



ROTEL

RC-1090 Control Amplifier & RB-1080 Power Amplifier

You can tell Rotel is still a relatively small, family-owned company simply by looking at the instruction manual. In the section about making signal connections, there's a warning that says 'To prevent loud noises that neither you nor your speakers will appreciate, make sure the system is turned off when you make any signal connections.' That wouldn't have made it past the style police—or the lawyers—at any of the larger multinationals!

In fact the whole concept of building the RC-1090 and RB-1080 very probably would not have made it past the bean counters in a large multinational company. I can imagine their comments now: 'What, it only has two-channels?' 'Where are the DSP modes?' 'Why are we bothering with balanced inputs and outputs?' Luckily, in a small company, you don't have to explain anything, you can just take the bean-counters down to the listening room, play some music through the product in question and say 'That's why!'

RC-1090 STEREO CONTROL AMPLIFIER

Rotel has loaded some neat circuits into the RC-1090 without getting away from the basic concept of a straight-through pre-amplifier (or 'stereo control amplifier' if you prefer to use Rotel's nomenclature). The front panel display is the most obvious example, with an LED (dot-matrix style) display of the selected input and the selected record-out output. It's large—and thus fairly intrusive!—but it doesn't have to be switched on all the time. In its 'off' mode, the display will stay blank at all times except when you change either the input source or the record output mode, upon which it will light up to display the selected source for five seconds before blanking out again.

When it displays the source, it can display anything you want, because you can program in your own identifiers, using up to five charac-

ters, so instead of showing just 'Aux 1' the display could instead say 'DVD-P' or 'VHS-1'. Once programmed, the Rotel shows *both* identifiers in quick succession, so if you use a Theta CD player, for example, and select the CD input, it will flash the letters 'CD' for two seconds, then the word 'THETA' for a further five seconds.

Another neat circuit allows the RC-1090 to be controlled by a computer (or any home automation system). A standard RJ45 socket on the rear panel will recognise the usual operating codes, which are exactly the same as those transmitted by the RR-969 remote control. This can be used in conjunction with the 12v-trigger output and the external (Xantech-compatible) remote input to enable completely remote controlled operation, including control over other attached components (such as the RB-1080). The only bad news about the RJ45 socket is that if your dealer does not have any suitable control software, you'll have to write it yourself, because neither Rotel nor local distributor International Dynamics has software available. I have heard reports that Crestron and AMX are in the process of developing 'modules' to control the RC-1090 and RB-1080 but have yet to confirm them.

But perhaps the neatest circuit (or circuits) in these Rotels are the balanced inputs and balanced outputs, which means you can use very long cable runs without worrying about noise being induced in the cables. This is not particularly important if you're using the RC-1090 in a stand-alone hi-fi system, but if it's being used as a part of a larger, multi-room system, where long cable runs are virtually inevitable, it will mean lower noise and thus higher performance. Using balanced connections is also useful if you live in an area where there's lots of r.f. and/or electrical interference. There's only one balanced input (for CD) and you can't 'double-up' by plugging one CD player's output into the balanced inputs and a second CD player's outputs into the unbalanced (RCA) inputs. You can use only one set of inputs at a time, not both. Not that this should be a worry, since there are five

line inputs, one phono input (switchable between MM and MC) and two tape loops—in other words, plenty to cope with almost any situation.

Input switching is via small push-buttons arrayed in a line across the bottom right of the front panel: Phono, CD, Tuner, DVD/Video, Aux 1, Aux 2, Tape 1, Tape 2. Immediately underneath each of these buttons is a matching button to select the Record output. At the bottom left of the front panel are the on/standby power button, a standard 6.5mm headphone socket and a small, circular, infrared receiving 'window' for the signals from the Rotel remote control.

The rear panel is laid out extremely well, though it's somewhat dominated by the four large XLR sockets for the balanced inputs and outputs. Alongside each pair of XLRs is a small slider switch that must be set appropriately (on or off) to get each XLR pair to pass signal, irrespective of what you do with the remote control or front panel controls.

RB-1080 POWER AMPLIFIER

The RB-1080 follows in the great tradition of Rotel power amplifiers, being very large, very heavy and available only in black! It also follows the great Rotel power amplifier tradition where all those impressive-looking fins on the front panel have absolutely nothing (or very little!) to do with dissipating the heat generated by the power output transistors. In fact, the 'real' heatsinking is inside the chassis, so you have to be sure to allow proper ventilation because, thankfully, there's no in-built (noisy) cooling fan.

