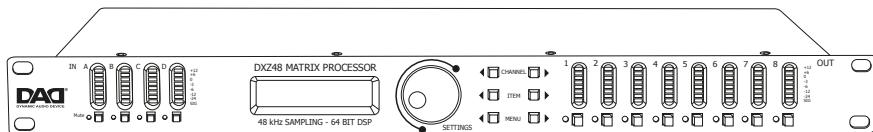


# DXZ48

Matrix Processor



## USER MANUAL

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### Warranty

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#### Packing content:

- DXZ48
  - User manual
-



## WARNING!



**Before carrying out any operations with the unit, carefully read this instruction manual, and keep it with care for future reference.**

**It contains important information about the installation, usage and maintenance of the unit.**

## SAFETY

### General instruction

- The products referred to in this manual conform to the European Community Directives and are therefore marked with **CE**.
- The unit is supplied with hazardous network voltage (240V). Leave servicing to skilled personnel only. Never make any modifications on the unit not described in this instruction manual, otherwise you will risk an electric shock.
- Connection must be made to a power supply system fitted with efficient earthing (Class I appliance according to standard EN 60598-1). It is, moreover, recommended to protect the supply lines of the units from indirect contact and/or shorting to earth by using residual current devices appropriately sized.
- The connection to the main network of electric distribution must be carried out by a qualified electrical installer. Check that the main frequency and voltage correspond to those the unit is designed for, as given on the electrical data label.
- This unit is not for home use, only professional applications.
- Never use the fixture under the following conditions:
  - in places subject to excessive humidity;
  - in places subject to vibrations or bumps;
  - in places with temperature above 45°C or below 2°C.
- Make certain that no inflammable liquids, water or metal objects enter the fixture.
- Do not dismantle or modify the fixture.
- All work must always be carried out by qualified technical personnel. Contact the nearest sales point for inspection or contact the manufacturer directly.
- If the unit has to be put out of operation definitively, take it to a local recycling plant for an environmentally safe disposal.

### Warnings and installation precautions

- This product in combination with amplifier, may be capable of producing dangerous sound levels that could cause permanent hearing loss. Do not operate for a long period of time at high volume level or at a level that is uncomfortable.
- Do not install the fixture near sources of heat.
- If this device will be operated in any way different to the one described in this manual, it may suffer damages and the guarantee becomes void. Furthermore, any other operation may lead to dangers like short circuit, burns, electric shock, ect.
- The fixture must be located in a place where a proper ventilation or thermal dissipation is not impeded. Do not install the fixture in a confined space.
- Do not link the output of any processor channel back into another channel's input. Do not parallel or series connect a processor's output with any other processor's output.
- Please turn off the power switch before pulling off the power cord.
- Before starting any maintenance work or cleaning the unit, cut off power from the main supply.



## GENERAL INFORMATION

### Shipments and claims

The goods are sold "ex works" and always travel at the risk and danger of the distributor. Eventual damage will have to be claimed to the freight forwarder. Any claim for broken packs will have to be forwarded within 8 days from the reception of the goods.

### Warranty and returns

The guarantee covers the fixture in compliance with existing regulations. You can find the full version of the "General Guarantee Conditions" on our web site [www.musiclights.it](http://www.musiclights.it).

Please remember to register the piece of equipment soon after you purchase it, logging on [www.musiclights.it](http://www.musiclights.it). The product can be also registered filling in and sending the form available on your guarantee certificate. For all purposes, the validity of the guarantee is endorsed solely on presentation of the guarantee certificate. Music & Lights will verify the validity of the claim through examination of the defect in relation to proper use and the actual validity of the guarantee. Music & Lights will eventually provide replacement or repair of the products declining, however, any obligation of compensation for direct or indirect damage resulting from faultiness.

**The information provided in this manual has been carefully checked. However music & lights is not responsible for Any possible inaccuracy.**

## INTRODUCTION

Congratulations on the purchase of your DXZ48. DXZ series strives to be the best in high end digital audio processing. After you have become familiar with your processor, we encourage you to experiment and find the most effective and efficient way to run your system by utilizing the powerful processing of the DXZ48.

