with Soundplex™ Digital Signal Processing

These days, it seems like everyone's talking about DSP. Installed sound publications are filled with ads claiming the fastest, the easiest, the most intuitive DSP product you can imagine. Trade shows are packed with manufacturers offering the latest and greatest black boxes.

Different day, different model number. Same old approach.

Soundplex™ Digital Signal Processing may come as a surprise.

It's a different take on DSP. Developed for you, by Shure. Designed from the perspective of real-world users, Soundplex products think the way you do. The audio system unfolds familiarly on the screen. The interface actually makes sense.

Five minutes with a Soundplex product, and you'll wonder why you ever needed a manual. We're talking zero learning curve.

Because you have better things to do with your time than obsess about DSP.

Introducing the P4800 System Processor — with Soundplex DSP.

Like the DFR11EQ, the P4800 delivers an impressive combination of value, features and processing power. This flexible, new System Processor from Shure is optimized for small- to medium-sized installed audio systems. And because it's a Shure product, it's essentially bombproof. But you knew that.

What you don't know is inside this brochure.

Full Complement of Processing Blocks.

The P4800 has all the DSP processing you need to ensure the highest quality audio, from basic functions like graphic or parametric EQ to advanced dynamic processing that delivers consistent audio quality no matter who steps up to the microphone.

Choose from a variety of **EQ options** to deliver clear, intelligible speech. A processor toolbox with 10- and 30-band graphic, and eight varieties of parametric EQ is available at your fingertips. All EQ blocks provide the ability to import and view SIA-Smaart® and TEF™ measurements while tuning the system.

Attack feedback right when it starts using the same powerful **feedback reduction algorithm** found in the DFR11EQ.

- Automatically deploys unobtrusive notch filters that immediately control problem frequencies
- Five or ten band DFR blocks available

Automatically attenuate background music for public address or paging using the **ducker** block.

Protect your amplifier and speakers from sudden, unexpected increases in signal level using the versatile **limiter** and new **Peak Stop (look-ahead) Limiter**.

- Hard and soft knee, and stereo limiting options available

Divide and distribute up to 20 seconds of **digital delay** to compensate for the distance between loudspeakers in your setup.

Use the full arsenal of **dynamics processors** to manipulate the dynamic range of the system to compensate for unwanted noise and signal variations that can detract from overall performance.

Available Dynamics Processors

The Automatic Gain Control (AGC) automatically increases or decreases gain to compensate for sounds of varying loudness and maintain consistent volume. No matter who's at the microphone, the audience hears an even, natural sound.

The Compressor scales the output of a signal to drive equipment with a narrower dynamic range (amplifier, tape deck, etc.) or to compensate for an overactive talker who accidentally gets too close to the microphone.

The Gate mutes a signal when it drops below an established threshold. So unwanted ambient noise, like air conditioners and fans, can't be heard during pauses in the program material.

The Downward Expander gradually reduces the gain once the signal drops below a certain threshold. It's a more subtle reduction for situations where gating the signal completely would be audibly distracting to the audience.
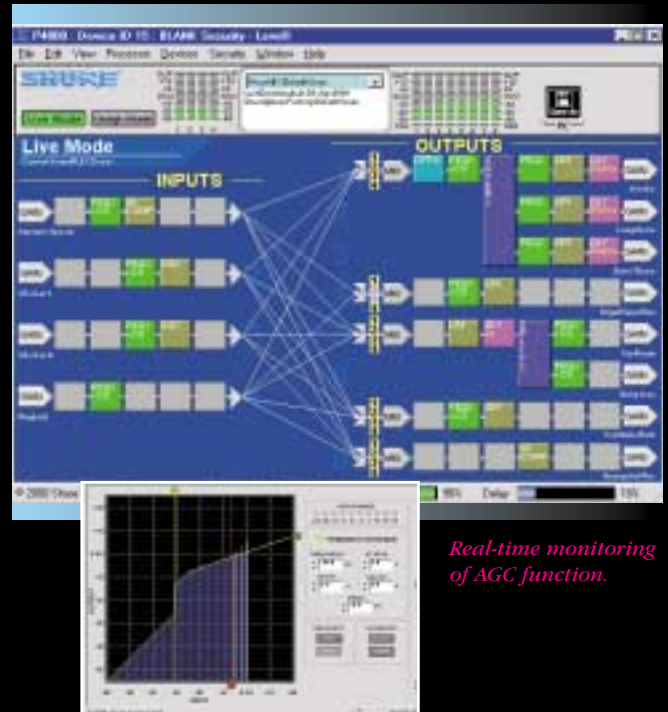
Real-time monitoring of AGC function.

