



MANUFACTURERS OF AUDIO EQUIPMENT

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TELEX 477811 NAIM G

The System

PRECEDENCE

The choice of components for a hi-fi system is governed by the basic rule that no component can improve the quality of its incoming signal. The most that any individual component can achieve is to deal faithfully with its input, without loss of musical information. A very simple and logical hierarchy is thus established.

In a system for playing records the turntable comes first, then the arm, then the cartridge. The best turntable with a cheap arm and cartridge will always outperform a moderate turntable fitted with the best possible arm and cartridge. Everything follows from the turntable, which is the most influential individual component in a system for playing records.



NAP 250

NAC 62



NAP 140/NAP 90



The pre-amplifier and amplifier rank next, in that order. Neither amp nor pre-amp can improve the quality of their incoming signal, and the better they do their task the more clearly they will expose, instead of masking, any faults in that signal. They are not the most important part of the system, and upgrading the amplification will not necessarily improve the system. Where radio is the source, the best tuner and a cheap amplifier will offer a better result than a moderate tuner with the best amplification system.

Loudspeakers rank last of all. The loudspeaker is the slave of the amplifier, and moderate speakers, properly driven by a very good amplifier, will outperform speakers that are potentially the best possible, but are less well driven. The loudspeakers are the least important part of the system.

BALANCE

The whole purpose of a hi-fi system is to allow you to respond to music without the system itself getting in your way. A well-balanced chain made up of very moderate components that mask each other's faults may allow you to do this better than a badly balanced chain containing the best amplifier or the best loudspeakers that can be obtained. You will want to listen to music, not to our amplifiers.

How do you choose? A good demonstration takes place in a room with no loudspeakers in it other than the pair being demonstrated, and is best when you relax, feel at home, and just listen to music in your own way, allowing yourself to respond naturally to all aspects of the performance. The better the system, the more the intentions of the composer will be revealed in the skill and feeling of the players, and the precise quality of the instruments. The less good the system the more these aspects will be obscured by minute alterations of pitch and amplitude. The system can be judged as you would judge a live performance, by purely musical criteria.

Power Amplifiers

DESIGN CRITERIA

The purpose of an audio amplifier is to drive loudspeakers without loss of musical information. In our view many commonly accepted parameters have little to do with loss of information and in some instances, such as the pursuit of large bandwidths or low distortion, unqualified acceptance of them can actually lead to the creation of mechanisms that bring such losses about. Dynamic output impedance, open loop bandwidth, slew rate, propagation delay and stability margins are only some of the many factors to which we attach importance, and which must all be brought into positive balance.

With this balance in view, our amplifiers not only achieve low harmonic distortion, low noise and wide power bandwidth, but also have a constant dynamic output impedance over the whole audio bandwidth. They are able to drive reactive loads without any appreciable change in distortion and are not sensitive to the absolute impedance of the load.

FREQUENCY RESPONSE

The frequency response of our amplifiers at the bass end is dependent on the gain decoupling capacitor, and the half power bandwidth extends to below 5Hz. At the top end the response is controlled by a passive single pole filter and is 3dB down at 40kHz. The amplifiers do not slew rate limit within this frequency bandwidth.

PROTECTION

The amplifiers will tolerate any load from 0 ohms to infinity without damage or instability, the output stages being protected by circuitry that measures the power dissipated. Prolonged running at high dissipation will cause the NAP 135, 140 and 250 to become quite warm and should the heatsink temperature exceed 70°C the mains supply will be interrupted until the amplifier has cooled down.

CONSTRUCTION

The cases of the power amplifiers are all constructed in a similar way, using a heavy aluminium extrusion, which acts as a heatsink, to form the outer cover for an inner chassis inside which the entire amplifier is assembled. All connections are on the rear. All the amplifiers have large toroidal mains transformers. The NAP 135 has two regulated power supplies and the NAP 250 has four, each of which is rated at 40 volts and able to deliver more than 10 amps continuously. The NAP 140 has dual rectification, and each channel has its own pair of smoothing capacitors. The NAP 90 uses one diode bridge and one pair of smoothing capacitors.

The NAP 135 is a mono amplifier and has a temperature controlled fan mounted on a large internal heatsink to assist cooling when being used at high dissipation levels.

The NAP 140 and NAP 90 have a built-in 24V regulated supply to power Naim Audio pre-amplifiers via a SNAIC-4 interconnect cable.

High quality components are used throughout, with great attention to detail construction. Many components are specially selected or manufactured to our own specification.

AMPLIFIER SPECIFICATIONS

Power output	Continuous	Transient	Voltage gain
NAP 90	30w into 8 ohms	125 VA	+ 29dB
NAP 140	45w into 8 ohms	200 VA	+ 29dB
NAP 250	70w into 8 ohms	400 VA	+ 29dB
NAP 135	75w into 8 ohms	500 VA	+ 29dB

Input impedance: 22k ohms. Operating temperature: 0 to 50°C.
Mains supply: 240V, 220V or 120V, 50 or 60Hz
Size: NAP 90 & 140, 76mm x 205mm x 300mm.
NAP 135 & 250, 76mm x 430mm x 300mm.

