



By Mark Frink

The introduction of digital speaker processors two decades ago allowed users to program complete presets for their speaker systems for the first time, including delay and parametric EQ to optimize multi-way systems beyond simply choosing the best crossover slopes and adjusting individual crossover outputs and then the graphic EQ by ear.

Yamaha's introduction of the D2040 2x8 digital speaker processor allowed precise, repeatable control of a 4-way sound system. Crown was one of the first to put

DSP into amplifiers with their P.I.P. (programmable input processor) DSP cards, providing limiting, delay, crossover and EQ filters, allowing amplifiers to be self-processed for bi-amplification and optimizing specific models of speakers, eliminating the need for external active crossovers.

Today, top manufacturers such as d&b, L-Acoustics, Martin, NEXO and Outline provide proprietary controller-amplifiers, often OEM-built by well-known amplifier manufacturers, to ensure tight integration between processing and loudspeakers,

and deliver precise, consistent performance.

Integration of DSP into amplifiers has led to standardization of amp racks, such as Clair Brothers' StakRak with Lab.gruppen PLM amplifiers, as well as L-Acoustics' LA-RAK with LA8 amplified controllers and Crown's VRACK with I-Tech 12000 HD amps for JBL VerTec systems. Indeed, standardization of loudspeaker-amplifier combinations is the "Holy Grail" for touring vendors, providing global consistency for international clients.

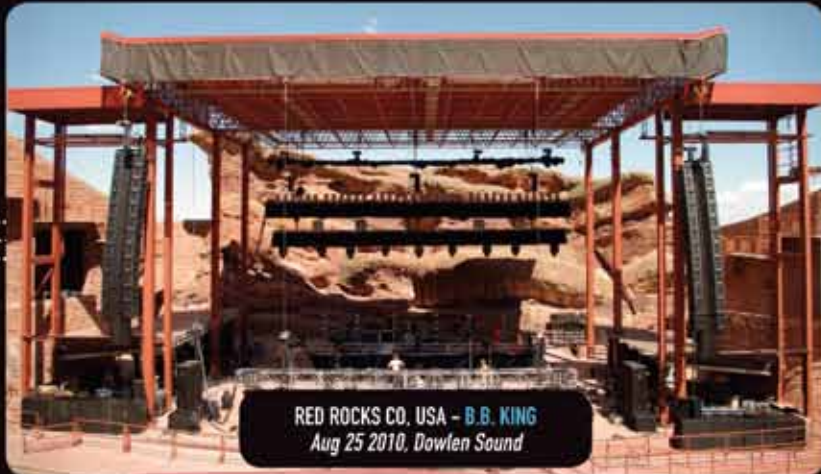
By standardizing DSP amp racks, touring engineers can specify a particular loudspeaker configuration that can provide identical results from different vendors on each continent. Additionally, "universal racks" can be deployed with different speaker models by simply recalling the correct preset. For installed systems, DSP amplifiers provide precision that allows careful system designs that employ predictive software to determine the best coverage before ground has even been broken for a venue's new facility.

DSP amplifiers allow individual processing. Loudspeaker systems can be more precise when each cabinet and even individual drivers can be processed uniquely. There has been much interest in building directional subwoofer arrays to keep up with high-powered line arrays. Though two-channel processing is sufficient to create simple cardioid sub arrays, individual cabinet subwoofer processing allows more complicated directional arrays to be created.

Systems are more powerful when individual cabinets and even individual drivers can be addressed uniquely. As we saw last month, digitally steered loudspeakers are the result of tightly integrated DSP with individual amplification. The next marriage is digital delivery of audio to DSP amplifiers along with networking their control and monitoring.

Convergence of signal processing and amplification represents the evolution of modern sound systems. In this Buyers Guide we look at DSP Amps from leading manufacturers. **FOH**

## THE GT GRAND TOUR by Outline



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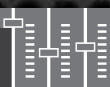

**Ashly**

#### Native Ethernet Series

<b>Top Model</b>	ne2400
<b>Class</b>	D (PWM)
<b>Power</b>	1200W @ 4 ohms
<b>Size x Depth</b>	2U x 15.5 inches
<b>Weight</b>	21 pounds
<b>Damping</b>	>250
<b>Sensitivity</b>	26 or 32 dB or 1.4 V
<b>Network</b>	Standard Ethernet, optional CobraNet or AES inputs
<b>DSP</b>	Protea Enabled version, PEQ, GEQ, notch & shelving EQ, HPF, LPF, APF, delay, comp/limiter, gate, ducking, auto-leveler & signal generator

[ashly.com](http://ashly.com)





## Crest

### Pro-LITE DSP Series

<b>Top Model</b>	Pro-LITE 3.0 DSP
<b>Class</b>	D
<b>Power</b>	870W @ 4 ohms
<b>Size x Depth</b>	2RU x 10.5 inches
<b>Weight</b>	13.3 pounds
<b>Damping</b>	> 255
<b>Sensitivity</b>	0.785 volts @ 4 ohms
<b>DSP</b>	LP & HP, BW 12, 18 and 24 dB/Oct plus L-R 24 dB/Oct X-overs, 5 band PEQ, Horn EQ, Waves MaxxBass, 125 ms delay, Limiter, 4 User Presets; USB interface