The front panel has only a single, large, power switch, above which are a power indicator and a protection LED. Rotel's protection is benign, in that it's independent of the audio circuit and therefore can have no effect on sound quality. Instead, it monitors the temperature of the internal heatsinks. If they get too hot, the protection shuts the amplifier down, upon which the front-panel LED will

switch on. That said, the Rotel's d.c. voltage rails are also protected by 6.3A output fuses, one each for the (+) and (-) rails for each channel.

At the rear of the RB-1080 are balanced and unbalanced inputs (with a slider switch for choosing which set you intend to use) and multi-way speaker output terminals. There are also 12-volt trigger inputs and outputs for remote switching and a trigger mode selector (on/off). Mains power is delivered via a standard IEC three-pin receptacle.

LISTENING SESSIONS

Setting up the Rotel pair was very easy, but I couldn't help but think Rotel should have made the RC-1090 as deep as the RB-1090 (not that you'll notice this if the two are installed in a rack or cupboard!). The fact that the two units *are* different depths means you can't place the RB-1090 on top of the RC-1090, which would allow superior cooling for the RB-1090. However, if they *were* the same depth, some people might then be tempted to place the RC-1090 on top of the RB-1080, which would result in even worse cooling, so that on balance, Rotel has probably steered the wisest course.

Although it's neat, the RC-1090's front panel display has the potential to confuse anyone who is not familiar with the RC-1090's operation, or doesn't look closely enough at the

Brand: Rotel
Model: RC-1090/RB-1080
Category: Preamplifier/Power Amplifier
Suggested Price: \$2,199/\$1,999
Warranty Period: Three Years
Distributor: International Dynamics
Australasia Pty Ltd
Address:
129 Palmer Street
Richmond
Victoria 3121
Tel: (03) 9429 0822
Fax: (03) 9429 0833
Toll Free: 1800 456 393
E-mail: id@internationaldynamics.com.au
Web: www.internationaldynamics.com.au
For additional information, turn to page 114 and circle 0841 on our Reader Information Service Card.

ROTEL



also be superior, so I would always recommend springing for a set of XLR-XLR leads. If you find these difficult to obtain as a finished product, you could ask for a set to be made up for you. If your dealer can't do this for you there are other companies around that will. In Sydney, I'd suggest asking Connect Cables in Artarmon (9437 6224) to wire them up with Neutrik XLRs at

front panel. Why? Take a look at the lead photograph in this review, where the front panel clearly shows the words 'CD OFF'. In fact this means the CD input is selected, and that the record output circuit is switched off, but I don't think this is immediately obvious, hence the potential for confusion.

Whilst connecting my turntable to the RC-1090, I discovered a design flaw with the rear-panel MC/MM switch, which means that under some circumstances, the plastic extension that protrudes through the rear panel can fly off the end of the switch and may even disappear inside the amplifier. If it does fall inside the amplifier it won't cause any electrical problems (because the part is made of plastic) but it will mean you can't switch between moving magnet and moving coil cartridges until it's fixed. I mention this only in the interests of disclosure, because when I alerted the local distributor to this flaw, it contacted Rotel immediately, which responded just as quickly that it would provide a 'fix' that would ensure no further RC-1090s should exhibit this behaviour.

During the course of this review, I tried both the balanced and unbalanced connections between the RC-1090 and RB-1080, also connecting a CD player with both balanced and unbalanced outputs via both connections, so in the end, I ended up trialling quite a few different permutations. In my location, where there's

very little r.f. interference, and using my very short (40cm) RCA leads, I could not detect any difference in the sound between the various connection methods—balanced or unbalanced. Which is not to say you might not—particularly if you're using longer leads, or you're in a more built-up area where interference is more of a problem. That said, my personal opinion is that the professional XLR connectors themselves are intrinsically far superior to the consumer RCA types, and in theory, the balanced electrical connection should

either end and Belden MediaTwist cable in between.