Control Units

DESIGN CRITERIA

The pre-amplifier has a very complex task. Input circuitry must accept the whole output of the source component without being overloaded. Frequency response and level of input signals must be normalised. The signal fed to the power amplifier then needs further conditioning to ensure that the amplifier is never driven outside its operating parameters. The pre-amplifier must also enable the user to select between inputs, and control their level.

The first stage of our phono input circuit is linear with a small gain, and RIAA equalisation is divided into two separate parts. We thus obtain complete theoretical and practical stability with a much wider open loop bandwidth than is normally possible. The resultant overload capability is maintained over the whole audio bandwidth.

Experience has shown that tone controls and filters do not improve the musical performance with a system of this calibre, even when playing old and dirty records. This is due partly to the excellent stability and overload margin of the pre-amplifier, and partly to its outstanding transient handling.

NAC 62

This is a simple pre-amplifier designed to meet the basic requirements of the serious audiophile. Facilities are limited to a phono input with a choice of input boards, tuner, auxiliary, tape, and a monitor/mute switch. The pre-amplifier is available with input boards to suit either low output moving coil cartridges (NAC 62S), Linn Karma and Troika (NAC 62K), high output magnetic cartridges (NAC 62N) or variable high level (NAC 62V).

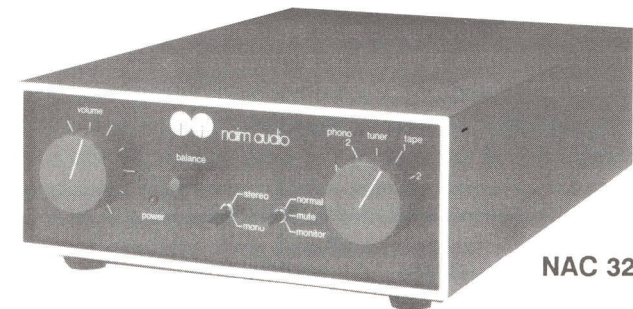
Internally the NAC 62 comprises a mother board having on it the high level audio circuitry, and two daughter boards containing the input stages. The boards are interconnected with gold-plated precision connectors.

NAC 32-5

The basic electronic circuitry of the NAC 32-5 is similar to that of the NAC 62, but more facilities are available. These consist of a phono input with a choice of input boards, a variable high level input, one tuner and two tape inputs. Tape sockets have combined input/output connections, and the tape monitor switch has a mute facility. Tape inputs are buffered. Tape outputs are fed from a 600 ohm source. The tape monitor facility is automatically switched between tape 1 and tape 2, with tape 1 having precedence. A mono/stereo switch operates on all outputs.

The NAC 32-5 is available with the same input board options for No.1 input as the NAC 62: type S for low output moving coil cartridges, type K designed specially for Linn Karma and Troika, type N for high output magnetic cartridges, or type V to provide a second variable high level input. Both No.1 and 2 inputs have plug in boards, and may be changed to suit the user's requirements.

Internally the NAC 32-5 consists of a mother board with eleven daughter boards interconnected with gold-plated precision connectors. Both the NAC 62 and the NAC 32-5 have BNC sockets for interconnection with pick-up cartridges, and locking DIN sockets for all other connections. Special circuitry delays output to the amplifier until normal operating conditions are reached after turn-on. Power is supplied from a regulated supply in the NAP 90, 140, or SNAPS via a SNAIC-4 interconnect, or, with improved performance, from a HI-CAP power supply via a SNAIC-5. Use of a remote supply ensures hum-free operation and enables correct earthing to be used.



NAC 32-5

PRE-AMPLIFIER SPECIFICATIONS

Input sensitivities:	NA 323S: 100 μ V, 470 ohms. (type S) NA 323K: 100 μ V, 560 ohms. (type K) NA 322: 2mV, 47k ohms. (type N) NA 328: 25mV - 375mV, 47k ohms. (type V) Tuner, Auxiliary, Tape 1 and 2: 75mV, 100kohms.
Optional input board:	NA 326: 75mV, 100kohms. (max input level: 7.5V)
Output levels and impedances:	Tape 75mV, 600 ohms, Main outputs 1V, 47 ohms.
Overload margins:	40dB on all inputs at all audio frequencies.
Size:	76mm x 205mm x 300mm

POWER SUPPLIES

An adequate and correctly designed power supply is extremely important for the performance of the pre-amplifier. A separate power supply is not required when our pre-amplifiers are used with the NAP 90 or 140, but optional use of the SNAPS 24V supply offers the benefit of a larger and quieter power source.

The HI-CAP offers even better performance. This is a much larger dual 24V supply for use with -5 pre-amplifiers, the NAC 62 or the NAXO 2-4 or 3-6 crossover. An alternative socket is provided for earlier pre-amplifiers or crossovers.

