

ARC AUDIO PS8-PRO DSP



PSC Controller sold separately

PROCESSOR REVIEW

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ARC Audio's outstanding PS8 processor gets the PRO treatment, making it one of the most powerful tuning tools on the market with literally too many features and functions to list.



Several years ago, I was introduced to the Arc Audio PS8 digital signal processor.

I listened to it for the first time in a demo car at CES that year and was really impressed; impressed enough that when I built my Corvette Grand Sport's audio system, I used a PS8 for my tuning. Fast forward a few years, and Arc Audio have come up with a brand-new piece to augment their already excellent lineup. The new unit is called the PS8-PRO, and it takes the abilities and performance of the older unit to a whole new level.

There are many subtle performance differences between the first generation PS8 and the new PS8-PRO, but here are a few real game changers:

- There are sample rate convertors at each input, optimizing the digital throughput for each input, individually, which allows for the unheard-of ability to play a mix of analog and digital inputs, simultaneously!
- A new Input Integration DSP panel in the software provides level adjustment, time correction, EQ, and channel blending for every input channel, individually. This allows correction of OEM head unit signals and a true, flat, full-range input. Input voltage ranges from 0.5 volts to 32 volts of input signal!

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I asked Arc Audio's Fred Lynch for details on the PS8-PRO and what I learned was, like the PS8, the PS8-PRO's technical mastermind is none other than the legendary Robert Zeff. As before, Zeff's technical prowess was mixed with feedback from the team at ARC Audio USA, along with Lynch's previous involvement with the original PS8 and extensive experience in tuning ultra-high-end

systems and competition cars, and the result is a brilliant blend of audio performance, adjustment capability, system design functionality, and true simplicity of use.

This thing can handle virtually any tuning or system setup function you can think of. The basics go like this: the PS8-PRO is a small black box that is controlled and adjusted primarily by a laptop computer connected by a USB cable, Bluetooth, or even Wi-Fi. I say "primarily" because there are provisions to change settings and configurations with simple switches as well, allowing certain functions to be adjusted from the driver's seat without a PC required. An optional remote-mounted device called a "PSC" will also allow adjustments without connecting a computer.

The software that comes with a PS8-PRO is some of the most intuitive processor software I have ever used, but it's going to be intimidating for anyone who

doesn't regularly work with tuning software, so those who have never tuned before should seek the assistance of a professional.

SOFTWARE & HARDWARE

The software is broken down into four distinct tabs, and then each of those has multiple sections of parameters to adjust. For example, if you go into the Integration DSP tab, you find sections for a parametric EQ, delay, and an integration mixer.

Or in the Output DSP tab, you find crossovers, delay, one-third octave EQ, parametric EQ, output levels, tone controls, and remote configuration.

You take it one tab and one page at a time to work your way through. To make things even easier, you can open up a graphical reference called the "Mixer Assistant" to assist in your setup. These assist panels will draw you a picture of the signal path for each channel,

input to output, and allow you to configure things right from there.

At the bottom of the software page is a constantly displayed level indication system that allows you to monitor what's going on at all times at various points of the signal path within the DSP. It will show you, at a glance, if the levels are too low, too high, or just right.

The PS8-PRO is much more than your typical DSP processor. At the digital core is a high-performance, automotive-grade, user-programmable, fixed-point, 32-bit, End-to-End (from ADC to DAC), 12x12 DSP core designed specifically for the audio industry, which is capable of 96/192-kHz signal processing, with plenty of room for all the features needed for most any install. Coupled to the DSP core is a flexible DMA engine, which can move data between peripherals, such as the serial control port (SCP), digital audio input (DAI) and digital audio output (DAO), or any DSP core memory, all without the intervention of the DSP.

LISTENING & MEASUREMENTS

In addition to the car audio addiction I have, I also do a lot of work with professional live sound and studio products, as well as high-end home audio. As a result, I have heard a lot of DSP processors. A few are very good, and some are, well, junk. One way I differentiate between the two is to listen for digital artifacts, or what I call "processed sound." In this regard, the Arc Audio PS8-PRO is one of the most musical processors I have ever heard because when you listen to a properly tuned system through the PS8-PRO, you have no idea the signal is being manipulated. That sort of transparency is the trademark of a truly high-performance processor, and the PS8-PRO gets very high marks in that regard. This DSP sounds amazing, simply because you can't hear it.