The DXZ48 is a powerful processor with four analog inputs, eight outputs (12dBu), 10 PEQ bands per input and output and a frequency range to 20kHz. The rugged analog input stage accepts input voltages of up to +23dBu thus matching any source on the market today, with an excellent dynamic range of 118dB. Using a switch-mode power supply for clean power supply rails and superior ruggedness, 64-bit digital processing and some of the best converters available on the market today, the DXZ48 offers sound quality that sets standards in professional as well as high-end home audio.

This User Manual describes how to operate the DXZ48's settings via the front panel controls. Alternatively, the DXZ48 can be configured completely via a remote connection to a PC, MAC, iPad or iPhone. Please refer to the Software User Manual for details on the remote control application.

Controlled via the front panel or via the remote control application, the DSP settings and coefficients are calculated on the fly at the moment of changing the parameters. Frequencies can be set with 1Hz accuracy, delays with 20 microseconds accuracy, and gains with 0.01dB accuracy. When editing values via the front panel, some values are limited in granularity; e.g. gain is set via 0.25dB steps in this case.

## OPERATING ELEMENTS AND CONNECTIONS

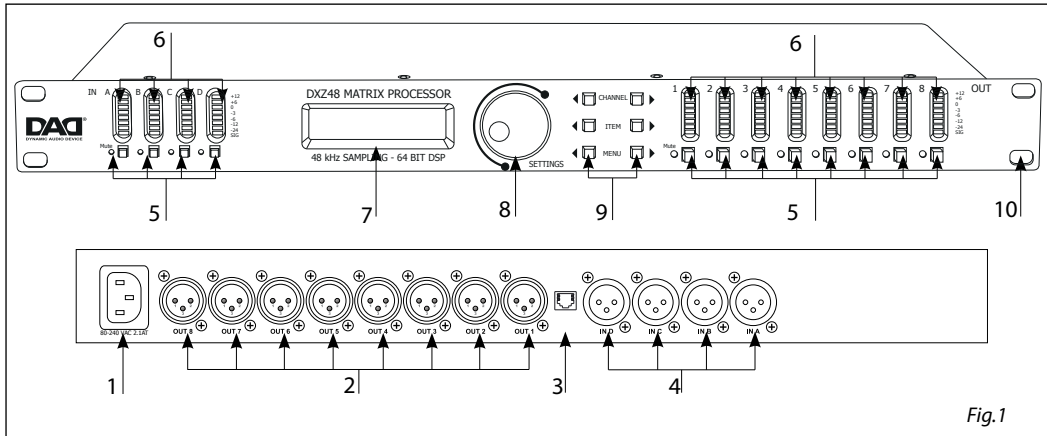


Fig.1

In addition to the available features described in this manual, you also have the option of controlling the processor remotely over your network. Please refer to the Software Manual for details.

1. **POWER IN:** mains plug for connection to a socket (80 to 240V 50Hz) via the supplied mains cable. The support for the mains fuse is located under the mains plug. Only replace a blown fuse by one of the same type. Be sure your amplifier is turned off before you plug in the mains supply cable into an electrical outlet.
2. **OUTPUT 1÷8:** XLR male connector with a balanced line level input. - Pin 1 = shield or ground; - Pin 2 = + positive or "hot"; - Pin 3 = - negative or "cold".
3. **NETWORK:** RJ45 connector; Connect to a router/wifi router with DHCP to enable automatic setup of the IP address. Connect to a PC/switch without setting a fixed IP and the unit will perform zero config. Setup a fixed ip to the unit, you need to connect by a DHCP or zero config network before to be able to change the ip address.  
Note: Only enable one of your network interfaces of the computer to avoid any issues.
4. **INPUT A-B-C-D:** XLR female connector with a balanced line level input. - Pin 1 = shield or ground; - Pin 2 = + positive or "hot"; - Pin 3 = - negative or "cold".
5. **MUTE:** press any of the front panel Mute keys to toggle the channel in and out of mute. The button will light red when the output is muted.
6. **LED OUTPUT BAROGRAPHS:** the Output barographs represent signal level relative to limiter threshold. These show the output level: SIG, -24dB, -12dB, -6dB, -3dB, 0dB (Limit), +6dB (CLIP).
7. **DISPLAY LCD.**
8. **THE ROTARY ENCODER:** to the right of the display screen there is a continuous rotary encoder that, when turned, changes the values in the value area of the screen. If this control is pushed in it will step through the inputs and outputs modes. If held down and turned it will enable fast switching through the available modes.
9. **FUNCTION BUTTONS:** The function buttons allow direct access to all editing and navigating functions. See section three for a detailed description on the functions of each of these buttons.
10. **MOUNTING HOLES** for fixing the rack.