Unlike other DSP products that constrict your freedom with preset templates, the processing blocks in the P4800 can be **applied in any order**, to any input or output. You can also link processors, including the input and output gains, for more efficient global control. Another time saver lets you **copy and paste** processing blocks to any input or output to duplicate processors across multiple channels.

With the P4800, you can design the entire system, save it to disk, and load it at the job site for easy setup. The P4800 also allows **real-time design changes**, so you can add, subtract or change processing blocks as you tune the system. It makes setup a breeze. And ensures that you get the best possible customized audio for your application.

Visual Indicators of Signal and Status.

A variety of **visual indicators** let you monitor the performance of the System Processor during (and after) setup.

LED signal metering, aligned in easily identifiable rows on the front of the box, lets you gauge the signal passing through the box without hooking up a computer. You also have full input and output metering on your laptop screen when the software is in live mode.

Delay and DSP **resource meters** at the bottom of the main window help you keep track of available processing power.

DFR and EQ **response graphs** show you the effects of DFR and EQ filters on the overall sound system frequency response.

Real World System Design.

So now you know the theoretical possibilities. But how does it work in the real world? That's what separates the P4800 System Processor from other multi-channel DSP devices. It's **designed for the real world**.

Last minute hardware changes, unexpected architectural revisions…

With the P4800, you can add or remove processing blocks whenever the need arises. You can **readjust on the fly** when the building specifications aren't what you expected. And you can hear all of your changes in real time, so you don't have to wait for the software to compile.

The P4800 System Processor allows control via RS232 and RS422 and interfaces with AMX/Panja and Crestron control systems. It also supports simple controls like switches and potentiometers, and provides contact closures to operate other devices, such as lighting or AV equipment.

Real World Installations.

Installed in a house of worship, the P4800 can be configured for audiences of different sizes and to compensate for different talkers. It's just that **smart**.

In a multi-purpose meeting facility, the P4800 can alternate presets according to how the airwalls are setup, for one large space or three smaller spaces, for conferences or concerts. It's just that **simple**.

In theatres, the P4800 can be tuned for specific performances and presentations, even individual singers. It's just that **flexible**.

Want to Know More?

Interested in finding out how you can incorporate the P4800 System Processor in your next system? Visit www.shure.com or call your local Shure representative for a hands-on demonstration.

Hotel Meeting Room Diagram (with moveable airwalls)

Room A — Room B

Amp — Amp

Mixer — Mixer

P4800 System Processor
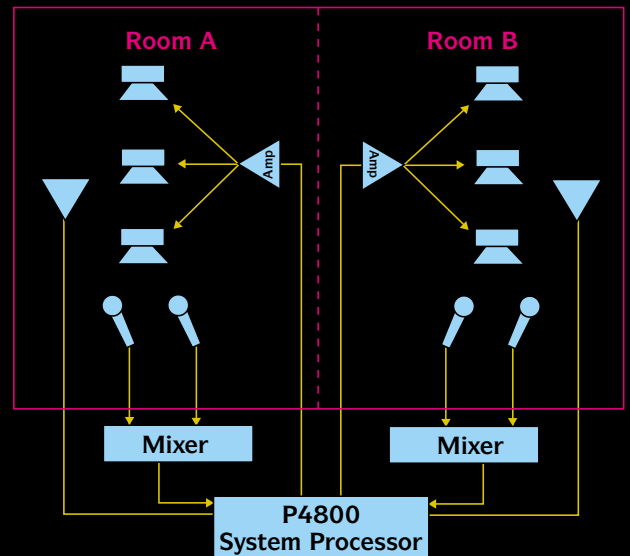
What it Does.

