

EQUIPMENT  
REVIEW

## Rotel RSP-1098

*Surround Processor/Preamplifier  
Offering High Performance & Value*

PERRY SUN

### Balancing Refined Audio Design And Affordability

Rotel is a 40-year-old, family-owned company in Japan that enjoys a solid reputation in the high-end audio and home theatre worlds in two seemingly juxtapositioned aspects—refined audio product design and remarkable performance-to-price value. The company prides itself in its Balanced Design Concept, which incorporates a combination of fundamental engineering, critical by-ear evaluation, and attention to cost.

*"The RSP-1098 represents an outstanding value given its high-end audio caliber, a wide range of features and functions, and design elements conventionally associated with considerably more expensive surround processors."*

Traditionally known for its high-end, two-channel audio separates, Rotel has been offering a series of home theatre-centric products for several years, which includes surround processors, receivers, multichannel power amplifiers, and DVD players (including the DVD-Audio/Video RDV-1060). The company turned many heads in the industry when it rolled out its RSP-1066, a surround processor fully equipped for 7.1-channel playback and priced at only \$1,499. Recently, Rotel introduced the RSDX-02 (\$1,499), a product that combines a surround sound receiver with a DVD-Audio/Video player.

The Rotel RSP-1098 is the company's flagship surround processor and the subject of this review. In addition to being one of the few such products to offer an integrated LCD display, the RSP-1098 is fully equipped with features more commonly encountered with considerably more expensive products. It carries a \$2,999 price tag, which I had to say was rather mind-boggling considering the build, design, and performance quality of this component.

### Rotel RSP-1098



#### Specifications:

Audio Inputs: Analog Stereo (8), 7.1, S/PDIF (5 Coaxial, 3 TOSLink)  
Audio Outputs: 7.1, S/PDIF (2 Coaxial, 2 TOSLink), Analog Stereo (5 Including Tape Loop & Zone 2)  
Video Inputs: Composite (5), S-Video (5), Component (4)  
Video Outputs: Composite (4), S-Video (4), Component  
Other Inputs/Outputs: Remote (3), IR Trigger (2), 12-Volt Trigger (4), Computer I/O (RS-232)  
Decoding And Processing Modes: Dolby Pro Logic®, Dolby Pro Logic II, Dolby Digital, Dolby Digital EX, Dolby 3 Stereo, DTS®, DTS-ES®, DTS 96/24, DTS Neo:6®, Rotel XS, Music 1-4, Stereo, Bypass, 5 Channel Stereo, 7 Channel Stereo,

PCM 2CH, HDCD®, MP3, MPEG  
Digital Signal Processor: Cirrus Logic® CS49400  
Dimensions (WHD In Inches): 17 x 6.5 x 17.1  
Weight (In Pounds): 34.6  
Price: \$2,999

Manufactured In Japan For:

Rotel of America  
54 Concord Street  
North Reading, Massachusetts 01864-2699  
Tel: 978 664 3820 / Fax: 978 664 4109  
www.rotel.com

#### Exterior Build And Features

The Rotel RSP-1098 surround processor has a stately, rather elegant appearance. The aluminum front panel, offered in black or silver, is flanked by two black aluminum wings, "which are part of the RSP-1098's front-panel chassis. The front panel is uncluttered, with two large knobs and a series of buttons serving to provide for most, if not all of the essential functions of this surround processor. Of course, the central feature of the front panel is the 6-inch-wide LCD display, which is used for viewing system status and accessing menu-based functions, as well as monitoring input video sources.

Overall, the unit has a solid, hefty feel. Vents

on the integrated side/top panel (as well as on the bottom of the component) provide for cooling. The RSP-1098 is of considerable weight at nearly 35 pounds, due in no small part to the presence of three transformers inside.

The rear panel shows a fully appointed surround processor in terms of its input and output options. There's switching for up to four input component video sources (typically, up to three are offered for a surround processor). For custom installation, the RSP-1098 offers Zone 2 audio and video, 12-volt triggering, and IR jacks. An Ethernet-type (RJ-45) port is also included, which allows for external control of the RSP-1098 via RS-232 interfacing, as well as internal software upgrading. Close inspection of the RSP-1098's rear panel shows that the various inputs and outputs



reside on a series of modules, all having separate service part model numbers. The IEC power AC jack is two-pronged, meaning that the grounding is floated.

