



**PKN AUDIO**



# DMP 4X4 DSP Matrix Processor User Manual

## ***Table of Contents***

<b>1. Specifications.....</b>	<b>2</b>
<b>2. Safety Warnings.....</b>	<b>3</b>
<b>3. Product Overview.....</b>	<b>3</b>
3.1 Front Panel.....	4
3.2 Rear Panel.....	4
3.3 Installation.....	5
<b>4. Software Overview.....</b>	<b>6</b>
4.1 Device Specific Features.....	7
<b>5. Troubleshooting.....</b>	<b>8</b>

# 1. Specifications

Parameter	Details
Connectors	4 x Phoenix Inputs (+48V Phantom capable) 4 x Phoenix Outputs 2 x Gigabit Ethernet Port (PortA: PoE capable) Daisy-Chain Power in & out Power Adapter
Analog Audio Channels	4 In / 4 Out
Network Audio Channels	4 In / 4 Out
Max Input Level	+14dBu @ 1kHz, THD+N ≤ 1%
Max Output Level	+14dBu @ 1kHz, THD+N ≤ 1%
Frequency Response	±0.2dB (20Hz ~ 20kHz)
Dynamic Range	110dB, A-weighted
Signal-to-Noise Ratio	99dB @ re+4dBu, A-weighted, 0dB Mic Gain 85dB @ re+4dBu, A-weighted, 24dB Mic Gain
THD+N	0.005% @ re+4dBu, A-weighted, 1kHz, Unity Gain
Mic Preamp Gain	4 Steps: 0dB / 15dB / 20dB / 24dB
Phantom Power	48V, 10mA
CMRR	≥50dB@1kHz
Channel Isolation	90dB, A-weighted, re+4dBu
Sample Rate	48/96kHz
Bit Depth	16bit, 24bit, 32bit
Network Latency	1ms, 2ms, 5ms, 6ms
Network Protocol	AES67, ST2110, RAVENNA
DSP Processing Functions	HPF, LPF, PEQ, Delay, Phase Inversion, FIR Filter, Compressor, Limiter, Expander, Noise Gate, Signal Generator, Feedback Suppression
Power Supply Modes	Adapter / Class 1 IEEE 802.3af PoE / Daisy-Chain
Adapter Power	Rated 12VDC, 1.5A
Daisy-Chain Power	Requires adapter Max daisy-chained units: 2
Dimensions	108 × 149 × 45mm
Weight	0.54kg

## **2. Safety Warnings**

To reduce the risk of electric shock or fire, DO NOT OPEN the device casing, or expose the device to rain or moisture!

The product must be kept away from heat sources!

**DO NOT OPEN THE DEVICE!**

**Please refer all servicing to qualified service personnel!**

Servicing may be necessary if:

1. Foreign objects or liquid might have entered the device's casing.
2. The device has been exposed to rain.
3. The device does not appear to operate normally, or there is noticeable issues with its performance.
4. The device has been dropped, or the casing is damaged.

If you have any questions, please contact your PKN Audio dealer, or write us an e-mail:

[info@pknaudio.com](mailto:info@pknaudio.com)

## **3. Product Overview**

The **DMP 4X4** is the smaller, more compact version of the DMP 4X4R. The 4X4 is utilizing 4 analog inputs and outputs via Phoenix connectors, with the addition of 4 (or 8\*) digital inputs and outputs through ethernet.

All 4 analog inputs can be used selectively to directly power any device that uses +48V Phantom power (condenser microphones, active DI-boxes etc.) directly from the front panel, or remotely through our software.

