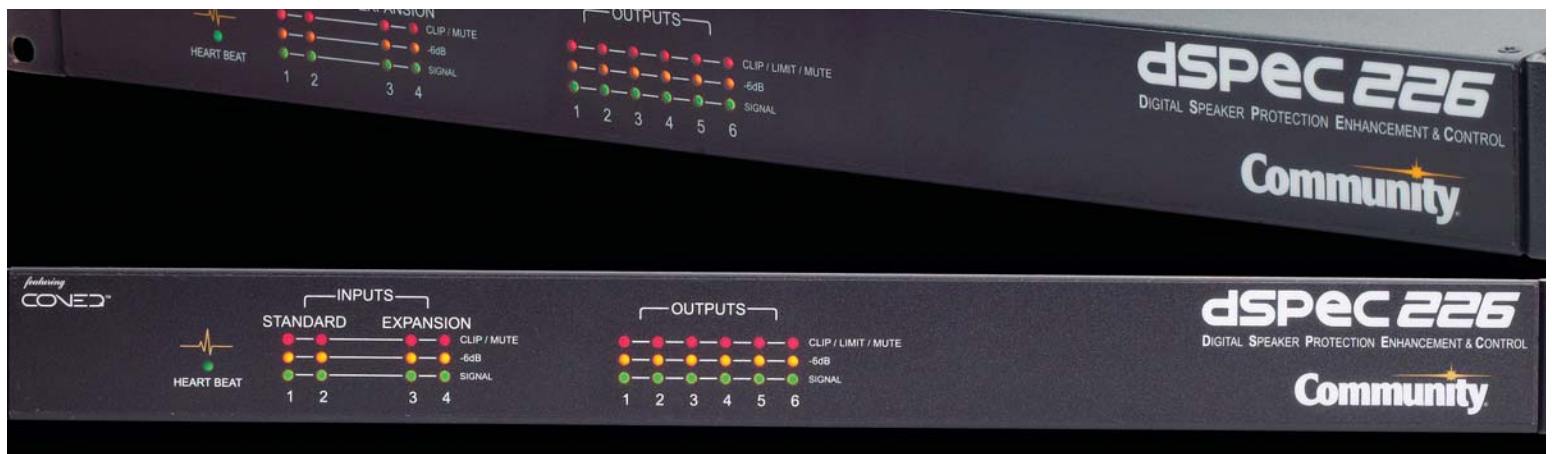# dSPeC

DIGITAL SPEAKER PROTECTION ENHANCEMENT & CONTROL

Networked Loudspeaker Processor

You'll Love Where It Takes You!

Community

dESIGN – PROTECT – ENHANCE – CONTROL

A New Way of Getting There

dSPEC is different...and therein lies its power. While other DSP products require hours, even days, to optimize crossover slopes, adjust protective limiters, correct driver offset, and set a slew of other parameters for each loudspeaker in your installation, dSPEC takes a whole different approach.

With **dSPEC** you simply select from a menu of Community Loudspeakers and **dSPEC** does the rest. We've provided a full suite of optimized DSP settings for each model of Community loudspeakers in the library that we supply with the **included Resyn™ software program.**

Optimized DSP means optimal performance. And optimal performance means satisfied customers (it also means spending a lot less time on the jobsite).

Equipped with a high speed SHARC DSP and a Xilinx Spartan FPGA, dSPEC gives you sonic quality at its very best—coupled with the processing power to get the job done right. Add in efficient operation and a reasonable price tag and you'll know why we say, "You'll Love Where it Takes You."

Consistency

It's no secret that loudspeakers are designed for many diverse applications and can sound quite different from one another. There's long throw, medium throw, and underbalcony fill, to name a few. But who wants the sound quality of their project to differ from one area of the venue to any other?

To solve this basic problem, **dSPEC** employs proprietary CONEQ™ **CON**volution **EQ**ualization. Based on Acoustic Power Frequency Response, instead of the SPL measurements used in all other corrective systems, a large Community R2 can sound nearly the same as a compact Community W2-2V8. Not identical, but extremely close in character, particularly in the zone that each is intended to cover.

