

ORELL SA-040



INTEGRATED AMPLIFIER

THIS unusual integrated amplifier, the first product from a new British company, Orell Electronics, was first shown to the public at last year's Heathrow Penta Show (see November 1987, page 839), although some visitors will have missed it because of its remarkably understated appearance. Indeed its very conventional, unassuming lines mean that casual perusal might well result in it being dismissed as yet another Far Eastern box of not very many tricks. But the styling is in fact deliberate: the SA-040 is intended visually to complement standard width component hi-fi tuners, cassette decks and Compact Disc players. There, though, the similarity ends, as closer inspection will immediately confirm.

The SA-040 was in fact designed for Orell by Graham Nalty of Audiokits, the Midlands-based DIY electronics and hi-fi company. Nalty has had many years of experience in the design and manufacture of audio equipment and many of his circuits have been published in the specialist electronics journals. For Orell he has come up with a relatively simple design which eschews tone controls, filters or even a balance control.

The SA-040 has labelled inputs for Phono (MM or MC), CD and Tuner, with facilities for two Tape machines. These are selected by a row of five pushbuttons on the front panel, with a sixth for "CD Direct", this bypassing the main input switch bank and routing the signal through just the one switch directly to the passive, attenuator-type volume control. In this mode, incidentally, it is possible to record from any of the other sources, including dubbing from one tape machine to another, whilst simultaneously auditioning a CD. (Off-tape monitoring with three-head machines is possible, but only on Tape 1.) The remaining front panel controls are a single large rotary knob for the volume control and a pushbutton mains switch with an adjacent red LED indicator. Two

more LEDs show the status (MM or MC) of the phono stage, this being selected by a further pushbutton switch on the rear panel—a sensible arrangement this, because it is used so infrequently, which keeps the fascia uncluttered. A standard 6.3mm headphones socket is fitted to the front panel, fed from the main loudspeaker outputs via an attenuating resistor network. No switching for this is included, however, so the loudspeakers have to be physically disconnected to be muted, which is something of an inconvenience (the thinking here being that any additional contacts in the high current path are likely to introduce audible degradation as they oxidize or become dirty).

The rear panel carries seven pairs of nickel-plated phono sockets for the low-level signal connections and four high quality 4mm socket/binding posts for the loudspeaker cables. A ground screw terminal is provided for the pickup arm screen wire and the pushbutton switch mentioned above selects the additional gain stage to convert the phono inputs from MM to MC. A captive three-core mains lead is fitted and there is a chassis-mounted mains fuse. Additional DC supply line fuses are mounted internally.

The layout inside the cabinet is very neat and logical, with the whole circuit mounted on one large, single-sided glass-fibre printed circuit board. All switches (high quality, these, with silver plated contacts), the volume control and the in-put phono sockets are mounted directly on to this board, leaving very little point-to-point wiring. Signal paths are kept short so that, for example, the sensitive phono gain and equalization circuitry is adjacent to the rear panel input sockets and well away from the high current power amplifier stages; there's nothing novel about that but it's symptomatic of the generally well thought out approach.

The mains transformer is a large 300VA toroidal type which feeds

SPECIFICATION

Power output: 45 Watts per channel into 8 Ohms
 Total harmonic distortion: -66dB at 45 Wats, line inputs
 Signal-to-noise ratio: MM phono 66dB (IHF, CCIR weighted)
 MC phono 62dB
 Other inputs 72dB

Input sensitivity: MM phono 0.78mV
 MC phono 0.28mV
 Other inputs 100mV

Frequency response: 20-20,000Hz ±0dB (-2dB at 18Hz)

Dimensions (W × H × D): 433 × 90 × 265mm

Weight: 7.5kg

Manufacturer: Orell Electronics Ltd., 25 Nathans Road, North Wembley,

Middlesex HA0 3SA

UK retail price: £359.00

massive 10,000uF reservoir electrolytic capacitors from a high current bridge rectifier. Three additional bridges and corresponding sets of electrolytics provide independent supplies for various areas of the preamplifier circuit and no less than eight integrated circuit voltage regulators are dotted around the board to provide additional smoothing and isolation at specific points.

High quality components are used throughout, including polypropylene capacitors and many one-percent metal film resistors (with half-percent Holco types in the critical phono EQ stage). All of the signal circuitry *per se* is based around optimized discrete amplifier stages rather than relying on off-the-shelf integrated circuit op-amps as often seen these days (not that there's necessarily any penalty involved in that approach). Robust, high slew rate TO-3 cased transistors are used for the final drive to the loudspeaker outputs. The chassis is simple pressed U-shape with a ventilated steel cover. At the rear a large vaned heatsink protrudes, increasing the overall depth of the unit to around 360mm. Under normal use the amplifier runs just barely warm but it does need to be adequately ventilated.

How it performed

The SA-040 did quite well on the testbench, all tests confirming or exceeding its specification. In particular the RIAA response of the phono equalization followed the IEC curve very closely. For MM the input impedance is 47k Ohms with 120pF of capacitive loading, values which will be more or less universally compatible, while the MC option gives 100 Ohms which again will suit most cartridges. Tape and tuner input sensitivity is 100mV with 30K Ohms loading. The CD input is sensibly brought into line in this respect by a resistive attenuator, so that in practice levels between phono, CD, tuner and tape should be pretty well matched. Because these signals are routed directly to the volume control without any active interface circuitry large signals can be readily contained: the overload margin is effectively infinite. All inputs have a mild bass roll-off, which is a sensible inclusion, especially with reflex loudspeakers, and helpful anyway with the LF noise and rumble of some turntables and/

or LPs. The tape record-out signals are buffered only by series 2,200 Ohms resistors but provided the interface leads here are kept reasonably short this shouldn't be a limitation.

On audition, the SA-040 performed very nicely indeed and certainly well up to the standard one might reasonably ask of a unit in this price area. With a very high quality, tried and trusted CD source connected the results were very musical indeed, the tonal balance accurately conveyed, with a good depth to the image and everything about the soundstage convincingly stable. There is a sense of easy control here which is both comfortable and persuasive. At high levels this authority does wane a little, though, and the sound has a tendency to harden up, so despite the continuous power output into 4 Ohm loads and below capability, the SA-040 would probably be best matched to speakers of average-to-good efficiency.

I was particularly impressed when I turned to LP sources to discover that both the MM and MC inputs were (a) adequately quiet and hum-free and (b) very well behaved. Clearly a lot of accumulated experience and thought has gone into this aspect of the circuit. It is an area that is often taken for granted by designers in these days of the laser, particularly as regards the more difficult to engineer (and certainly costly to do well) MC gain stage, but here the open quality noted with CD sources was just as evident, the treble sweet and crystal clear and quite without any sibilant emphasis, the bass light but tight and well defined.

The Orell SA-040 is a deceptive beast. Its plain black cabinet, anodised front panel and simple white legends look a little unimaginative and uninspiring. Closer inspection reveals that few compromises have been made where it really counts, in the quality of the switches and connectors, and certainly by a peep inside and in audition. The budget has been well used, I feel, and this amplifier would form an unobtrusive centrepiece in a rack amongst compatibly-dimensioned ancillary items. In that context it would set a standard significantly ahead of the norm and can be confidently recommended. It is an auspicious début. **IVOR HUMPHREYS.**