

**LPP480A** is a High End 4-IN/8-OUT digital speaker management system which maintains the same outstanding Sound Quality of the former DPA480 version, but highly improved in terms of DSP processes and added of an astonishing FIR filtering tool set. Designed for maximum versatility, it provides all the processing and control necessary for both live and fixed installation use. Proving for any crossover configuration, it offers 4 analog inputs, 8 analog outputs and 2 AES/EBU inputs, managed by 2 powerful MARANI M716 DSP Engines, for a full 96kHz processing, in addition to 24 Bit AD/DA Converters. Each input channel provides a choice of a 13-band Parametric EQ, Gain control, Noise Gate, RMS Compressor, Internal White/Pink Noise Generator and configurable Delay. Each output offers up to 7-band of parametric equalization, in addition to the IIR crossover filters which themselves provide slopes from 6dB/Octave up to 48dB/Octave. Each output path also features PEAK Limiter, RMS Compressor and configurable Delay. Particularly, the Output X-Over Filtering can be selected to be IIR style, with the complete set of Classic Hp/Lp filters (Butterworth, Linkwitz-Riley, Bessel) or FIR, being for each output channel available a

512 taps FIR filter which can be set as Hp/Lp/Bp. On each one of the 4 Input paths, one more 1024 taps Asymmetrical FIR is available for Phase Correction purposes, where the Coefficients Calculation can be supported by an embedded Wizard tool or can be Loaded from external sources as Third Parties Sw for the FIR filters coefficients Generation. Being the phase correction FIR Asymmetrical, a powerful tool for adjusting/reducing the FIR latency is available, allowing therefore the **LPP480A** to be used without any problem also for Live performances still having the Phase correction FIR running together with the eventual FIR for the X-Over implementation in cascade. The **LPP480A** supports a full set of matrix mixing modes where Input sources can be routed/mixed to the Input paths, inputs paths may be routed/mixed in any ratio to any output and couple of outputs (1/2, 3/4, 5/6, 7/8) can be swapped at pleasure. For remote configuration and control the **LPP480A** can be connected via USB/RS485/TCP-IP connections. The control remote PC software allows simultaneous control up to 32 units, setting all parameters and showing real time levels.



### Features

#### Top-grade DSP Engines and Processes

- 13 band parametric equalization per input channel
- 7 band parametric equalization per output channel
- Each band can be switched to Bell, Shelving, HP/LP, Band Pass, Notch Filter, All Pass
- IIR Crossover filters with slopes from 6 up to 48 dB/ Octave including Butterworth, Bessel, Linkwitz-Riley
- FIR X-over Filters with number of Taps from 256 up to 512, Attenuation and Window Type
- Asymmetrical 1024 Taps FIR for Phase Correction on each of the 4 Input paths [FIR coefficients generated internally by the machine or loadable from external third parties applications]

RMS compressors working on Look Up tables for the Compression coefficient are available on Input and Outputs paths.

On Outputs a further Peak Limiter is available at the end of the paths.

Adjustable Delay time up to 480 ms for every input channel and 340 ms for each output channel

#### Direct PC/Network Connection

- Front panel USB connector for direct PC communications
- RS485/TCP-IP connection for system setup, monitoring and control via fully manageable remote PC software
- Simultaneous control up to 32 units via PC software

### Applications

- Auditoriums
- Houses of Worship
- Theaters
- Performing Art Centers
- Convention Centers
- Stadiums and Arenas
- Touring Musicians
- Stage Monitoring System digital



### Audio

Analog Input	-----	4 x XLR electronically balanced
Analog Output	-----	8 x XLR electronically balanced
Digital Input	-----	2 x AES/EBU; Gain 0dBu
Minimum Load	-----	150 ohm
THD+N	-----	0.001% at 1kHz 0dBu
S/N	-----	> 110dB
Ground Noise	-----	-92 dBu
Frequency Response	-----	20Hz - 20kHz; -0.5dBu at 20Hz and 20kHz
AD & DA Converters	-----	1 x AK5388 24bit, 4 x AK4396 24bit - 96kHz