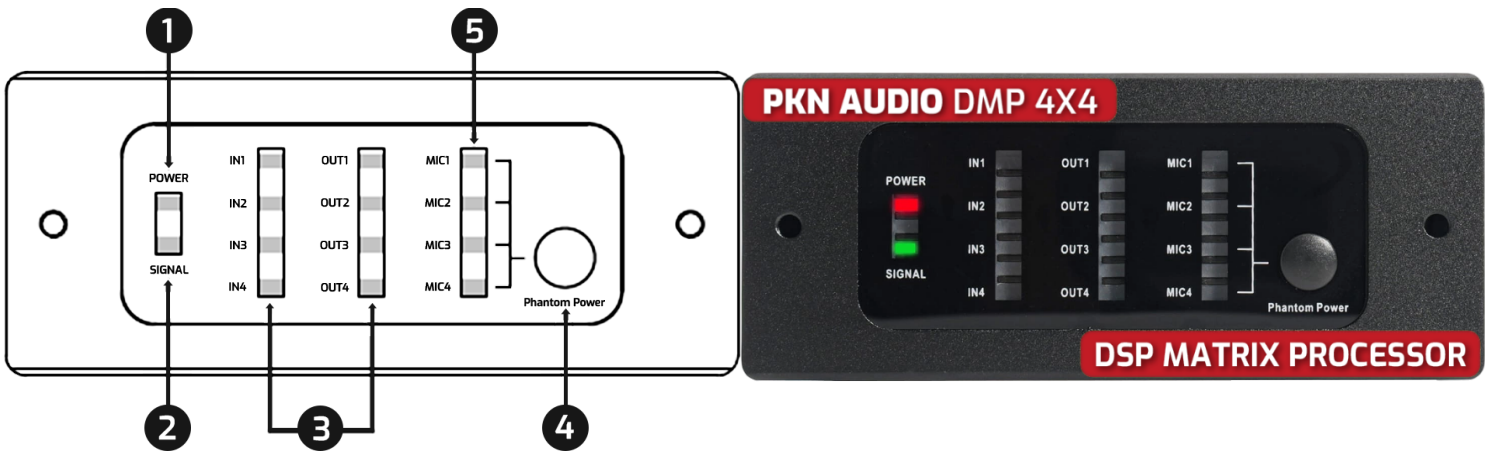
Our **DSP Matrix Series** devices, including the **DMP 4X4**, natively support **AES67**, **ST2110** and **RAVENNA** protocols, and they are able to transmit lossless, ultra-low latency digital audio streams over a local area network (LAN) with Layer 3 capabilities, which can interconnect even with other mainstream AoIP devices (such as QSC, Dante, Dolby, etc.) as well.

These features are realised in the same ecosystem, and can be managed remotely from the **PKN Audio DSP Controller** Software where you can customize every DSP feature, along with analog/digital audio matrix routings.

You can download the latest software from [Our Website!](#)

\*Currently the 8 Digital In-and-Out channels option is only supported in 48kHz Sample Rates, with custom firmware modifications. Please contact us at [info@pknaudio.com](mailto:info@pknaudio.com) for further details!