The P4800 System Processor is a four-input, eight-output DSP tool that provides **all necessary functions** between the mixers and amplifiers in an installed sound system.

Though it's flexible enough to fit in almost any application, the P4800 is specifically designed to provide efficient, reliable back-end signal processing in **small to medium-sized installations.**

Combine the System Processor with any of Shure's AMS or SCM Mixers for seamless audio performance.
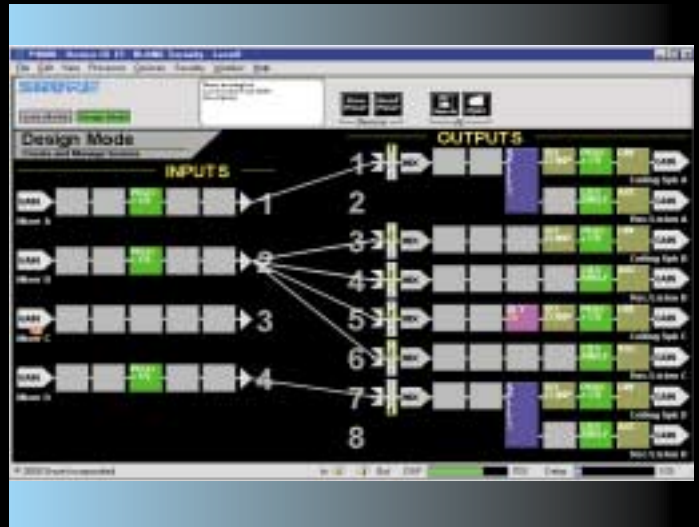
System Processor Features:

- 4X8 Matrix Routing

- Drag and Drop Graphical User Interface

- Full Complement of Processing Blocks, Including Shure's Patented **DFR Feedback Reduction Algorithm**

- Flexible Signal Path

- Real-Time System Configuration

- On-Screen Metering of Available Processing Power

- Power Supply Capable of Handling Unexpected Power Anomalies

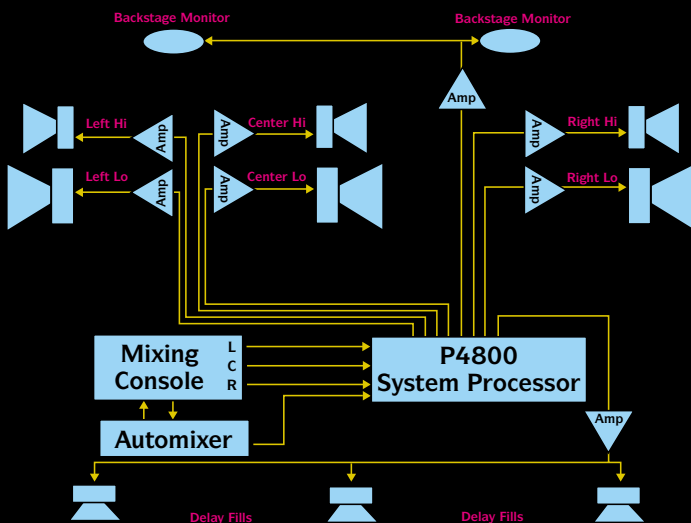### Performance Space Diagram

Quick and Easy Matrix Mixing.

The amazingly straightforward **matrix mixing** function allows you to quickly assign any of the four inputs to any of the eight outputs.

The convenient pop-up window lets you **adjust the polarity and signal level** of your inputs as they're routed to the selected output channels. Just a few clicks of the mouse connects the entire front and back ends of your audio system.


Continuous Improvement.

Since its introduction, the P4800 has been updated to make it an even more essential DSP tool.