From a technical, bench measurement perspective, the PS8-PRO is equally as impressive.



The unit has a truly formidable set of credentials on the test bench. It will deliver eight volts on each output with a great output impedance of only 50 ohms. Signal-to-noise is always a tough spec on DSP-powered products, but thanks to the use of first class components and the engineering brilliance of Robert Zeff, this processor has a S/N ratio of better than -88 dBA at an output

level of eight volts RMS. I measured THD levels in the 0.05 percent range, and stereo separation is a phenomenal -73 dB!

**FEATURES
AUTO RECOVERY USB (A.R.U.)
TECHNOLOGY**

The A.R.U. technology, designed and engineered specifically for the PS8-PRO by Robert Zeff, allows for

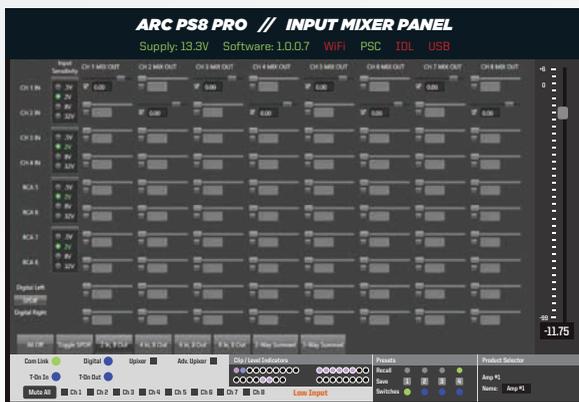
faults and cable issues, such as cable disconnect, damaged cables, power failure or power loss on PC or in the vehicle, critical faults in USB communications, etc., without the result of a processor lockup or loss of unsaved settings requiring a processor reset. Arc Audio's A.R.U. allows users to simply restate the proper operating conditions after a failure or power loss and continue from the last known user-defined tuning position, even if it has not been saved as a preset or as a setting file on the PC.

REAL TIME UPDATE & MEMORY MANAGEMENT

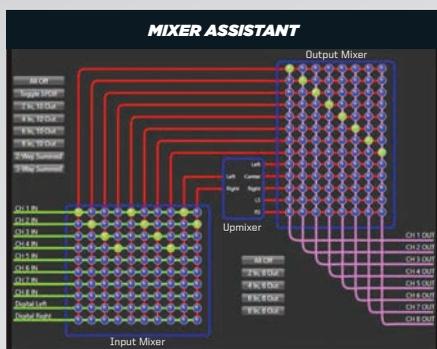
Whether making adjustments via USB direct connection with a PC, using the PSC controller, or AXP Wi-Fi accessory module, the PS8-PRO updates in real time, allowing you to hear and save every adjustment as it is made, while user setting files are processed internally as data files, rather than active audio files. In this manner, the PS8-PRO can process the user-defined adjustments at a higher resolution and faster real time speeds without the risk of loss of settings in the event of unforeseen events or circumstances.

FOUR-STAGE AUDIOPHILE SWITCHING POWER SUPPLY

The PS8-PRO uses a dedicated and proprietary four-stage switching power supply for its various critical digital and analog



Output Delay Panel



Output Delay Panel



Crossover Control Panel

components. There is an isolated 14-volt power supply used specifically for the display controller and Op amps, as well as dedicated power supply channels for the PS8-PRO's codec and DSP main chips. To prevent unwanted noise, special ground isolation circuitry

SIGNAL INPUT STAGE & INPUT COMPATIBILITY

The PS8-PRO includes eight channels of balanced differential RCA input, capable of up to 32 volts of signal from low-level RCA or

speaker-level inputs. An additional S/PDIF digital channel input is also included for reference-level direct connection capability.

FIBER OPTIC INPUT

A priority-assignable S/PDIF Fiber Optic input capable of processing high-resolution 96/192-kHz source signal media allows users to run at the highest level of acoustical reference on today's most advanced high-end source units. When using user-defined priority assignment, users also

have the option to automatically change presets (EQ, crossovers, delay, etc.) to optimize the final acoustical product between different types of inputs.