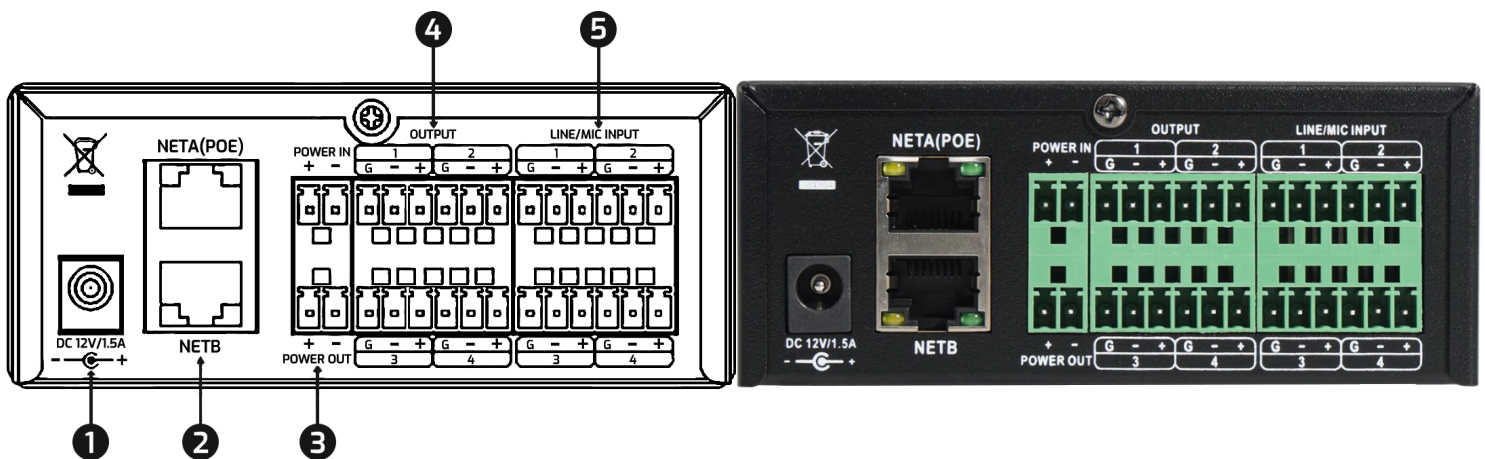
### 3.1 Front Panel



1. **POWER indicator:** - Red: The device is powered
2. **SIGNAL indicator:** - Green: Network is connected | Orange: Disconnected from network
3. **IN/OUTPUT indicator:** - Green: Signal presence | Red: Signal clipping
4. **Phantom Power button\*:** - Tap: Select channel  
 - Hold for 3s: Enable/Disable +48V Phantom for selected channel  
 - Hold for 5s: Device Locator (Highlights the device in the software)  
 - Hold for 10s (all LEDs flash twice): Factory reset
5. **Phantom Power indicator:** - Red Blinking: Current channel is selected  
 - Red Continuous: Current channel +48V Phantom Enabled

\*Phantom power can also be enabled/disabled remotely via software. See: [4. Software Overview](#)

### 3.2 Rear Panel



1. DC 12V/1.5A Power Supply Connector
2. Gigabit Ethernet Connectors (only NET A port Supports PoE)
3. Daisy-Chain Power Connectors\* (IN: receive power, OUT: send power towards another device)
4. Analog Output Phoenix Connectors (Ground, -, +)
5. Analog Input Phoenix Connectors (+48V Phantom Power capable)

\*Daisy-Chain power requires the first device powered by DC12V power supply, and is capable to power 2 more devices.

### 3.3 Installation

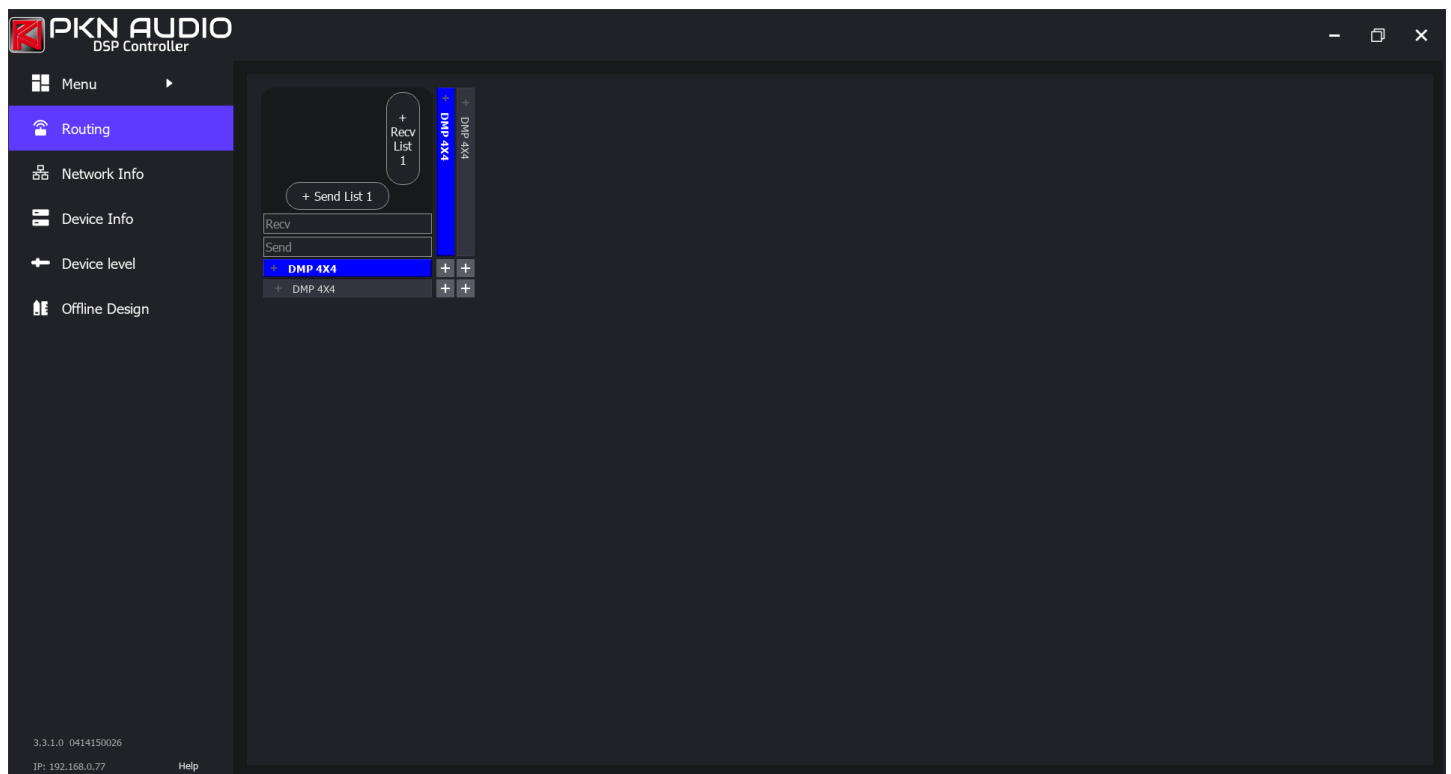
The DMP 4X4 can be powered on via PoE (Power over Ethernet, 802.3af Class 1), the supplied 12VDC, 1.5A adapter, and if the adapter is used, a following second and third device can also be powered via Daisy-Chain, through the Power In / Power Out Phoenix terminals.