If you're like me, one of the first things you do when testing out a new amplifier—either at home or in the store—is to give the volume control a bit of a nudge just to get an idea of the potential power output. Do this with the RB-1080 and you should be prepared for a shock (and, if you try it in a showroom, for the very-rapid arrival of a salesperson to wrest the control from your nerveless fingers)! This amplifier is powerful, and I mean 'Powerful' with a

Power Output Table (Rotel RC-1090/RB-1080 Pre/Power Amplifiers)

Channels Driven	Load	20Hz	2kHz	20kHz
1	8Ω	270 (24.3)	282 (24.5)	276 (24.4)
2	8Ω	253 (24.0)	248 (23.9)	248 (23.9)
1	4Ω	473 (26.7)	479 (26.8)	475 (26.8)
2	4Ω	400 (26.0)	412 (26.1)	405 (26.1)
1	2Ω	* (00.0)	800 (29.0)	* (00.0)

Note: Figures in brackets are dBW-decibels referred to one watt) * Rail fuses blew before measurement could be taken (see copy).

Freq. Resp. @ 1 watt (-1dB):	5.6Hz- 89kHz
Freq. Resp. @ 1 watt (-3dB):	3.2Hz- 163kHz
Channel Separation @ 1kHz:	70dB
Channel Separation @ 20Hz:	70dB
Channel Separation @ 20kHz:	70dB
Channel Balance:	0.287dB
Interchannel Phase:	0.39 degrees
THD+N @ 1 watt:	0.0126%
THD+N @ 200 watts:	0.0163%
S/N Ratio (re 1 watt out):	74dB (unweighted)
S/N Ratio (re 1 watt out):	80dB (IHF A-weighted)
S/N Ratio (re rated o/pt):	90dB (unweighted)
S/N Ratio (re rated o/pt):	97dB (IHF A-weighted)
Input Sensitivity (CD input):	229mV (for rated output)
Input Sensitivity (CD input):	15.9mV (for 1 watt out)

capital P and a few exclamation marks. I don't care how inefficient your loudspeakers are, you won't need more power than the RB-1080 can provide, even in the largest room or open-plan space.

You won't need more finesse either. Although the Rotel can wave a big stick when required, it's more likely that for the most part listeners would prefer transparency and fluidity at low to medium volume levels, because it's at these levels that most listening at home is done. This Rotel combo didn't disappoint here either. Listening at very low volume levels, using very efficient loudspeakers (93dB SPL, which meant the amplifier was probably delivering less than half a watt of power at the time), the sound was beautifully clean and uncluttered, with no grain at all and a wonderful sense of tonality.

Listening to Ian Holtham's latest recording on the Move label (a Lizst recital, including the fabulous *Sonata in B minor*) the tone of the Steinway D's sound is wonderful, and the decay of individual notes is not only captured perfectly, but also reproduced perfectly by this Rotel RC1090/1080.

As you'd expect with such good performance at low and high levels, excessive dynamics didn't faze the Rotels at all, they simply leapt to the occasion. I listened to an incredibly dynamic new release from La Brava, titled 'Doin' Our Thing' with the Sydney All Star Big Band. Again, the way the Rotel amps handled the sound of difficult instruments, such as Blaine Wittaker's baritone sax, and the incredibly piercing sound of the brass section on *All Clear*, a track composed by Don Rader, who also plays trumpet on it.

The Rotels also handle less than perfect recordings very well. On Jimmy Barnes' 'RAW', a CD recorded live at the Colonial Stadium in Melbourne, the rawness (sorry!) of both the recorded sound and that of Barnes' own voice are rendered 'warts and all' conveying the true emotional feeling of the event, as well as the music itself. Listen to *Cheap Wine* or *Working Class Man* and you'll be an instant convert.

To my mind, the Rotel had only one tiny peccadillo, which is that it didn't seem entirely happy driving full-range electrostatic speakers. It wasn't that it didn't sound good—it did—but with a pair of the new

Quad ESL 988 electrostatics the sound didn't quite gel for me as well as it did with the various dynamic speakers I used for most of the auditions. This isn't a real-world concern, since electrostatic loudspeaker designs probably constitute less than 0.001% of the total hi-fi loudspeaker market, but it's certainly worth mentioning for the few of you who own or intend to buy electrostatics.