### DSP & Processing

DSP Engine	-----	2 x MARANI M716
DSP Resolution	-----	24bit (data) x 24 bit (coeff.), 54 bit accumulation registers, 96 bit precision on intermediate processing data
FIR for Phase Correction	-----	Asymmetrical 1024 Taps, with coefficients generated by Pc Sw embedded Wizard tool, allowing also FIR latency Adjustment/reduction. Coefficients can also be imported by external third party applications, so as can be exported to third parties applications
Parametric Equalization	-----	13 PEQ filters per input; 7 filters per output
Filter Type	-----	Bell, Shelving, HP/LP, Band Pass, Notch Filter, All Pass
Filter Gain	-----	From -15dBu up to +15dBu by 0.5dBu resolution steps
Center Frequency	-----	from 20Hz up to 20kHz with 1Hz resolution steps
Filter Q/BW	-----	Bell Type: Q from 0.4 up to 128 in 100 steps Shelving/Hp/LP Type: Q from 0.1 up to 5.1 in 100 steps Band Pass/Notch Type/All Pass: Q from 4 up to 104 in 100 steps
Input & Output Gain	-----	From -18dB to +12dB by 0.1dBu resolution steps
IIR Crossover Section Hp/Lp	-----	Butterworth: 6/12/18/24/36/48dB per octave Bessel: 12/24dB per octave Linkwitz-Riley: 12/24/36/48dB per octave
FIR X-Over Section Hp/Lp/Bp	-----	Hp/Lp/Bp filters, Taps from 256 up to 512, Attenuation up to -120dB, Window type as Rect / Sinc / Keiser / Hanning / Hamming / Blackman / Nuttall / Sine
Internal Noise Generator	-----	White/Pink Noise; Level from -40dBu to 0dBu
Input Noise Gate	-----	Threshold from -80dBu up to -50dBu, or not active Attack time from 1ms up to 1000ms; Release time from 10ms up to 1000ms
Input/Output RMS Compressor	-----	Threshold from 20dBu up to -10dBu; Makeup from -12dBu to +12dBu Ratio: 2:1~32:1; Knee: 0~100%; Attack time from 0.1ms up to 5000ms; Release time from 0.001sec up to 10sec
Output Peak Limiter	-----	Threshold from 20dBu up to -10dBu; Attack time from 0.1ms up to 900ms; Release time from 0.04sec up to 56sec
Delay	-----	480 ms 10.4us increment/decrement steps for each input, 340ms 20.8us increment/decrement steps for each output
Routing	-----	Inputs/ Outputs Full matrix mixing mode

### General

Device Presets	-----	Up to 16 User Presets
Front Panel	-----	2 x 24 character LCD display with green LED backlight 7-LED meter per input channel -15dBu to +15dBu, clip and limiter mode 7-LED meter per output channel -15dBu to +15dBu, clip and limiter mode Blue LED (Edit) per channel Red LED (Mute) per channel NAV/PM1 Rotary encoder push button switch Pm2, PM3, ENTER, ESC, UTILITY push button switches EDIT/MUTE push button per channel USB type A connector
Rear Panel	-----	(2+2) x XLR female connectors (4 x Analog Input or 2 xAES/EBU) 8 x XLR male connectors (Output) 1 x RJ45 connector for RS485 (Input) 1 x RJ45 connector for RS485 (Output) 1 x RJ45 connector for TCP-IP 1 x Ground-lift toggle switch 1 x Analog/Digital toggle switch
Main AC	-----	IEC C13 16A connector; Power on/off switch 90-240VAC (50/60Hz) - 40W
Dimensions	-----	19"x 1.75"x 9" (483x44x229mm) 1RU
Weight, Net / Shipping	-----	7.71 lbs (3.5 Kg) / 8.82 lb (4 Kg)