimensions	242 mm x 112 mm x 44 mm

The specifications are correct at the time of printing this manual. For improvement purposes, all specifications for this unit, including design and appearance, are subject to change without prior notice.