Once the sufficient power is supplied, the device automatically powers on.

After the Ethernet connector's network port indicator lights up, the device will take ~20 seconds to boot, then it's operational.

Make sure that the computer, running the **PKN Audio DSP Controller** is on the same network, as the device, and that in the software, the correct network card is selected.

If the devices don't show up, please consult the **5. Troubleshooting** section.



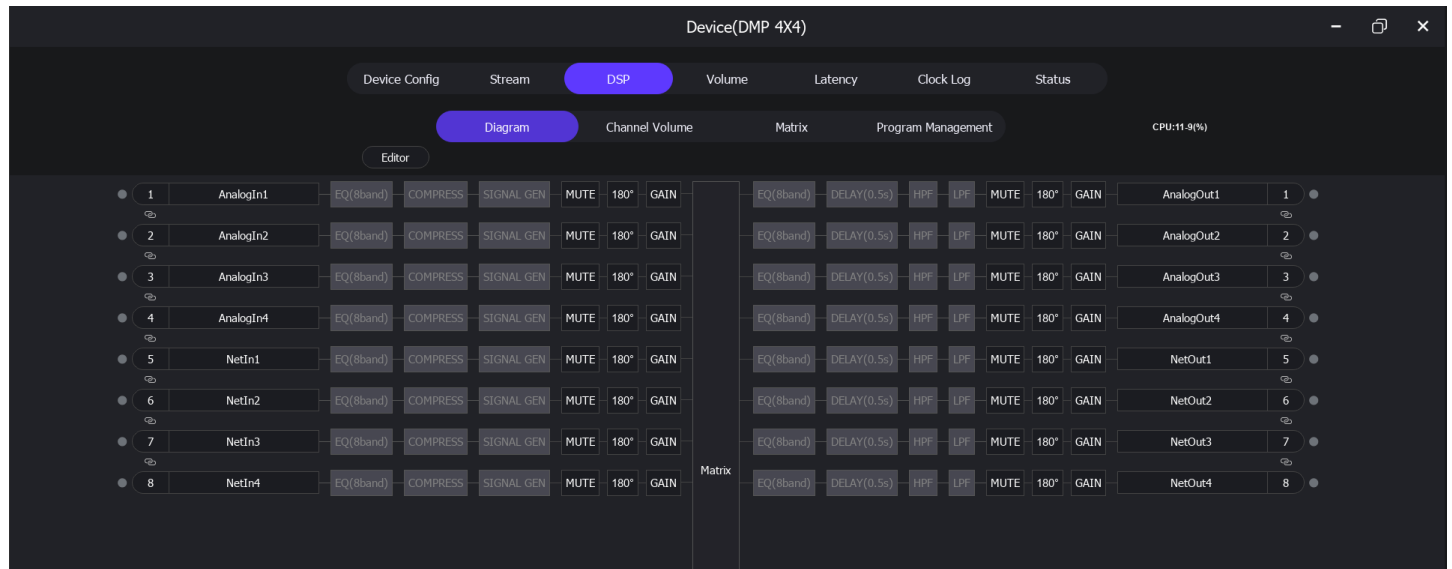
Once the device is found you can set up its network channel routings, or open the `Device Details` menu to configure it further, by double clicking it's name from any of the side menus.

