

# PRODUCT SHOWCASE

## Elan RMA-02 Challenger studio monitor amplifier

Elan Audio is one of Australia's leading producers of professional audio equipment, widely used in recording studios and broadcast stations. Their RMA-02 stereo power amplifier, rated at 200W per channel is compact but does not have fan cooling, to ensure quiet running at all times.

The RMA-02 Challenger is the result of an interesting approach to producing a high power stereo amplifier for studio monitoring use. It is housed in a two-unit rack case and is fitted with 3-pin XLR connectors for its balanced inputs. Its speaker outputs are unbalanced and uses large binding post terminals. For lightness and corrosion resistance it uses an aluminium chassis and it weighs just 6kg all up. Separate volume controls are used for each channel, although we anticipate that in most applications (driven by a mixer) these would be set to maximum level. The only other control on the front panel is the on/off switch.

So while many studio monitor amplifiers tend to be big and bulky, the RMA-02 is quite compact. This has come about partly because the designer, Poul Kirk, has opted for a relatively modest power supply using a compact toroidal power transformer producing unregulated  $\pm 70V$  supply rails. This arrangement gives good headroom (ie, more music power on typical program). As such, it is intended for studio monitoring and high quality domestic installation. According to the designer, it is definitely not intended for disco, stage or sound reinforcement work.

The power amplifiers themselves use a fully symmetrical circuit, with complementary differential input



stages, each with their own current sources. The output stage employs rugged 40MHz complementary bipolar transistors, considered by Elan Audio (and us!) to produce better quality sound than power Mosfets.

Possibly the most interesting aspect of the design is the use of a split feedback network with separate paths for high frequencies and low frequencies. There is heavy negative feedback at low frequencies, giving low distortion and high damping factor, as required for good low frequency loudspeaker performance. At the high frequencies, feedback is more moderate and this claimed to make the amplifier more tolerant of unpredictable loading effects of loudspeakers, crossover networks and speaker cables.

As a result of the above design philosophy, the power ratings are quoted

as short term only, not continuous. Power outputs are listed as 200W RMS into 8 $\Omega$  loads, 300W RMS into 4 $\Omega$  loads and 400W RMS into 2 $\Omega$  loads, although testing at this latter load impedance will blow the fuses. Harmonic distortion is listed at .015% or less at 1kHz at up to 100W and less than 0.5% at 10kHz.

Signal-to-noise ratio is -102dB unweighted (20Hz to 20kHz) with respect to 100W into 8 $\Omega$ . Frequency response is very flat; 0dB at 20Hz, -0.1dB at 20kHz and -1dB at 40kHz.

We ran through the gamut of tests on the RMA-02 and confirmed every figure in the specs – that is a little unusual in itself. Even more satisfying were the protracted listening tests. Using a wide range of CDs, the RMA-02 always gives a good account of itself, with plenty of power, very low background noise and very clean sound at all times.

It would make an ideal studio monitoring amplifier (as intended), especially as it has no cooling fan.

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