

Rotel RSP-1098 AV processor

This world exclusive review by Paul Miller finds Rotel applying its two-channel magic to multichannel audio

If Rotel is best known for its audiophile but understated amplifiers, CD players and AV receivers then its new RSP-1098 processor looks to be a radical rethink for this conservative brand.

The RSP-1098 is the embodiment of trickle-down technology. It's not the first to feature an LCD panel, for example, but it is the first to use a 16:9 aspect (wide VGA) colour TFT display. Similarly, a modular internal architecture was premiered in very high-end models from Mark Levinson and Meridian; but at just £2300 price pounds this construction is unique.

In the same vein, the RSP-1098 is one of the very first units to implement Crystal's new-generation CS49400 decoder, a single-chip replacement for the 300-series, which required an additional back-end processor to accommodate all 7.1 channel modes. Now Dolby EX, DTS ES (Matrix and Discrete), Neo:6 and 96/24 decoding are provided from a single platform with sufficient headroom remaining for Rotel's own, proprietary 7.1 channel processing mode. There is also sufficient memory to accommodate a maximum 500millisecond sound-to-picture lip-synch delay, adjustable in 5ms steps. And the DACs? Well these are Crystal's top-of-the-range CS43122 parts, so-called for their potential 122dB dynamic range.

The key analogue, digital and video components of the RSP-1098 are separated onto a series of cards that slot into PCI connectors on a common backplane. In this way, the four component video, five S-video and five composite video inputs are divided into discrete groups around the back of the RSP-1098. Other cards carry the various digital inputs, assignable trigger and comms connections (to facilitate software updates) alongside one for the eight stereo inputs and another that hosts a bank of multichannel inputs and pre-outputs. The benefits of this modular approach to manufacturing, service and future hardware 'swap-outs' is so

obvious one wonders why more audio-visual specialists have not gone down this route.

From an operational standpoint, the RSP-1098 is a dream. Volume sits to the right of the TFT display and offers Slow, Mid and Fast modes that

skip up or down in 1dB, 2dB and 3dB increments over a full 94dB range. It's even possible to define both the switch-on and maximum permissible volume settings. Any of the *composite* video inputs may be directed to the TFT panel with the system status display superimposed on top. Not only is this useful for navigating DVD-A menus or cueing-up a movie before the TV is switched on but, for example, you can also hook this to a security camera.

The RSP-1098's menu is navigated using the rotary encoder that sits to the left of the display. The Input page deals with assignment of analogue and digital connections and their default decode modes, while Contour provides independent high and low-frequency 'shaping' of front, centre, surround and centre back channels. The Sub Setup and Speaker configuration pages are especially flexible. The former allows a master crossover frequency to be set from 40-200Hz for both the sub and *any* main channel set to 'small'. The



Rotel RSP-1098 AV processor

PRICE	£2300
SUPPLIER	B&W Loudspeakers
CONTACT	01903 221500
WEBSITE	www.rotel.co.uk



master level of the various Dolby, DTS, stereo and music decode modes may also be offset from here. The Speaker Setup page allows individual crossover points to be specified for each of the main channels while setting a default configuration for each of the Dolby and DTS decode modes. Add to this a flexible second zone facility, with independent volume control and composite video, plus a programmable and LCD-equipped RR-1050 remote control and the RSP-1098 looks to be a formidable package.

PERFORMANCE

In my experience, AV processors deliver across a sliding scale. At one end we have very dry, technical performers that render six or more painfully detailed channels that betray little or no empathy with the film's score. At the other end are units that build a genuinely 'musical' sound that reaches into and across the room. Fortunately, Rotel's RSP-1098 lands far closer to

The RSP-1098's front panel carries two large rotary controls: the first adjusts volume, which can be set to change in 1dB, 2dB or 3dB increments; the second to navigate the processor's comprehensive on-screen menus



Rotel provides an RR-1050 remote control, equipped with programmable functions and an LCD



The burble of the 7-series BMW is as evocative as the mountainous scenery which, together with the punchy soundtrack, builds a realistic tension in the room without the sound itself becoming strained or tiring. This is a big and powerful sound, delivered with a deftness that's really quite disarming.

Perhaps this is not surprising in the light of its performance with DVD's from The Eagles' *Hell Freezes Over* to Robbie William's live Albert Hall extravaganza. The latter is thunderously entertaining, the RSP-1098 creating a real sense of the Hall's unique acoustic while unleashing Robbie's tonsils to dramatic effect. There's a very real sense of 'being there', even if this does involve lapping-up the slightly self-indulgent atmosphere of the concert as a whole. There's no gain without a little pain!