## 4. Software Overview

The DMP 4X4 supports 4 Analog In-and-Out channels along with 4 Digital In-and-Out channels by default in 96kHz sample rates.

Currently the 8 Digital In-and-Out channels option is only supported in 48kHz with custom firmware modifications.

Please contact us at [info@pknaudio.com](mailto:info@pknaudio.com) for further details!



Each channel's DSP functions are modifiable, by clicking on the Editor button, and the routings can be set up in the Matrix tab.

By default, the matrix is set up to route the inputs to their corresponding outputs, as the following:

	AnalogOut1	AnalogOut2	AnalogOut3	AnalogOut4	NetOut1	NetOut2	NetOut3	NetOut4
Clear All Route								
Reset All Gain								
All Sharing								
	Sharing	Sharing	Sharing	Sharing	Sharing	Sharing	Sharing	Sharing
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Set 0	Set 0	Set 0	Set 0	Set 0	Set 0	Set 0	Set 0
AnalogIn1	0	0	0	0	0	0	0	0
AnalogIn2	0	0	0	0	0	0	0	0
AnalogIn3	0	0	0	0	0	0	0	0
AnalogIn4	0	0	0	0	0	0	0	0
NetIn1	0	0	0	0	0	0	0	0
NetIn2	0	0	0	0	0	0	0	0
NetIn3	0	0	0	0	0	0	0	0
NetIn4	0	0	0	0	0	0	0	0

For further, more detailed informations about all software features, please consult the [DSP Software Manual](#).

## 4.1 Device Specific Features

Apart from the front panel's button, the +48V Phantom Power can also be toggled remotely, from the software in the *Device Details - Volume* tab.

Here you can set up the Microphone Gain, if necessary, choosing between 0/15/20 or 24dB:

The screenshot displays the 'Device(DMP 4X4)' software interface, specifically the 'Volume' tab. The interface is organized into several sections:

- Navigation:** At the top, there are tabs for 'Device Config', 'Stream', 'DSP', 'Volume' (selected), 'Latency', 'Clock Log', and 'Status'.
- Channel Selection:** Below the navigation, there are buttons for 'Input Channel' (selected) and 'Output Channel'.
- Input Channels:** The main area is divided into two columns: 'AnalogIn' (In1 to In4) and 'NetIn' (NetIn1 to NetIn4). Each channel has a vertical level meter with a scale from -60 dBFS to 0 dBFS.
- Gain and Mute:** Below the level meters, there are gain sliders (0 dB to +12 dB) and 'Mute' buttons for each channel.
- Phantom Power:** At the bottom, there are 'PhantomPower' toggle buttons for each channel. The 'PhantomPower' for In4 is currently set to 'ON'.
- MicGain:** Below the PhantomPower buttons, there are 'MicGain' dropdown menus. The 'MicGain' for In2 is currently set to '24'.

A red box highlights the 'MicGain' and 'PhantomPower' settings for the four input channels.

## 5. Troubleshooting

- *The device's LEDs are dark.*

-If Power Supply is used, make sure it's the original 12V/1.5A, supplied with the product.

-If Daisy-Chain is used, make sure the cables and connectors are intact, and in the correct polarity.

-If you are using PoE, make sure the ethernet cable is connected properly on both ends, and the power supplying switch is also powered, and sufficient.

- *The software doesn't recognize the device, it doesn't show up in the GUI.*

-Check the Ethernet connector's LED status along the front panel's: Flashing GREEN means good connection, flashing ORANGE means the communication is abnormal, or there is no sufficient power to the device.

-If the status shows green, make sure that the computer's firewall or antivirus software is not blocking the software's network functions.

- *I can see the device in the software, but cannot control it properly.*

-Reboot (power cycle) the device.

-Check for static or dynamic (DHCP) IP settings.

-Make sure that the device's IP address and the computer's IP address are in the same subnet (e.g., if the device's IP is 192.168.10.123, the computer's IP should be 192.168.10.xxx), and ensure that no other devices on the network conflict with either the device's or computer's IP address.

- *There is no output.*

- Ensure the input signals are present on the software, they're not muted and the matrix connections are set up properly both in the software's main **Routing** and the Device's **DSP** → **Matrix** menus.