



PKN AUDIO



DMP 4X4R DSP Matrix Processor User Manual

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1. Specifications

Parameter	Details
Connectors	4 x MIC/LINE Inputs (XLR-F, +48V Phantom capable) 4 x Balanced Outputs (XLR-M) 2 x Gigabit Ethernet Port (PortA PoE) 8-port GPIO Interface 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
Adapter Power	Rated 12VDC, 1.5A
Daisy-Chain Power	Requires adapter Max daisy-chained units: 2
Dimensions	482 × 164 × 45 mm
Weight	1.84 kg

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

3. Product Overview

The **DMP 4X4R** is the ultimate choice for DSP enabled Matrix Processing, with 4 analog XLR inputs and outputs, 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.), remotely through our software.

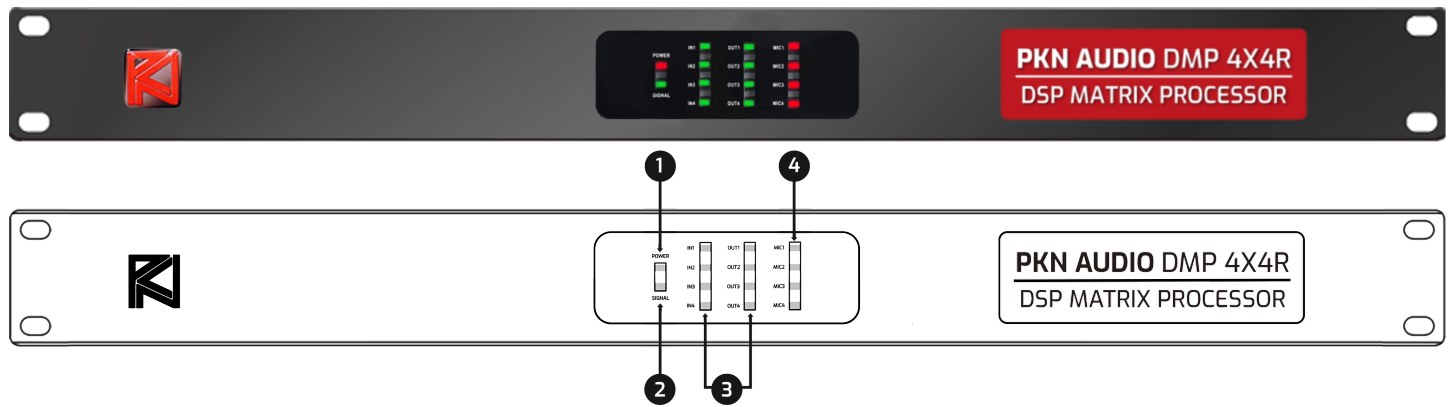
Our **DSP Matrix Series** devices, including the **DMP 4X4R**, natively support **AES67**, **ST2110** and **RAVENNA** protocols, and they are able to transmit lossless, ultra-low latency digital audio streams over a local area network (LAN) with Layer 3 capabilities, which can interconnect even with 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!](#)