CONEQ™ is just one outstanding dSPEC feature among a host of others. After all, the world doesn't need just another loudspeaker processor. But what it does need, is a **new way to get the job done.**

Technology that Doesn't Trip on Itself

A lot of raw technology is available in pro audio, but often is very difficult to harness. That's where **dSPEC** comes in. Our Resyn software guides you through an **Engineered Workflow** to configure your system - whether it's a single **dSPEC** in a House of Worship with only a few loudspeakers - or many **dSPEC's** driving hundreds of loudspeakers in a large stadium.

How Does It Work?

It starts with **design System** (de•sigń sys'tem: to skillfully plan an ordered assemblage). You select the Community loudspeakers in your installation from the **design System** screen, and then label your Inputs and Outputs (MAIN L, MAIN R, UNDERBALCONY SECTION 33, etc.). Resyn software intelligently introduces lo-pass and hi-pass filters, along with factory optimized equalization that flattens each loudspeaker's frequency response. If a loudspeaker is bi-amplified or tri-amplified, Resyn provides optimal crossover points and assigns LF, MF, & HF Outputs as needed. Here's what a **design System** screen looks like. It could hardly be more simple:
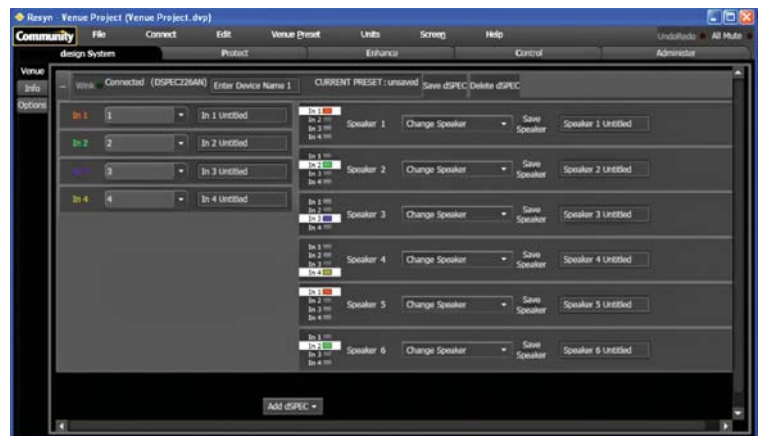
Next, you select **Protection** (pro•tec'tion: providing safety). This is where you'll enter the power ratings of the amplifiers to ensure that the protective limiter algorithms function properly. Better yet, **dSPEC** can accurately **measure** each amplifier's power level. By connecting the amplifier to **dSPEC's** built-in AMP CAL port, **dSPEC** derives optimal limiter adjustments. AMP-CAL is quick and it's smart. Your loudspeakers will thank you for it.

dSPEC's Protection screen is shown below:

Now it's time to use the full array of **Enhancement** capabilities **(en•hance'ment: to raise to a higher degree; increase value).** Do you need delay for that underbalcony area? It's available. Want to dial-out room resonance modes with parametric filters? You've got 20 of them on each of the six outputs. Every filter can be configured as a PEQ, a Low Shelf, a High Shelf, an All-Pass, a Phase Compensation filter, or a Var Q lo-pass or hi-pass. With Var Q you can alter filter damping coefficients, opening up possibilities that go way beyond normal equalization practices.

And there's more. Resyn's Enhancement screen provides an all-new way to Look at the response of multiple Inputs and Outputs, while Adjusting the one of interest. Numerous graphs representing Inputs, Outputs, and Individual Drivers may be superimposed on one another.   **Enhancement** provides a wealth of information you won't find anywhere else. But it's not just raw information; **it helps you do a better job.**

dSPEC may also be used with non-Community loudspeakers. Custom crossovers are readily configured using Bessel, Butterworth, and Linkwitz-Riley filters with slopes that range from 12dB/oct to 48dB/oct in 6dB increments. You can enter driver power ratings into the **Protection** screen to quickly set protection levels, and the full complement of delays and filters are always available without restriction. The sole exception is CONEQ™, which is only usable with Community loudspeakers.