It's thunderously entertaining... the RSP-1098 creates a very real sense of 'being there'

CONCLUSION

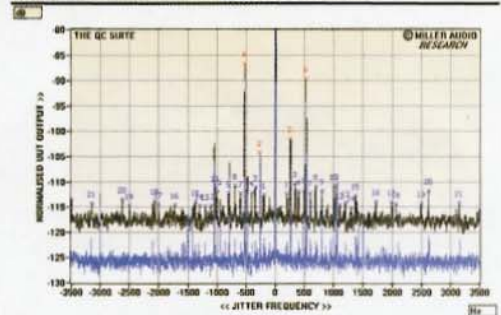
Rotel's designers have not sought to tease the very best technical performance from the RSP-1098's silicon, possibly because they appreciate that many products that measure like a textbook are no more enthralling on audition. Instead, the RSP-1098 has been carefully

the latter end of the scale than the former.

To describe the external renovation performed by the pursuers on our hero's villa in *The Transporter* as 'musical' is probably stretching the point. And yet the hail of automatic gunfire, the delicate rattle of spent cartridges bouncing off the quayside and the whoosh of the surface-to-surface missiles does have a certain melodic quality about it. The point is, this melee of explosions, falling masonry and metalwork can easily sound confused, hard and relentless. Not so through the RSP-1098, which maintains a euphonic harmony across all its 6 or 7.1 channels, even to the point of allowing the limited dialogue the same room to 'breathe' through these chaotic scenes as they have when accompanied by as subtle a sound as the background theme.

LAB REPORT

ROTEL RSP-1098 AV PROCESSOR: JITTER WITH 48kHz & 96kHz LPCM DIGITAL INPUTS



The RSP-1098's PCI backplane is really a motherboard equipped with PCI connectors, a docking station for the various audio, video, comms and digital interface cards rather than a true PC interface. As such, managing the various earth planes and minimising potential interference between these processes is extremely difficult and may explain why the ultimate technical performance achievable by the CS43122 DACs, for example, has not been fully realised.

THE JITTER SPECTRUM

Figure 1 shows the slightly untidy jitter spectrum that amounts to ~1400 picoseconds with 48kHz/24-bit data (blue trace) and ~1100ps with 96kHz/24-bit data (black trace) where there's also an obvious (but not directly audible) increase in background noise.

The 102dB A-wtd S/N ratio is good enough for Dolby and DTS multichannel soundtracks while errors of just 0.0/-0.5dB at -100dBFS and 0.0/-3.0dB at -110dBFS (48kHz/24-bit LPCM data) are impressive. Distortion of just 0.003% (20Hz), 0.0007% (1kHz) and 0.007% (20kHz) at -10dBFS increases to 0.013% at 40kHz with 96kHz/24-bit LPCM inputs at -10dBFS with no increase in ultrasonic noise right up to 100kHz.

THE SUBWOOFER CHANNEL

Figure 2 shows that the sub channel is some +5dB up on the main channels with

Dolby tracks, while the centre back channel appears at -6dB, as it should. The centre (green) channel shows Rotel's 'small' speaker configuration, while the differences in level between the main channels is a direct reflection of the -0.2dB to +0.5dB variations in balance.

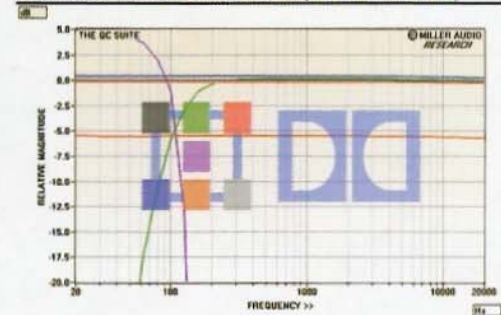
Reducing the centre to 'small' increases the front bass output by +3dB with no increase in sub level, while reducing the surrounds to 'small' produces no change on the front but increases the sub level from +5.1dB to +9.3dB. When centre and surrounds are set to 'small', the front channel bass output lifts by a substantial +12.7dB and the sub by +10.2dB. Only a configuration with no sub and small surrounds gives any concern, for the centre channel bass is increased by +8.0dB and clips with some 12% distortion.

DISTORTION LEVELS

Figure 3 shows that LPCM inputs enjoy some 10dB less distortion over the top 10dB of the processor's dynamic range while below -20dBFS the 'character' of the channels shifts so that the front and centre are very similar but slightly distinct from the surrounds and centre-back.

The processor's response is flatter with Dolby-encoded data than with uncompressed PCM inputs: the former just -0.1dB down at 20kHz, the latter -0.65dB at 20kHz (48kHz/24-bit). With 96kHz/24-bit data, this continues with the HF rolloff reaching -1.6dB at 45kHz.

ROTEL RSP-1098 AV PROCESSOR: DOLBY DIGITAL EX RESPONSES (CENTRE CHANNEL SHOWS 'SMALL')



ROTEL RSP-1098 AV PROCESSOR: DISTORTION vs DOLBY DIGITAL EX SIGNAL LEVEL (LPCM DASHED)