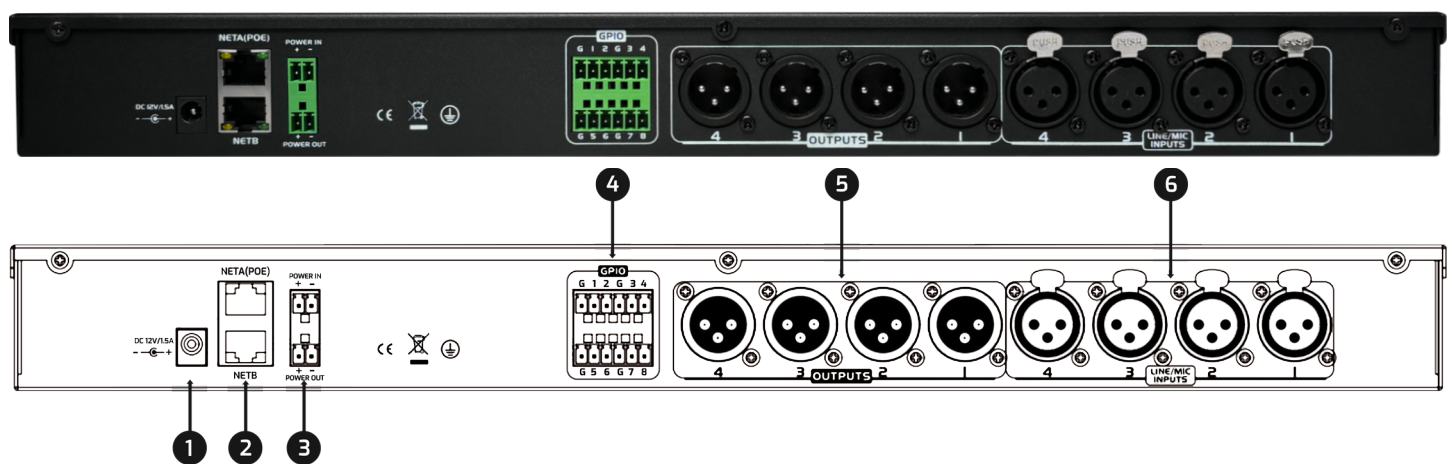
*Currently the 8 Digital In-and-Out channels option is only supported in 48kHz Sample Rates, with custom firmware modifications. Please contact us at info@pknaudio.com for further details!

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 indicator:** - Red: Current channel has +48V Phantom Power Enabled

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. GPIO Interface Phoenix Terminal
5. Analog Output XLR-M Connectors
6. Analog Input XLR-F 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

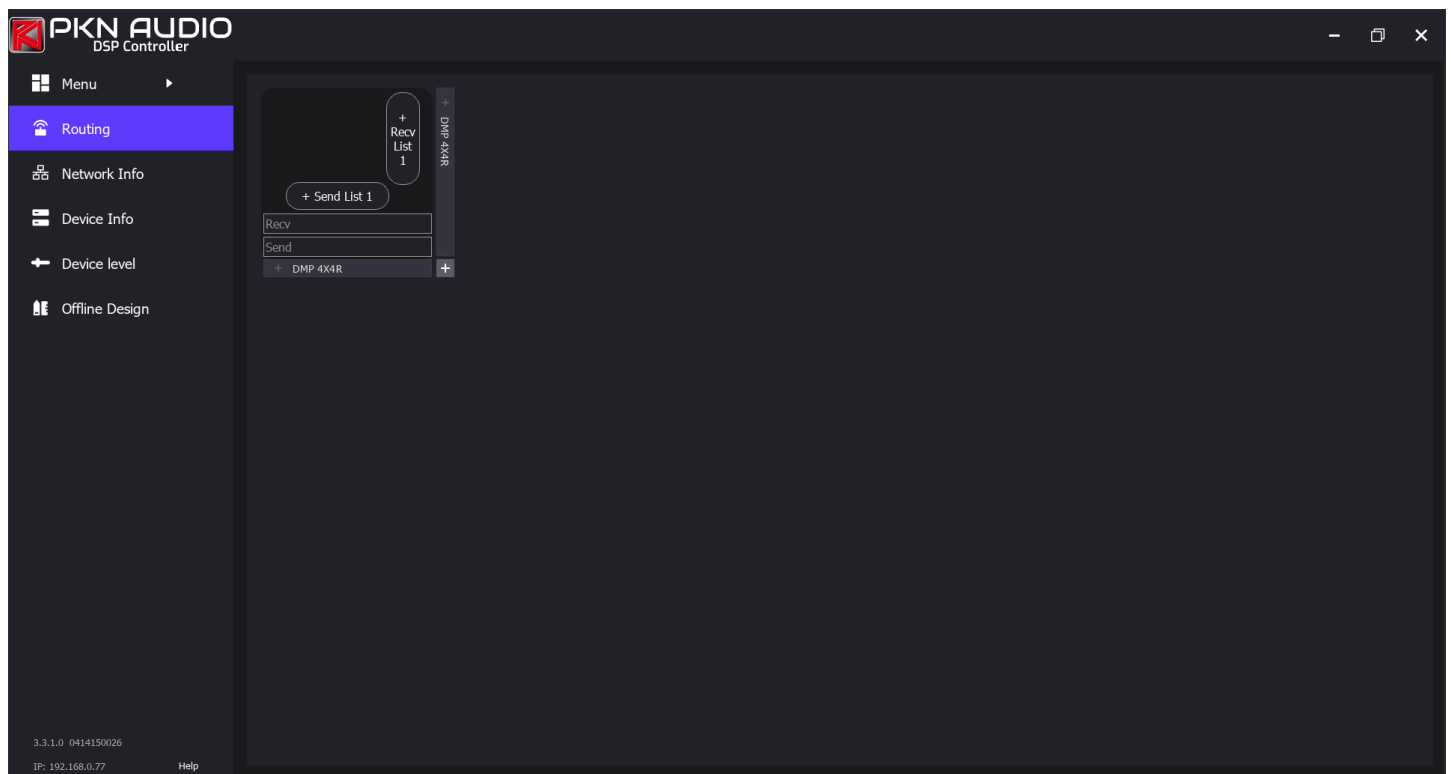
The DMP 4X4R can be powered on via PoE (Power over Ethernet, 802.3af Class 1), the supplied 12VDC, 1.5A adapter, and if the adapter is used, a following second and third device can also be powered via Daisy-Chain, through the Power In / Power Out Phoenix terminals.