Electronic Crossovers

NAIM AUDIO NAXO ELECTRONIC CROSSOVERS

The NAXO3-6 crossover is a 3-way 18dB per octave fixed frequency unit. The crossover frequencies are defined by a series of active filters which have been designed with particular regard to their transient handling abilities. The filter frequencies have to be matched to the loudspeaker system with which the unit is going to be used.

The output level is internally adjustable both for frequency and channel balance using enclosed cermet pre-sets. Special circuitry delays output to the amplifiers until normal operating conditions are reached after turn-on. Power is supplied from a separate supply, type HI-CAP.

The NAXO3-6 circuit is assembled on a double sided printed circuit board which is mounted on an internal chassis. There are sockets on the rear for both tri-amp and six-pack systems.

The NAXO2-4 2-way crossover is of similar construction.

Impedances: input, 20k ohms. output, 47 ohms. Size: 76mm x 205mm x 300mm.



NAIT 2

NAIM AUDIO INTEGRATED AMPLIFIER

The NAIT 2 is a small integrated amplifier with four inputs, moving magnet phono input, auxiliary, tuner and tape, and a tape output. Power output is sufficient for the simple start-up systems for which this amplifier has been designed. The NAIT 2 is intended to bring Naim Audio quality within the reach of customers buying their first serious hi-fi system, but like the rest of our equipment it will not give satisfaction without a good source and careful installation of the whole system.

Input sensitivities:	Phono, 2.5mV, 47k ohms. Aux, Tuner and Tape: 75mV, 47k ohms.
Tape output level and impedance:	75mV, 1k ohms/source.
Size:	76mm x 205mm x 276mm.
Mains supply:	240V, 220V or 120V, 50 or 60Hz.

LOUDSPEAKER CABLE

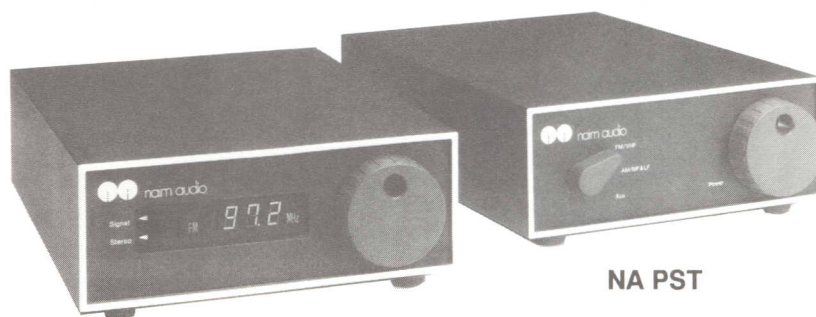
NACA4 is a multistrand loudspeaker cable consisting of two parallel, 4mm sq conductors joined by a small web. The very low capacitance and appropriate inductance of this cable will allow the amplifier to perform optimally.

Stereo Tuners

DESIGN CRITERIA

A radio tuner has to respond to a wider range of incoming signals than any other piece of audio equipment. We have paid particular attention to achieving the optimum receiver bandwidth for every input signal, taking into account the interference and noise levels present.

The NAT 01 uses a number of self-adjusting systems, one of which automatically selects the optimum bandwidth. Another, in both the NAT 01 and the NAT 101, switches progressively from mono to full stereo (where broadcast) according to received signal level. The NAT 01 has a digital frequency display, while that in the more simple NAT 101 is mechanical. Both displays increase in brightness when on station, to facilitate tuning.



NAT 01

NA PST

Power for the NAT 01 is supplied from the NA PST tuner power supply, which has facilities for future additional tuners as these become available. The NAT 101 uses a SNAPS, which may also power a pre-amplifier.

AERIAL REQUIREMENTS

The performance of the tuner is limited by the signal that it receives, and therefore even in areas close to the transmitter, the VHF input socket must be connected to a directional roof aerial mounted clear of obstructions and interference sources. If reception from more than one transmitting site is desired, the use of an aerial rotator is to be recommended. It is important not to use an aerial pre-amplifier since this will disturb the automatic operation of the tuner.

TUNER SPECIFICATIONS

NAT 01 and NAT 101:

Tuning range: VHF/FM: 87.5-108MHz.
Output level: 250mv per channel at 100% modulation.
Size: 76mm x 205mm x 300mm.

NA PST:

Selector: FM/VHF; AM/MF, AM/LF and Aux.
Mains supply: 240V or 120V, 50 or 60Hz.
Size: 76mm x 205mm x 300mm.

Naim Audio pre-amplifiers and power amplifiers have a frequency response to within 1 dB between 20Hz and 20 kHz. All distortions of whatever type including noise, at any audio frequency and at rated levels, will remain below one thousandth part of the required signal.

The manufacturer reserves the right to alter specifications without prior notice in accordance with continuing developments.

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