## Interior Components And Design

The interior of the RSP-1098 reveals an impressively neat and organized layout of components. A substantial portion of the internal real estate is devoted to the power supply system. There are three toroidal transformers, which are Rotel-designed and manufactured. One of them is devoted to the analog circuitry. The other is dedicated to the digital operations of the unit, and the third provides for filtering. A power distribution board regulates the power and then routes to the various plug-in module boards. These boards are all separately housed within their own metal casing, as is the power supply reception module. Internal wiring is kept at short lengths and neatly organized.

As mentioned, the various inputs and outputs for the RSP-1098 reside on modular boards that are removable. It should be made clear, however, that Rotel's rationale behind this was to enable convenient servicing of parts, should it become necessary. The company has not announced an intention to offer hardware upgrades to the RSP-1098 via new plug-in modules, such as would be the case for Theta Digital's Casablanca product evolution or Meridian Audio's 861 surround processor.

The central DSP (digital signal processor) for the Rotel RSP-1098 is the Cirrus Logic® CS49400. Four CS43122 192 kHz/24-bit stereo audio DACs (digital-to-analog converter) are employed for the eight output channels, and AKM Semiconductor AK5393 96 kHz/24-bit audio ADCs convert input analog audio to digital. The analog audio output stage (a critical design element of any surround processor) features Burr-Brown® op-amp circuit components.

Another notable design element for the RSP-1098 is the use of mechanical relay switching devices for muting. You will hear these devices in operation rather often as "clicks" emanating from the unit. Mechanical relays for muting are preferred for audio purity concerns because they are only part of the signal paths when muting is engaged.

The RSP-1098 offers nearly all of the industry-recognized surround decoding and processing features, including Dolby® Pro Logic® II, Dolby Digital EX®, DTS® 96/24, DTS-ES®, and DTS Neo:6®. It is expected that there will be a software update to the RSP-1098 to allow for Dolby Pro Logic IIx. There's also Rotel's XS (eXtra Surround) processing, which enables 6.1 and 7.1 listen-



ing from 5.1 and matrix-decoded sources, four proprietary DSP music modes, and the capability to process stereo audio to five and seven channels. This surround processor also supports HDCD®, MP3, and MPEG multichannel audio. The RSP-1098's analog audio bypass circuitry routes stereo and eight-channel inputs directly to outputs.

## Setup And Customization

The Rotel RSP-1098's essential functions and adjustments are facilitated with the aid of their video-based menus. While an external display can certainly be used, you're much more likely to use the built-in LCD display. This is the third surround processor I have reviewed that incorporates such a display, and I have to say that this one trounces the others in terms of size and clarity. The on-screen menus are bright and very well-presented, easily enabling me to read the screen from several feet away. The LCD also will display only composite video input sources. You have the option to turn off the LCD if so-desired. From the on-screen menu, there are adjustments to fine-tune LCD brightness and contrast.

The on-screen menu design is excellent, easy to access, and rather logical in organization and layout. I found it necessary to refer to the owner's manual to clarify a few matters. But otherwise, setup and menu access should be easy and intuitive. The owner's manual does a very good job of explaining the use of the many functions and parameters, particularly as they relate to system setup. On-screen menu access is possible via the remote control or from the front panel. For the latter, you'll only need to use the Menu button and Function knob (which is also a large button).

For its price, the RSP-1098 offers very impressive flexibility with its myriad of system adjustments and functions. There are certain aspects of system setup for this surround processor that are often missing from its more expensive competitors. One of them is the option to set separate crossover points for bass management for the front

loudspeaker pair, center, surrounds, and back surround(s). You can also select a master crossover point for all loudspeakers while setting a low-pass filter for the subwoofer, or defeat this setting. All crossover points are selectable between seven settings from 40 to 200 Hz.

Loudspeaker distances are specified in feet (1-foot increments) but are also displayed in meters. When setting channel output levels, you can make adjustments in 1 dB steps. However, the RSP-1098 only allows you make such adjustments in the presence of the internal pink noise source. If you desire the use of an external source, as I would generally advise, then there is a workaround that will require some creativity and the use of the surround processor's temporary on-the-fly channel level settings. Whatever the case, it is advisable to use the master volume control in setting the level for the left front channel, adjusting the level for all other channels relative to left front, and then noting the master volume setting as your reference listening level.

The Rotel RSP-1098 additionally offers some unique features related to system setup. Individual subwoofer adjustments are possible for various surround listening modes, including Dolby Digital and DTS. You can also alter bass management settings for individual loudspeaker groups, depending on the listening mode. For example, say that you have your setup such that all loudspeakers cross over to the subwoofer at 80 Hz. However, while listening in stereo, you may prefer to have the front loudspeakers set for full-range playback.