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.



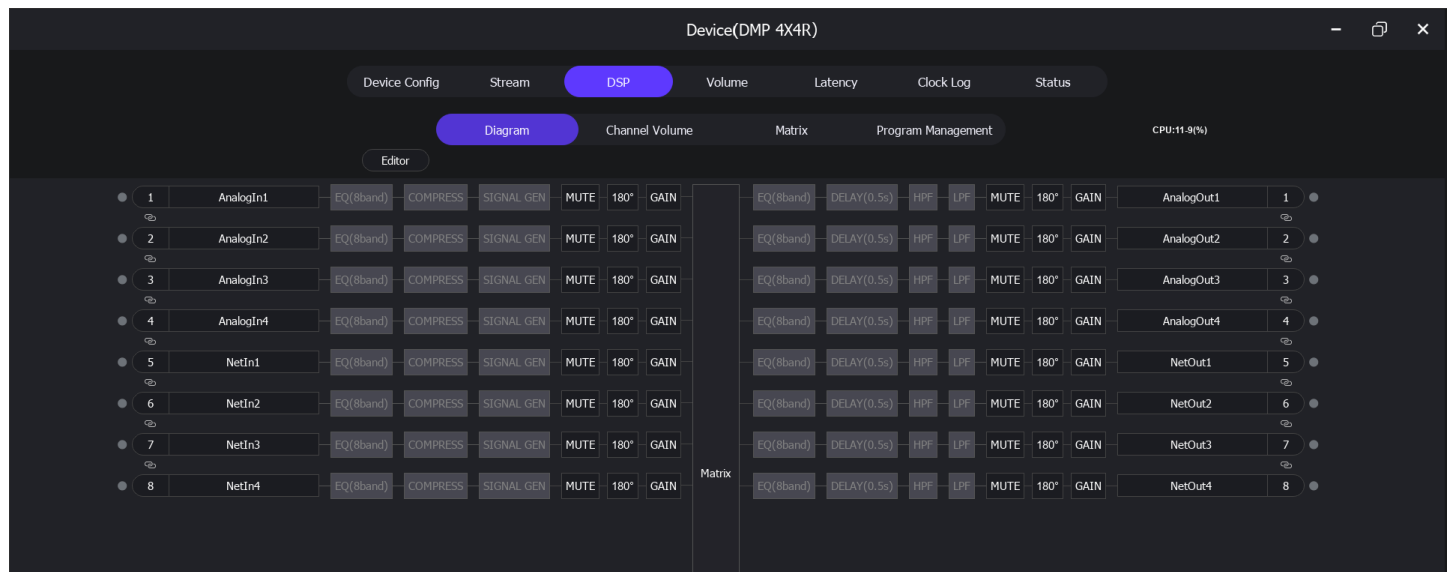
Once the device is found you can set up its network channel routings, or open the `Device Details` menu to configure it further, by double clicking it's name from any of the side menus.