## FUNCTIONS AND SETTINGS

### SYSTEM SETUP AND GAIN STRUCTURE

This product offers a wide range of tools for sound system design and setup. These tools can make your system more efficient and better sounding, but to get the best possible sound it is important to use these tools properly.

The following section explains how to maximize system gain and how to use the limiters to protect your amplifiers from clipping. In traditional system design, the output of your console would be routed to a system EQ, a compressor, and a crossover with output level control. From the crossover, there may be additional filters that are employed to improve the response of your speakers. There may also be limiters set up to keep

your amplifiers from going into clipping and protect your speakers from the hazards of a clipped signal. Your amplifiers play a vital role in system setup, because they are last item in the chain before your speakers and offer the greatest amount of gain (that is their job after all). If your limiters and amplifiers are incorrectly setup you will not be using your system to its fullest potential and could be harming your speakers. To ensure an optimal gain structure:

Play a signal at the nominal level from your mixing desk, and set the input gain of your processor to 0.

Set the crossovers that you want to use, while keeping the output gains also at 0.

With DISCONNECTED loudspeakers, turn up the volume of the power amplifiers entirely clockwise (full volume).

Now reduce the output gain and / or the output limiter setting to get the desired gain, so that the amplifier is just clipping and the built-in limiters of your processor are just limiting. If the amplifier does not have a built-in clip limiter, set your processor's limiter so that the amplifier does not clip.

Now turn down the volume of the power amplifiers, connect your speakers, and slowly increase the volume while checking the sound.

If all is well, there should be distortion-free sound, and the limiter LEDs are flashing or off, but not continuously on. If they are continuously on, reduce the output gain of your processor.

If you cannot reach enough signal level, increase the processor's input gain or turn up the level from your mixing desk.

### SETUP AND OPERATION

Before plugging the processor in, always make sure that the power supply matches the product specification voltage. Install this device on a flat, stable surface, not bent or curved. Do not supply power before all components of the system are set up and connected properly. Make sure your power amplifiers are switched on last in order to avoid transients, which could damage your speakers or annoy your audience.

#### 1 . System Check

After connecting all cables, you should mute all outputs first or turn the gain/level setting on your amplifiers to minimum. Activate the HF-outputs first. In case of wrong cabling, High Frequency (HF) audio signals will come out of bass-speakers that cannot be harmed this way. Vice versa, the Low Frequency (LF) audio signals would destroy your HF-speakers. It is advisable to install a large capacitor in series with HF drivers (47 - 100 uF). That way, drivers are somewhat protected against accidental instrumentation errors.

#### 2 . Input Setup

Press the Channel Up or Down button to select the input channel you wish to edit. Make the first settings with the output turned low or muted.

To toggle through the different items, press the Item Up or Item Down buttons.



### 2.1 . Gain

Adjust the gain by dialing the rotary encoder. The gain is adjusted in steps of 0.25dB. Smaller steps (0.01dB) can be set via the PC or MAC interface.



In AB Gain  
-2.25dB

### 2.2 . Input Selection

Select the source (Analog) by rotating the encoder.



In AB Input  
Analog

### 2.3 . Channel Link

By linking 2 channels, the settings are guaranteed to be identical for both channels, except for mixer and mute. Turn the encoder to set the Channel Link on or off.



