

RECOMMENDED

Yamaha CA-610
 Natural Sound Systems Ltd., 10 Byron Road, Wealdstone,
 Harrow, Middlesex. 01-863 8622.

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The control arrangements of this amplifier are unusual because a single rotary switch is used to select all inputs including tape monitoring, the basic inputs being a magnetic phono cartridge input, tuner and auxiliary inputs, plus two tape units.

Input signals to the tape units are selected by a further rotary switch which feeds the tape units from the phono, auxiliary or tuner sources and also allows tape dubbing in either direction. All input impedances and levels are sensible as are overload margins, and in addition to the phono sockets used for the signal inputs the tape units can also be fed from DIN compatible connections.

Clip type connectors are fitted for two sets of loudspeakers which are selected individually or as pairs in parallel by the front panel speakers switch which also has an 'off' position for use when listening with headphones via the front panel headphone jack socket. Examination of the power output capability of the amplifier shows that it delivers a good power into either 4 or 8 ohms, but that 2 ohm loads provoke disaster. It is therefore suggested that some care is required in selecting suitable 4 ohm loudspeakers, or for that matter when running two sets of 8 ohm loudspeakers simultaneously because some of these which have a nominal impedance of 8 ohms can halve their nominal impedance at discrete frequencies.

Both harmonic and intermodulation distortion were at very low levels within the audio frequency band, and intermodulation distortion at high frequencies was also very

respectable. Similarly the noise performance of all the inputs was to a high standard providing a good dynamic range. However the worst volume setting noise which occurs at 10 o'clock on the volume control may be troublesome when listening with headphones.

In other respects the performance of the volume control and its 21dB 'muting' switch were very good, and neither these or any other controls introduced significant unbalance between the amplifier channels. The balance control itself was also good with a fine control area around its mid position which had a useful mechanical click stop.

The treble and the bass tone controls are of the potentiometer type, each having an associated 'defeat' toggle switch — two switches seem a bit unnecessary. Subjectively the tone control had a very wide range, but as they are pure potentiometer types this didn't matter as their control law was satisfactory and permitted fine adjustment.

The amplifier is fitted with a single high pass filter which has been well conceived with its -3dB point at 25Hz and a rapid roll off at 12dB per octave, in addition to which the amplifier has been rolled off with a similar rate of attenuation below 7Hz, but unfortunately the high frequency response has not been similarly controlled and extends unnecessarily to above 200kHz.

The remaining features of this amplifier are the switched loudness control which gives a substantial boost to both the treble and the bass, and two meters which are scaled in Watts into 8 ohms. As is common with so many

amplifiers which have meters these are far too slow to indicate peak overload conditions, to the extent that they indicated only 1W under transient overload conditions.

Both bass and treble overload was subjectively smooth, and other than a parasitic oscillation at 1.6MHz in one sample of the amplifier, no troubles were encountered. The standard of construction was generally good with a reasonable standard of wiring, but component identifications were mediocre and the mains cable clamp loose.

General Data

Hum modulation at rated output into 8Ω
 50/100/150Hz 0/16/0dB
 Damping factor ref 8Ω at 1 kHz 64
 D C offset at loudspeaker and headphones L/R 3/4mV
 Crosstalk at 1W output 100Hz/1kHz/
 10kHz ->80/-77/-60dB
 Loudness control effect ref 1kHz 100Hz/10kHz +7/+4dB
 Frequency response deviation from 20Hz to
 20kHz aux/tape/tuner 0.5dB

Power performance

Power output into 8Ω both L/R 40/42W
 Power output into 8Ω single L/R 60W
 Power output into 4Ω both L/R 63W
 Power output into 4Ω single L/R 79W
 Burst output into 8Ω single L/R 65/64W
 Burst output into 4Ω single L/R 99/95W
 Power output into half rated load L/R 2Ω 6W
 Power bandwidth 8Ω 20W L/R 10Hz to 69kHz
 Power bandwidth 4Ω 25W L/R 10Hz to 41kHz

Distortion

Total harmonic distortion at 1W into 8Ω
 1kHz/10kHz 0.03/0.02%
 Total harmonic distortion at 1W into 4Ω
 1kHz/10kHz 0.03%
 IM distortion at half rated power into 8Ω
 DF2 1/10/100kPz ->80/>80/69dB
 IM distortion at half rated power into 8Ω
 DF3 1/10/100kHz ->80/>80/61dB
 IM distortion at 1W from auxiliary input DF3
 1/10/100kHz ->80/>80/76dB
 IM distortion at 1W from phono input DF3
 1/10/100kHz ->80/>80/80dB

Noise performance

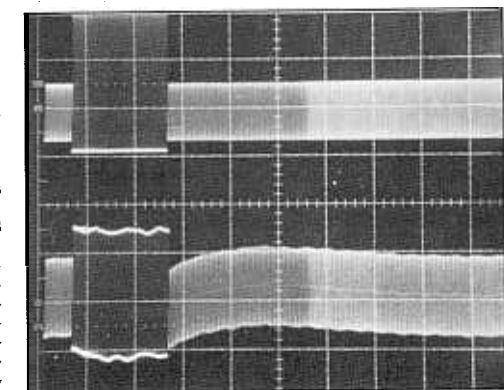
Noise ref to input — average L/R CCIR/22kHz
 aux/tuner/tape 106/101.5dBV
 Noise ref to input — average L/R CCIR/22kHz
 Phono 113.5/116.5dBV
 Noise ref to input — average L/R CCIR/22kHz
 Mic -dBV
 Output noise power at zero volume (8Ω)
 CCIR/22kHz 0.016/0.010μW
 Worst case volume setting auxiliary input (8Ω)
 CCIR/22kHz 0.13μW
 Burst dynamic range aux input ref 8Ω worst
 channel CCIR 91.5dB

Inputs and outputs

Input impedance on aux/tuner/tape
 68/47-tape 63/44k 140;170pF

Input impedance on phono 5
 Input sensitivity and clipping point at 1kHz
 aux/tuner/tape 155mV >20V
 Input sensitivity and clipping point at 1kHz
 phono 2.8mV 185mV*
 Input sensitivity and clipping point at 1kHz mic -mV
 Output voltage and impedance for rated output —
 headphone 18V 217Ω
 Output voltage and impedance for rated output —
 tape 155mV VARIΩ
 Output voltage and impedance for rated output —
 DIN 30mV 44kΩ

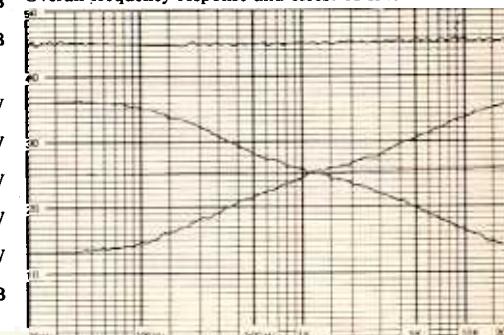
Typical selling price including VAT £155.00



Overload recovery performance



Overall frequency response and effect of filters



Effect of tone controls and accuracy of RIAA equalisation