IDATALINK MAESTRO

There is an optional direct port connection allowing installers to combine the power of the PS8-PRO with iDataLink's Maestro AR module. Currently compatible with a selection of Ford and Chrysler vehicles, this interface enables installers to seamlessly remove the factory amplifiers and put the PS8-PRO in its place, giving users an upgraded audio system with full retention of the vehicle's factory radio and controls. The PS8-Pro also offers additional resources in the software that gives users and installers the ability to customize how several of the factory tuning and control operations on the radio and steering wheel operate.

DSP-CONTROLLED REMOTE TURN-ON CIRCUIT

To prevent unwanted pops and snaps caused by components in the system turning on before or after others, the PS8-PRO has DSP-triggered remote turn-on output technology to control the critical timing of your amplifier's on/off sequences. User-defined controls allow users to define when their amplifiers turn on or off, as well as additional delay needs found in OEM interfaced auto-sense turn-on applications using signal from the vehicle's factory audio system through the PC interface, from one millisecond to 10 seconds after the source unit is turned on, with the same range of adjustment available for turn-off settings

BLUETOOTH EXPANSION MODULE

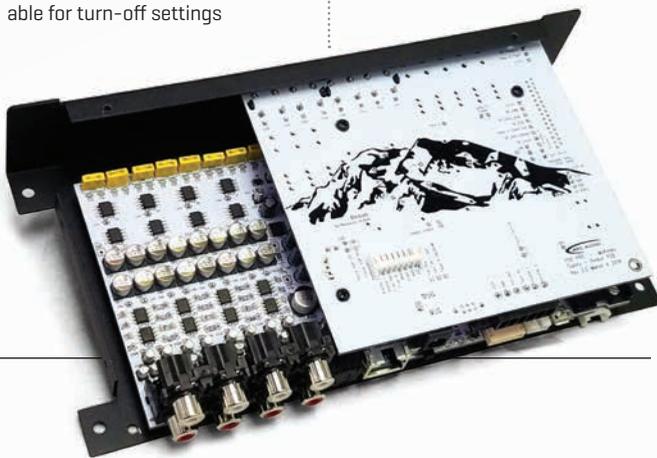
The PS8-PRO has an optional advanced Bluetooth audio connection feature incorporated into the platform design, offering users a wide variety of additional high-resolution source applications for the PS8-PRO. The ARC Audio BTM Bluetooth and BTD Bluetooth Dongle modules are required for this function.

VU METERS

One of my favorite features, and something that comes in very handy when tuning, are the on-board VU meters in the software. These individual channel meters offer users the ability to view signal levels within the PS8-PRO and multiple points in the signal chain. The signal input VU meter allows users to view the incoming signal in real time, including clipping level and independent channel level of all inputs.

A Post-Mixer output VU meter allows users to visualize the signal levels through the PS8-PRO, post-mixer/router, crossover, signal delay, etc., helping ensure that the channel assignments are correct