In AB Link  
On



In A Link  
Off

## 3 . Output Setup

Press the Channel Up or Down button to select the output channel you wish to edit. Make the first settings with the output turned low or muted.

To toggle through the different items, press the Item Up or Item Down buttons.

### 3.1 . Gain

Adjust the gain by dialing the rotary encoder. The gain is adjusted in steps of 0.25dB. Smaller steps (0.01dB) can be set via the PC or MAC interface.



Out12 Gain  
-2.25dB

### 3.2 . Mixer

Turn the rotary encoder to mix the signal from the selected input to the selected output. Push the rotary encoder to select the input. Attention: The mixer is only available while the outputs are not linked by Channel Link. If the channels are linked, the mixer will be skipped.



Out1 Mixer  
In A: -6dB



Out1 Mixer  
In B: Off

### 3.3 . Delay

Set the delay time by turning the encoder. Select the displayed unit (ms or s, mm or m, feet, inches, or mils) by pushing the encoder.

Out12 Delay  
1.020ms

Out12 Delay  
100.23m

Out12 Delay  
244.5Feet

### 3.4 . Low Pass Filter

Adjust the Low Pass Filter frequency by turning the rotary encoder. You can switch the low pass filter off by turning the rotary encoder up (clockwise) until the frequency passes 20kHz.

Press the rotary encoder to change the filter type. Select the type by turning the rotary encoder. You can choose from: Butterworth 6dB, Bessel 6dB, Butterworth 12dB, Bessel 12dB, Linkwitz Riley12dB, Butterworth 18 dB, Bessel 18dB, Butterworth 24dB and Bessel 24dB. Higher order filters may be set by adding filter sections in the PEQ blocks (see below).

Out12 Low Pass  
Freq: 14500Hz

Out12 Low Pass  
Type: But24

### 3.5 . High Pass Filter

Adjust the high pass frequency by dialing the rotary encoder. You can switch the high pass filter off by dialing the rotary encoder down (counterclockwise) until the frequency passes 20Hz.

Press the rotary encoder to change the filter type. Select the type by turning the rotary encoder. You can choose from: Butterworth 6dB, Bessel 6dB, Butterworth 12dB, Bessel 12dB, Linkwitz Riley12dB, Butterworth 18 dB, Bessel 18dB, Butterworth 24dB and Bessel 24dB. Higher order filters may be set by adding filter sections in the PEQ blocks (see below).

Out12 High Pass  
Freq: 34Hz

Out12 High Pass  
Type: Bes12

### 3.6 . Parametric Equalizer (PEQ )

There are 10 bands of parametric equalization. Each band can be adjusted freely over the frequency range of 20Hz to 20kHz. Adjust the frequency by dialing the rotary encoder.

Press the rotary encoder to select the parameters. The available parameters are: Frequency (20Hz to 20 kHz), Gain (-12dB to +12dB), Q (0.2 to 25), Enabled (On or Off), Type (Bell, High Shelf, Low Shelf, Notch, All Pass, Band Pass, High Pass, Low Pass). For the Shelving filters, the Q value sets the steepness of the filter in dB/Oct.

Out12 PEQ 5  
Freq: 14500Hz

Out12 PEQ 5  
Gain: -7.75dB

Out12 PEQ 5  
Q: 1.5

Out12 PEQ 5  
Type: Bell

Out12 PEQ 5  
Enabled: On

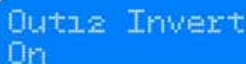
### 3.7 . Limiter

The limiter is a zero-attack peak limiter. Only the threshold and release can be set. Press the rotary encoder to select the parameters. The release value is displayed in dB per second.

Out12 Limiter  
Thr.: 23.00dBuOut12 Limiter  
Rel.: 50dB/s

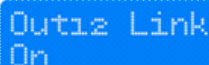
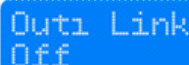
### 3.8 . Phase Inversion

Turn the rotary encoder to switch phase inversion on or off.