Take Control

(con·trol: to adjust to a requirement; to regulate)
While DSP can be a great problem solver, you may not always want to include a PC with each installation. Fortunately with **dSPEC** you don't have to. Once the setup is complete, the computer can be removed and your settings will be tamper-proof.

But what if the system needs to be reconfigured from time to time? Maybe it's in a gymnasium where the format changes from basketball games to commencement ceremonies? Or a hotel ballroom where the head table at lunch is moved to a new position during dinner, and all the delay times need to be re-set? What if these changes occur every day?

No Problem. **dSPEC** provides the solution. Six external control ports are included, each activated by a simple remote contact closure. Remote Control switches can be located far, far away, and more than one **dSPEC** can respond to the same switch command. You can even purchase a nice looking 4-position wall mount switch assembly directly from us.
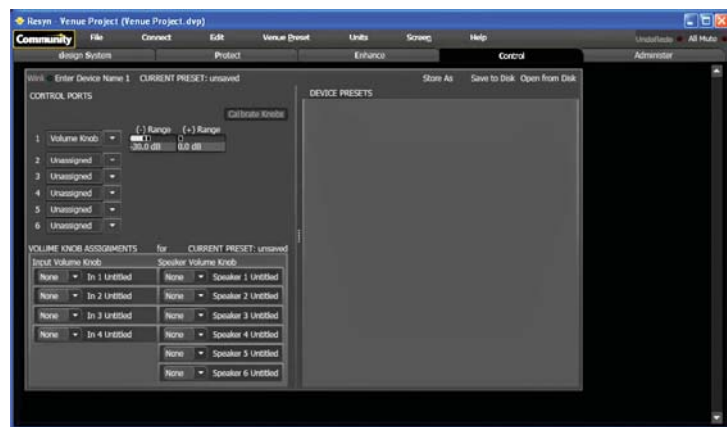

dSPEC's Control screen (shown above) is all about setting up User Presets. A Preset can change as few as one, or as many as all, of dSPEC's configurable parameters. Whenever a Control Port is activated, I/O routings, delay times, crossover points, EQ, loudspeaker types—and every other programmable function—can be reconfigured in a matter of seconds. And if that's not enough, each of the six Control Ports can alternately be used for remote Level Control with *fully configurable maximum and minimum range settings* (we sell attractive wall-mount controls, too).

So when you need to provide a system for rapid changeover in a meeting room…or one that lets the restaurant staff turn up the volume after hours (but not too loud), you can be assured that **dSPEC's** control capabilities will meet your needs.

Administer (ad•min'ister: to direct or manage)
Community's Effortless Ethernet requires nothing more than connecting an Ethernet cable from **dSPEC** to your laptop. And if you add more units, they'll be automatically recognized. In case you need manual IT control, **dSPEC** provides that, too. You also get password-protection for all functions, a quick way to check if firmware is up to date, the ability to change measurement units, and a Community first… you can alter the screen contrast to improve visibility in daylight.
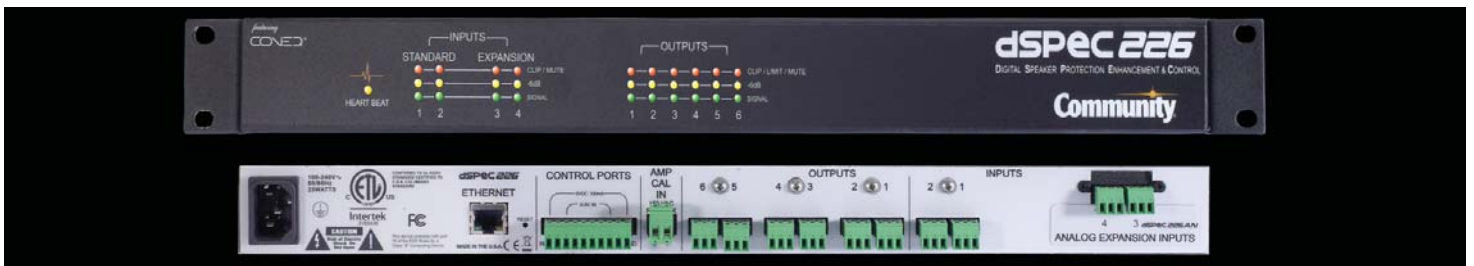
Flexible, Configurable, and Future Proof