While the RSP-1098 offers 7.1-channel output, there are actually ten output channels, with the center and subwoofer duplicated. Pressing the Menu button on either the front panel or remote control reveals a convenient system status menu, showing current input setting, input video source, listening mode, digital input source, volume level, and active loudspeakers.

Setting up input sources for the RSP-1098 should be just as intuitive and straightforward as loudspeaker setup. You have the ability to set a specific input video and digi-



tal audio to any or all of the available input source settings. For each input source setting, you can specify your own label, as well as a Group Delay setting, which imposes a specific time delay to the audio output (from 0 to 500 ms in 5 ms increments). This setting (which can also be set on-the-fly) is particularly helpful in situations where the image lags behind the audio, due to the display or video processor, or a particular DVD or DVD player.

The 7.1-channel analog audio input source offers the option of engaging bass redirection. Low frequencies below 100 Hz are duplicated from the main channels and sent to the subwoofer.

The Rotel RR-1050 remote control is comprehensive and should provide for smooth and trouble-free operation after some initial familiarization. Most of the buttons can be illuminated, and the ones that are not are concealed under a slide-out panel.

## Installation And Equipment

The Rotel RSP-1098 was installed in my reference home theatre (see page 9) with the TAG McLaren DVD32FLR as the DVD player. To assess relative performance capability, I employed the TAG McLaren AV32R surround processor with the latest updates. As a comparative reference for the RSP-1098's multichannel analog line stage, I used the McCormack MAP-1 six-channel analog preamplifier with the Integra DPS-8.3 DVD-Audio/Video & SA-CD player, as well as an Outlaw Audio ICBM-1 to provide for bass management.

## Listening Tests And Performance

Overall, the Rotel RSP-1098 delivered impressive surround sound performance. I like to describe the general sonic character as nicely defined, yet also smooth and relaxed. During my evaluation period, I was delighted with how the Rotel performed, whether the source was movie soundtracks, high-resolution surround music, or just two-channel audio from CDs. There was simply a pleasing sonic quality from the RSP-1098 that translated very nicely to the reproduction of various recordings. At the same time, I also marveled at the RSP-1098's sonic performance capability given its rather modest price tag, despite my observations that the reference TAG McLaren AV32R, at about twice the price, exhibited some slight yet noticeable audio refinements.

With the use of analog bypass, whether for any of the two-channel or multichannel inputs, RSP-1098 exhibited an impressively

low noise floor. Initially, however, there was some detectable noise at volume levels approaching film reference when digital audio sources were engaged. This was subsequently corrected with a replacement digital audio plug-in module, which included additional shielding for extra isolation from noise interference. While Rotel did acknowledge the audible noise, they also claimed that it was not typical. Current production units have the revised digital audio module installed.

The RSP-1098 offered enjoyable, pleasing reproduction of movies and music by virtue of its palpable audio quality. More specifically, the midrange exhibited a slightly smooth, relaxed attribute while also possessing considerable detail, and as well, timbre that was quite compellingly natural. In my opinion, these qualities should result in a "musically attractive" audio presence from the casual to fairly serious music devotee.

For music, particularly of the high-resolution multichannel nature from SA-CDs and DVD-Audio, I enjoyed the RSP-1098's presentation of a warm, engaging soundstage presence with good lateral imaging and dynamics, as well as abundantly resolute tonality. These favorable attributes were especially apparent with two SA-CD titles I used during my evaluation sessions, Prokofiev's *Romeo and Juliet* suites from Telarc and *Word Of Mouth Revisited* from Jaco Pastorius Big Band (Heads Up), along with *Johann Strauss In Berlin*, a great DVD-Audio recording from Teldec.

With movie soundtracks, the slightly relaxed nature of the midrange proved to be a complement to the often characteristic "edge" in the tonal character, seeming to gently taper any apparent sibilance in the audio. Dialogue sounded especially clear and comfortable through the RSP-1098. In general, sonic delivery was of particularly notable fidelity, spatial articulation, and dynamic range, evident with the very well-recorded and crafted soundtracks for *Lara Croft: Tomb Raider—The Cradle Of Life* and *Finding Nemo*.

## Conclusion

The Rotel RSP-1098 offers sonic performance that I feel is both enjoyable and exemplary. For its price of \$2,999, it also represents an outstanding value, given its high-end audio caliber, a wide range of features and functions, and design elements conventionally associated with considerably more expensive surround processors. I found the RSP-1098 to be particularly user-friendly and intuitive in operation. This product is an excellent choice for any home theatre enthusiast eager to jump into high-end separates without breaking the bank. ■