4. Software Overview

The DMP 4X4R 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 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
	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 Feature – Phantom Power / Mic Gain

You can find the +48 Phantom Power, and Microphone Gain settings in the *Device Details – Volume – Input Channel* view.

Here you can toggle the +48 Phantom for each channels separately, or set up their Gain, choosing between 0/15/20 or 24dB:

Device(DMP 4X4R)

Device Config Stream DSP **Volume** Latency Clock Log Status

Input Channel Output Channel

In1	In2	In3	In4	NetIn1	NetIn2	NetIn3	NetIn4
AnalogIn1	AnalogIn2	AnalogIn3	AnalogIn4	NetIn1	NetIn2	NetIn3	NetIn4
0	0	0	0	0	0	0	0
-12	-12	-12	-12	-12	-12	-12	-12
-24	-24	-24	-24	-24	-24	-24	-24
-36	-36	-36	-36	-36	-36	-36	-36
-48	-48	-48	-48	-48	-48	-48	-48
-60	-60	-60	-60	-60	-60	-60	-60
-60.0 dBFS	-60.0 dBFS	-60.0 dBFS	-60.0 dBFS	-60.0 dBFS	-60.0 dBFS	-60.0 dBFS	-60.0 dBFS
+12	+12	+12	+12				
0dB 0	0dB 0	0dB 0	0dB 0				
-12	-12	-12	-12				
-24	-24	-24	-24				
-36	-36	-36	-36				
-48	-48	-48	-48				
-60	-60	-60	-60				
dB	dB	dB	dB				
0	0	0	0				
Mute	Mute	Mute	Mute				
MicGain	MicGain	MicGain	MicGain				
0	0	0	0				
PhantomPower	PhantomPower	PhantomPower	PhantomPower				
OFF	15	OFF	ON				
	20						
	24						

4.2 Device Specific Feature – GPIO Settings

You can configure the GPIO ports to your liking in the *Device Details - Status* tab:

Device(DMP 4X4R)

Device Config Stream DSP Volume Latency Clock Log Status

System

Version:3.1.7.0

Temperature:53.3°C

Elapsed Time:3:3:27

Mac Address:4a:18:e6:72:f8:85

Other Settings

PTP DSCP Priority: 46 Stream DSCP Priority: 34

GPIO Setting

1 GPIO_1

2 Direction Input

3 Control Type Scene

4 Enable State Disabled

5 Trigger Type High Level Trigger

6 Scene Scene 1

Redundant: OFF 7

Save

Reboot

- 1) **GPIO selector:** Here you can chose which port to configure below
- 2) **Direction:** Chose whether the selected port should be Input or Output
- 3) **Control Type:** You can select from 5 different functions: Scene, Route, Gain, Mute or Command
- 4) **Enable State:** Toggle from if the port should be Enabled, or Disabled
- 5) **Trigger Type:** Chose between High Level Trigger or Low Level Trigger
- 6) **Control Type Specific option:**
 - Scene: Set scene from 1-20 to enable when triggered
 - Route: Select routing of in-and-outputs (1-8) when triggered
 - Gain: Set Input/Output channel gain when triggered
 - Mute: Mute selected Input/Output (1-8) when triggered
 - Command: Communicate via Command Line when triggered
- 7) **Redundant:** Toggle Redundancy ON or OFF

5. Troubleshooting

- *The device's LEDs are dark.*

-If Power Supply is used, make sure it's the original DC 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 (802.3af).

- *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.