CONCLUSION

Rotel has not only managed to deliver great sound, performance and operability with the RC-1090 and RB-1080, but has also done so at an enticingly low price. High-power, high-end performance without the high price tag. **AHF**

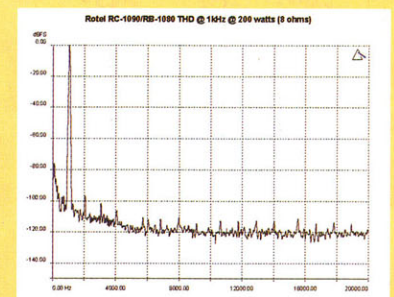
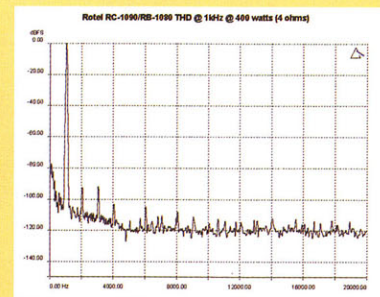
greg borrowman

Readers interested in a full technical appraisal of the performance of the Rotel RC-1090 and RB-1080 should continue on and read the 'LABORATORY REPORT' published on the following pages. All readers should note that the results mentioned in the report, tabulated in performance charts and/or displayed using graphs and/or photographs should be construed as applying only to the specific sample tested.

TEST RESULTS

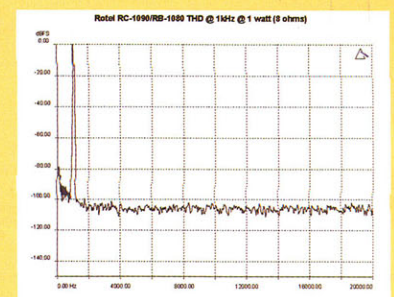
For this review, *Australian HI-FI Test Laboratories* was requested to make all measurements through both the RC-1090 and the RB-1080, in effect treating them as an 'integrated amplifier' rather than as separate pre- and power amplifiers, as has usually been done in the past. This means that with the single exception of the power output figures, none of the test results can be compared against Rotel's specifications, which are for each unit on its own. When making the tests, the two were connected using the unbalanced connections, all test signals were input through the unbalanced CD input, and all parameters measured at the speaker outputs of the RB-1080.

The frequency response was very flat, extending from 5.6Hz to 89kHz -1 dB and from 3.2Hz to 163kHz -3 dB. The roll-offs in the graphed result look a little extreme, but note the vertical scale: 0.5 dB per division! This means that across the graph,



from 10Hz to 40kHz, the response is within 0.5 dB or, to put it another way, 10Hz-40kHz±0.25 dB.

Channel balance was measured at 0.287 dB which is good without being exceptional. More interesting is the channel separation which came in at 70 dB irrespective of frequency, which is highly unusual and made me suspect some fault in a lead, or perhaps in the test set-up. Unfortunately, due to the pressure of deadlines, there wasn't sufficient time to get the units

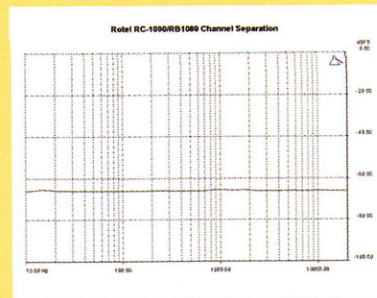
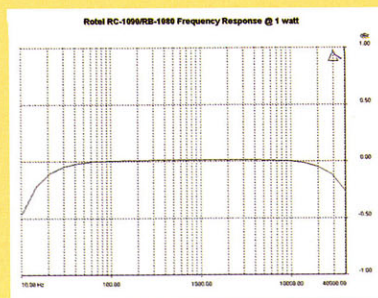
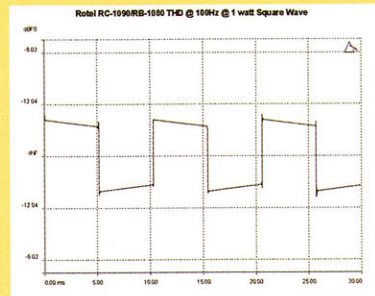
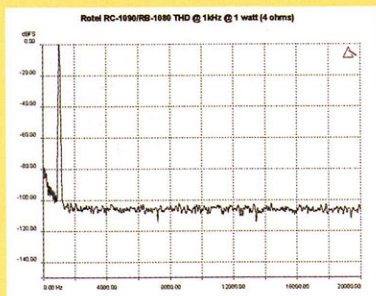


lab report

back for a re-test, so the reason for this outcome will have to await another issue. As it happens, 70 dB is plenty good enough for this parameter—in fact at 20Hz and 20kHz, it's better than a good few integrated amplifiers.