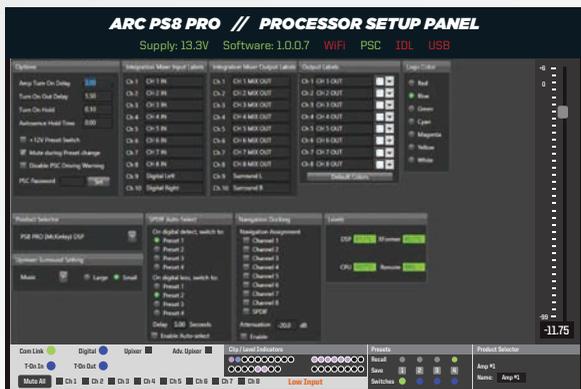
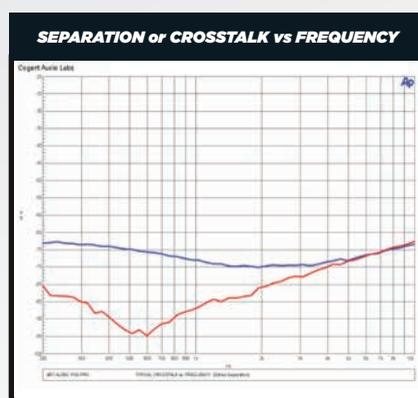
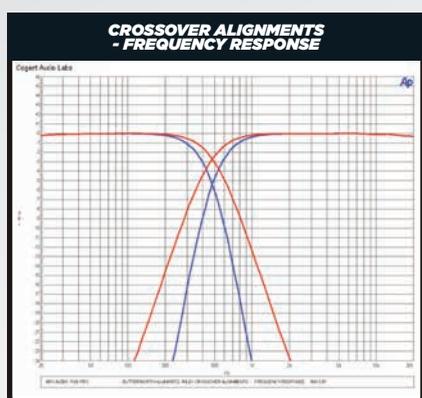
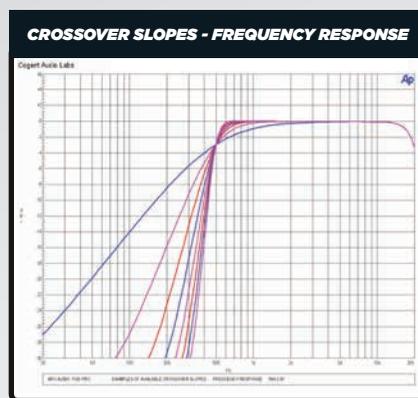
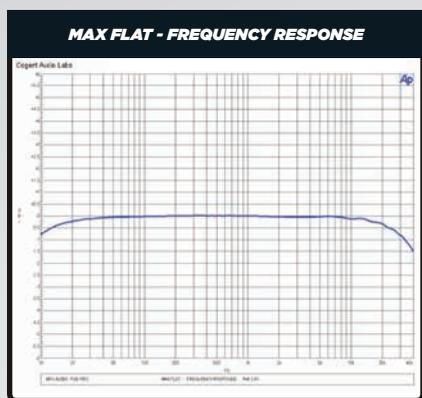
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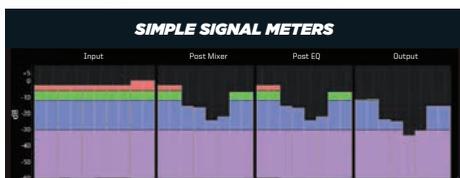
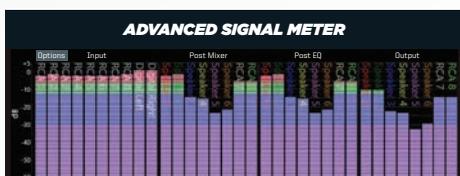
and there is no internal clipping of any of the individual DSP internal component sections before the output stage. The PS8-Pro also has an added meter package that reads signal post-EQ to help identify or isolate possible level or unwanted distortion issues as a result of an improperly set gain band in the massive resource of EQ configurations. The Signal Output VU meter allows users to see the signal of all individual channels as it is leaving the DSP into the PS8-PRO's output stage, allowing users to use the signal output trim panel to adjust each channel for optimum signal, while avoiding signal clipping or unwanted distortion.

ONE-STEP FIRMWARE / SOFTWARE UPDATE

When the PS8-PRO is connected to the internet via a PC, users can quickly check for updates for their DSP and controller by simply pressing "Check for Software Updates." Users can utilize a single-click [network-



Setup Panel



based] operation to check that they are using the most up to date version of the software. The new software update kit also automatically verifies version compliance of the PS8-PRO's firmware. If it is out of date, there is an auto-update process to allow further operation and tuning.

Thanks to a built-in fail safe protocol, there is no risk of catastrophic consequences should there be an accidental interruption of any kind during the update process. Lynch demonstrated this for me by first unplugging the USB cable during an update, and then removing the battery from his laptop during a subsequent demonstration. The system returned to its previous state without any lockups or crashes.

WORLD WIDE WEB TECH SUPPORT

The PS8-PRO PC interface allows Arc Audio to take technical support to a new level. With a click of a button, the software compiles a complete operational history

report that includes setting files, error reports, peak operation data, software/firmware version numbers, and a plethora of other detailed info that can be reviewed by technical staff if an unwanted experience happens.

Additionally, web-based technical support services can be connected directly to your PS8-PRO hardware from anywhere in the world, allowing tech support personnel to take control of the unit from Arc Audio's main headquarters. This remote-control capability allows the support staff to quickly and easily diagnose and correct problems without an endless barrage of questions.

For more details and info on the extensive selection of crossover options, filters, equalization, high-resolution signal delay, and features and options, visit ArcAudio.com. PAS