New features include:

- More DSP resources for creating complex system configurations

- Two New Audio Processors:
    Ducker - For sound systems that require public address or paging
    Peak Stop Limiter - a "look-ahead" limiter for absolute speaker protection and more control over transient sounds

- Ability to import and view data from SIA-Smaart® and TEF™ measurements in the P4800's equalizer window

- Smoother response to real-time changes (both with control inputs and in Live Mode)

- Windows XP compatible; improved ultra-reliable operation under all Windows systems

Front Panel
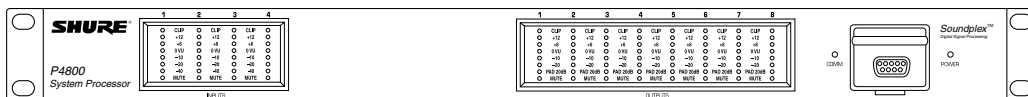
Back Panel

Hardware Specifications

Frequency Response
20Hz to 20kHz +1, -3 dB

Dynamic Range
100 dB minimum, A-weighted, 20Hz to 20kHz

Sampling Rate
48kHz

Digital-to-Analog, Analog-to-Digital Conversion
24 bit resolution

Propagation Delay from Input to Output
< 1.5ms

Processing blocks add no additional latency
(except for delay blocks)

Impedance
Input: 10 kΩ
Output: 120 Ω

Input Clipping Level
+26 dBu minimum

Output Clipping Level
+22 dBu minimum
+2 dBu minimum with 20 dB pad engaged

Total Harmonic Distortion (THD)
< 0.05% at 1 kHz, +4 dBu, 20 Hz to 20 kHz

Analog Audio Inputs
4 analog inputs, block connectors
Operating level defaults to +4dBu,
    software switchable to -10dBV
24-bit, 48 kHz AD conversion
+26 dBu input clipping level @ 1% THD

Analog Audio Outputs
8 analog outputs, block connectors
Operating level defaults to +4dBu,
    software switchable to -10dBV
24-bit, 48 kHz DA conversion
+22 dBu output clipping level @ 1% THD

Control Pins
Voltage supply: 5Vdc, 100mA (total)
Logic output current sinking ability: 500mA

Operating Voltage
100–240 Vac, 50/60 Hz (auto-switching)

Dimensions
44mm H x 483mm W x 279mm D
(1 3/4 x 19 x 11 inches)

Weight
4.1 kg (9.0 lbs)

Software Specifications

Matrix Mixer

Assigns any input to any output
Independently adjustable gain
Selectable muting and polarity for each channel

EQ & Shelving

Graphic Equalizers
10 and 30 band. Combining and Non-combining.
Up to 12dB boost, 18dB cut

Parametric Equalizers
Available in 3, 5, 7, & 10 filters
Bandwidth: 1/70 to 4 octave filters
Up to 18 dB cut and boost

Cut/Shelf Equalizer
High/Low shelf filters: 6, 12dB/octave slopes, 18dB boost/cut
High/Low cut filters: 6, 12, 18, 24dB/octave slopes
Cut filter types: Butterworth, Bessel, and Linkwitz-Riley

DFR

Automatic Feedback Reduction
5 and 10 filter modules available
Frequency resolution: 0.1 Hz
Filter width: 1/10 to 1/40 octave
Filter depths: 3, 6, 9, 12 and 18dB

Delay

Up to 2 seconds per delay block
20 seconds total of available delay memory
20 microsecond resolution

Crossovers & Splitters

Crossovers
2 to 5 way crossovers
Butterworth, Bessel, & Linkwitz-Riley up
    to 24 dB/octave
Independently adjustable, +/-12 dB gain
Selectable polarity and muting per output

Splitters
2 to 5 way splitters

Dynamics Processing

Compressor/Limiter
Versions Available: Soft/Hard Knee, Stereo
    & Peak Stop (look ahead) Limiter
Threshold range: 80dB
Attack: 1 ms to 200 ms, 0 ms to 200 ms
    for Peak Stop Limiter
Decay: 50 ms to 1000 ms
Ratio: inf. to 1:1

Gate and Downward Expander
Threshold: 80dB, 0.5 dB resolution
Attack: 1.0 to 200 ms
Decay: 0.05 to 1 second
Gate Hold Time: 0 to 500 ms

AGC Leveler
Threshold: -72 to -1dBu, 0.5dB resolution
Attack: 0.2 to 3 seconds
Decay: 0.5 to 5 seconds
Hinge: Threshold to -1dBu, 0.5dB resolution