While all **dSPEC** models are based on a fixed-chain architecture of four Input Processing Blocks and six Output Processing Blocks, within this framework alternative I/O options are available by means of an expansion slot. The base model is equipped with **two** Analog Inputs and **six** Analog Outputs, and can easily be upgraded to **four** Analog Inputs by purchasing a **dSPEC226AN** or installing an Analog expansion card.

A second expansion card provides two AES3 dual channel **Digital** Inputs, thereby providing options for selecting from **four** Digital Inputs along with the **two** native Analog Inputs.

Additionally, a CobraNet™ expansion card provides selection of **eight** **Digital** Inputs and **eight** **Digital** Outputs, while the **two** native analog Inputs and **six** native analog Outputs remain active and addressable - for a total of 10 physical Inputs x 14 physical Outputs to choose from.

Any Input or Output may be routed to the fixed-chain 4 x 6 processing blocks in any way that might be required. **Digital** Inputs can be used in conjunction with **Analog** Inputs, and the first six CobraNet **Digital** Outputs appear in parallel with the six **Analog** Outputs (though small timing variations may occur). As with all other adjustments, routing is selected through the use of Resyn software, and changes can be programmed into one or more of the User Presets.

Perhaps most importantly, **dSPEC** was designed to be Future Proof. As new digital audio standards emerge, Community will respond by manufacturing expansion cards that meet the needs of our customers. Initiatives such as AVB, Dante™, Optocore, and others hold exciting promise that **dSPEC** will be capable of accommodating. Though we don't know where the future will take us, we're very confident that...

"You'll Love Where dSPEC Will Take You."

Please visit **www.communitypro.com** for more information.

Technical Specifications

Sample Rate:	48k
Internal Bits:	Floating Point
DSP Engine:	Sharc ADSP-21262
CONEQ™ Engine:	Xilinx Spartan FPGA
A/D Bits:	24
A/D converter:	Delta-Sigma, 128x oversampling
D/A Bits:	24
D/A converter:	Delta-Sigma, 8x digital oversampling
THD+N:	< 0.001% 100 Hz-20 kHz, 0.002% 20 Hz-20 kHz
THD:	<0.0008% @1K
Hum + Noise:	-95dBu A-weighted
CMRR:	>70dB 20 Hz-2 kHz, >55dB 20 Hz-20 kHz
Crosstalk:	<-100dB (20 Hz - 20 kHz)
Dynamic Range:	>115dB Analog, >118dB AES3 & CobraNet™
Frequency Response:	20-20k ±0.2 dB
Max Input:	20 dBu
Max Output:	20 dBu
Output Z:	200 ohms
User Memories:	>100 (dependent on file size)
External Control:	6 logic ports
PC Link:	100 Base-T Ethernet
Input Delay ms:	75, each input channel
Output Delay ms:	400, each output channel
Total DSP Delay ms:	2700
Delay Increment ms:	0.02083
Minimum Latency:	1.8ms
CONNECTIVITY:	Signal & control connections by detachable Euroblock screw-type pressure connectors. PC connection by standard Ethernet RJ45.
REMOTE CONTROLS:	RPS4 Remote Preset Recall Switch RLC1 Remote Level Control

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