[peavey.com](http://peavey.com)



## Crown

### XTi 2 Series

<b>Top Model</b>	XTi6002
<b>Class</b>	I (BCA)
<b>Power</b>	4000W @ 4 ohms
<b>Size x Depth</b>	2 RU x 16.2 inches, others 12.2 inches
<b>Weight</b>	24 pounds, others 18.5 pounds
<b>Damping</b>	> 500
<b>Sensitivity</b>	1.4 volts
<b>Network</b>	USB Type B, connects to HiQnet™ network
<b>DSP</b>	HP/LP and 6 PEQ input, 8 PEQ output filters, BW & L-R 6dB to 48dB/octave crossovers, 50 ms delay, SubHarmonic Synth, Peak Plus™ Limiters, front panel lock, 50 presets

[crownaudio.com](http://crownaudio.com)



## Electro-Voice

### Tour Grade Series

<b>Top Model</b>	TG-7
<b>Class</b>	H (3-step)
<b>Power</b>	2500W @ 4 ohms
<b>Size x Depth</b>	2 RU x 19.6 inches
<b>Weight</b>	32 pounds
<b>Damping</b>	> 400
<b>Sensitivity</b>	32, 35 or 41 dB
<b>Network</b>	Optional CAN-bus with AES/EBU or CobraNet
<b>DSP</b>	Optional RCM-26 with 20 filters & 8 presets load monitoring and impedance measurement diagnostics

[electrovoice.com](http://electrovoice.com)



## Lab.gruppen

### PLM Series

<b>Top Model</b>	PLM 20000Q
<b>Class</b>	TD (Tracked PWM)
<b>Power</b>	4400W @ 4 ohms/4 ch.
<b>Size x Depth</b>	2 RU x 18 inches
<b>Weight</b>	37 pounds
<b>Sensitivity</b>	22 to 44 dB in 0.1 dB steps
<b>Network</b>	Dante, AES/EBU standard
<b>DSP</b>	2 channels of Lake Processing: raised cosine EQ, Ideal Graphic, Mesa EQ, classic & linear-phase crossover, LimiterMax & Iso-Float

[labgruppen.com](http://labgruppen.com)

**Peavey****IPR DSP Series**

<b>Top Model</b>	IPR 3000DSP
<b>Class</b>	D (IPR)
<b>Power</b>	840W @ 4 ohms
<b>Size x Depth</b>	2 RU x 10.5 inches
<b>Weight</b>	7.8 pounds
<b>Damping</b>	>225
<b>Sensitivity</b>	1.215 volts 4 ohm rated power
<b>Network</b>	N/A
<b>DSP</b>	120 ms delay, 4 band PEQ, Security, 4 <sup>th</sup> -order L-R crossovers & HPF, Setup wizard, Waves MaxxBass, Horn EQ, 4 presets

[peavey.com](http://peavey.com)**Powersoft****M Series DSP+ETH**

<b>Top Model</b>	M 30D
<b>Class</b>	D (PWM)
<b>Power</b>	1500W @ 4 ohms
<b>Size x Depth</b>	1RU x 14.1 inches
<b>Weight</b>	16.3 pounds
<b>Damping</b>	> 500
<b>Sensitivity</b>	26, 29, 32 or 35 dB
<b>Network</b>	Ethernet
<b>DSP</b>	Optional DSP card: 6 input and 5 output filters per channel, BW & L-R 6dB to 48dB/octave crossovers, Peak, RMS and frequency dependent RMS limiters, 4 presets

[k-series.it](http://k-series.it)**QSC****PowerLight3 Series**

<b>Top Model</b>	PL 380
<b>Class</b>	D (PWM)
<b>Power</b>	2500W @ 4 ohms
<b>Size x Depth</b>	2 RU x 15 inches
<b>Weight</b>	24 pounds
<b>Damping</b>	> 200
<b>Sensitivity</b>	26 or 32 dB or 1.2 V
<b>Network</b>	DataPort HD-15, control from Signal Manager via RS-232
<b>DSP</b>	optional DSP-4 with HPF, LPF, PEQ, 4th order crossovers, delay, compressor, limiter, signal generator, clip & protect, 8 presets

[qscaudio.com](http://qscaudio.com)**Yamaha****TXn Series**

<b>Top Model</b>	TX6n
<b>Class</b>	EEEngine (PWM)
<b>Power</b>	3000W @ 4 ohms
<b>Size x Depth</b>	2 RU x 18 inches
<b>Weight</b>	35 pounds
<b>Damping</b>	> 300
<b>Sensitivity</b>	19.8 to 43.8 dB in 0.1 dB steps
<b>Network</b>	standard Ethernet, AES MY card, optional ES or CN MY cards
<b>DSP</b>	8-band input EQ, 8th order crossovers, delay, 6-band output EQ, voltage & power limiters, signal generator, 50 presets

[yamahaproaudio.com](http://yamahaproaudio.com)