Out12 Invert  
OffOut12 Invert  
On

### 3.9 . Channel Link

By linking 2 channels, the settings are guaranteed to be identical for both channels, except for mixer and mute. Turn the encoder to set the Channel Link on or off.

Out12 Link  
OnOut1 Link  
Off

## 4 . System Menu

Push the Menu button to enter the system menu. Push the Menu button again to toggle through the menu items. The available menu items are:

### 4.1 . Load Preset

Turn the rotary encoder to select the preset you wish to load. Push the rotary encoder to select it, then turn it again to select “YES” and confirm again by pushing the rotary encoder knob. The preset is loaded and all settings are applied immediately. All settings that were in the unit prior to loading the preset will be erased.

This action can not be undone.

The presets contain all filter, dynamics, gain settings etc; in other words, everything that makes out a loud-speaker configuration. Presets do NOT contain the name of the unit, network configuration, automatic standby delay, user access rights and passwords.

### 4.2 . Save Preset

Turn the rotary encoder to select the location of the preset. If that location is not empty, the preset in that location will be overwritten. This action can not be undone.

The system will ask you to give a name to the preset name. Select a character in the cursor position by turning the rotary encoder; pushing the rotary encoder confirms the character selected and moves the cursor to the next character to edit. Pushing the exit/ESC button erases the last confirmed character. Once the name is set up, push the menu button again. If you want to continue storing the preset, select Yes by turning the rotary encoder and confirm by pushing it. To cancel, push the exit button. Now your preset is saved in the selected location.

The presets contain all filter, dynamics, gain settings etc; in other words, everything that makes out a loud-speaker configuration. Presets do NOT contain the name of the unit, network configuration, automatic standby delay, user access rights and passwords.

### 4.3 . Access Level

The DXZ48 has the option of locking away the front panel controls to avoid tampering of settings by unauthorized persons. To lock the unit, select “Locked” by turning the rotary encoder, and push it to confirm. The system will ask you to enter a password. Select a character in the cursor position by turning the rotary

encoder; pushing the rotary encoder confirms the character selected and moves the cursor to the next character to edit. Pushing the exit/ESC button erases the last confirmed character. Once the password is set up, push the menu button again and the unit will be locked.

**ATTENTION:** Make sure to remember the password! When the unit is locked and you forgot the password, it is not possible to unlock it without contacting your local service representative.

To unlock the unit select "Unlocked" and enter the password. The password is automatically checked after each entered character, and the unit will exit the system menu when the password is confirmed. The default password is "Password".

#### **4.4 . Version Information**

By pushing the rotary encoder, the display toggles through the version information about the unit (serial number, firmware version), as well as some parameters like IP address, subnet mask, MAC address etc.

## TECHNICAL SPECIFICATION

Technical specification	DXZ48
Product Type	Matrix Processor
Input	4 way mono
Output	4 way stereo, 8 way mono
Connection	Ethernet port
Dynamic range	110dB
Max Input Level	+23dBu
Frequency Responce	20Hz to 20kHz
Distortion	<0.01%, (+10dBu, 20Hz to 20kHz)
DSP	64 bit
Sampling rate	48 kHz
A/D - D/A Converters	24 bit
Gain OUT	+12dB to -48dB and mute, 0.25dB steps
Delay	output 2000ms
Crossover Filters Slope	12, 18 & 24dB/octave Bessel and Butterworth 12 & 24dB/octave Linkwitz Riley
Parametric Filters	10 for input and output: Bell, High Shelf, Low Shelf, Notch, All Pass, Band Pass
EQ frequency	10Hz to 20kHz
EQ gain	+12dB to -12dB, 0.25dB steps
EQ width	Q 25 to 0.2 - BW 4.75 to 0.06
Limiter	Zero-attack peak limiter
Compressor	True RMS compressor. Adjustable threshold, attack time, release, hold
Audio Connectors	3-pin XLR
Power supply	80 to 240V AC, 50/60Hz
Weight	1,7 Kg
Dimensions (WxHxD)	482x44x175mm





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