Distortion was effectively non-existent at one watt, into either 8-ohm or 4-ohm loads, with no distortion components at all above the noise floor which sat at around -108 dB over most of the audio spectrum. Increasing the power to its rated figure saw some minor harmonics appear at the speaker outputs for both 4-ohm and 8-ohm test loads. At 200-watts into 8-ohms there are second, third and fourth-order harmonics visible in the output, but these are at levels of -98 dB, -102 dB and -108 dB respectively, or levels approaching 0.001% THD, and therefore inconsequential. The picture isn't quite as rosy on the graph showing 400-watts into 4-ohms, but the second and third harmonics at -90 dB each contribute only 0.003% to THD, so the levels of distortion are still inconsequential. Overall, these are excellent results. Total harmonic distortion (the sum of all the harmonic components) and noise (THD+N) at one watt was measured at 0.0126%, and at rated output it was 0.0163%.

The square wave results were excellent, with the 100Hz wave showing a slight tilt to indicate a non-dc response, but no untoward phase shift. The 1kHz square wave was essentially a replica of the test signal (the glitches on the graphed output are an artefact of the digital acquisition technique). At 10kHz (a photograph taken directly from an old-fashioned analogue oscilloscope!) the square wave shows very slight rounding on the leading edge but is other-

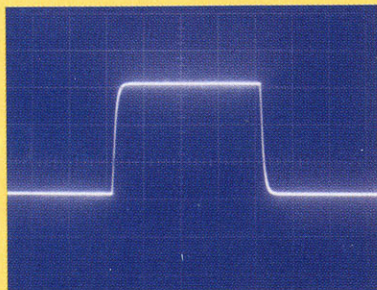


wise excellent. The oscillogram showing a square wave when the Rotel is loaded with a highly capacitive load exhibited only a mild overshoot, but quite extensive ringing.

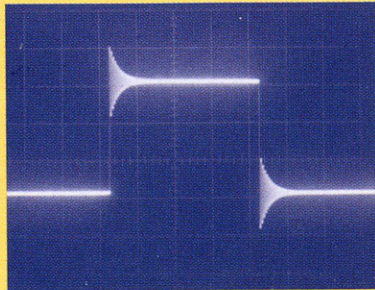
Signal-to-noise ratios were good, but the figures (and graphs) indicated to me that some low-frequency hum present, very probably mains hum. Even so, the A-weighted figure of 97 dB is very good. Input sensitivity was 229mV for rated output and 15.9mV for a one watt output, so you'll have no difficulties driving the Rotel to rated output with any hi-fi source component—even one with exceptionally low output.

As far as power output goes, the tabulated chart shows you everything you need to know, with the Rotel RB-

1080 producing power levels substantially above specification with any load, at any frequency (remembering that the minimum load is supposed to be 4-ohms!). Both channels driven into 8-ohms, the Rotel delivered 248-watts (23.9dBw) continuous at 1kHz and 20kHz and *increased* output a fraction at 20Hz, to deliver 253-watts RMS (24.0dBw). Into a single channel, the Rotel delivered a maximum 282-watts (24.5dBw) at 1kHz into 8-ohms, a full 1.5 dB better than specification. Into 4-ohm loads, the RB-1080 more than doubled its rated power output (though didn't quite double its 'actual' output) delivering nearly 500-watts with one channel driven, and 412-watts (26.1dBw) when both channels were driven into 4-ohms (both results for a 1kHz test frequency). Although the Rotel is not rated for loads lower than 4-ohms, a quick check with a single channel driven into 2-ohms at 1kHz saw RB-1080 deliver 800-watts (29.0dBw) into the load. Trying to repeat this test at 20Hz and 20kHz resulted in the 6.3 amp rail fuses going open-circuit, which is not surprising, given that the continuous current at the time was greater than 20-amps!



Square Wave Response
Frequency: 10 kHz
(8 Ω resistive load)



Square Wave Response
Frequency: 1 kHz
(8 Ω/2 μF capacitive load)

Steven Holding **AHF**