

Nº32

REFERENCE PREAMPLIFIER





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The N°32 Preamplifier is a revolutionary Mark Levinson component. It is the first preamplifier to earn the Reference label.

Separating power-supply and control circuitry makes sense in a modern, Reference-level preamplifier. AC power supplies, microprocessors, LED displays — essentially, anything that generates noise — are housed in a separate chassis from the low-level audio signals (the N°32 Reference Controller), while all of the audio-preamplifier circuitry is housed outboard (the N°32 Reference Preamplifier). Thus, the audio circuits are exposed only to quiet, regulated DC power and the audio signal itself.

Two master power supplies are located in the center section of the Reference Controller: one is dedicated to control and communications; the other is used for the audio circuits. The power from the AC line is pre-filtered, and the two master supplies are isolated from one another. The power supplies use custom-designed transformers featuring multiple secondary windings, which substantially improve isolation between separate circuit blocks. Separate rectification, filtering, and regulation circuits are used to supply DC to the control/communications circuits, a N°25 phono DC supply output, and the 400Hz oscillator circuits used in power-supply regeneration.

The N°32 employs AC power regeneration: the DC supply feeding the voltage gain stages is derived from an AC source generated within the amplifier itself. This technique is expensive but very effective. In the N°32 Reference Controller, a 400Hz oscillator generates the AC source for the preamplifier's audio power.

Microprocessors are noisy devices which can pollute low-level audio signals if care is not taken to keep processing noise out of the signal path. For this reason, the microprocessors in the N°32 are not only located in the controller box, physically separated from the preamplifier chassis, but are also within their own shielded box.

The microprocessors in the N°32 control volume changes, signal routing, and other switching functions. They make it easy to name inputs, select mono modes, set mute level, or program offset or gain levels for individual inputs — all from the front panel. Like other current Mark Levinson components, the N°32 uses a software-based operating system that can be upgraded through its RS-232 port.

The Reference Preamplifier chassis has no buttons or knobs. The Reference Controller is used to execute all commands through its simple front panel. Each source can be named in the display, and full control of all functions, with the addition of mono/stereo selection and polarity control, is available from the remote.

The N°32's casework is extraordinary even by Mark Levinson standards, and, like the other aspects of its design, reflects an uncompromising

approach. Its chassis is a custom aluminum casting, machined and finished with a conductive Irridite (clear chromate) coating. This design approach assures a rigid, stable environment in which vibration and microphonic effects are controlled.

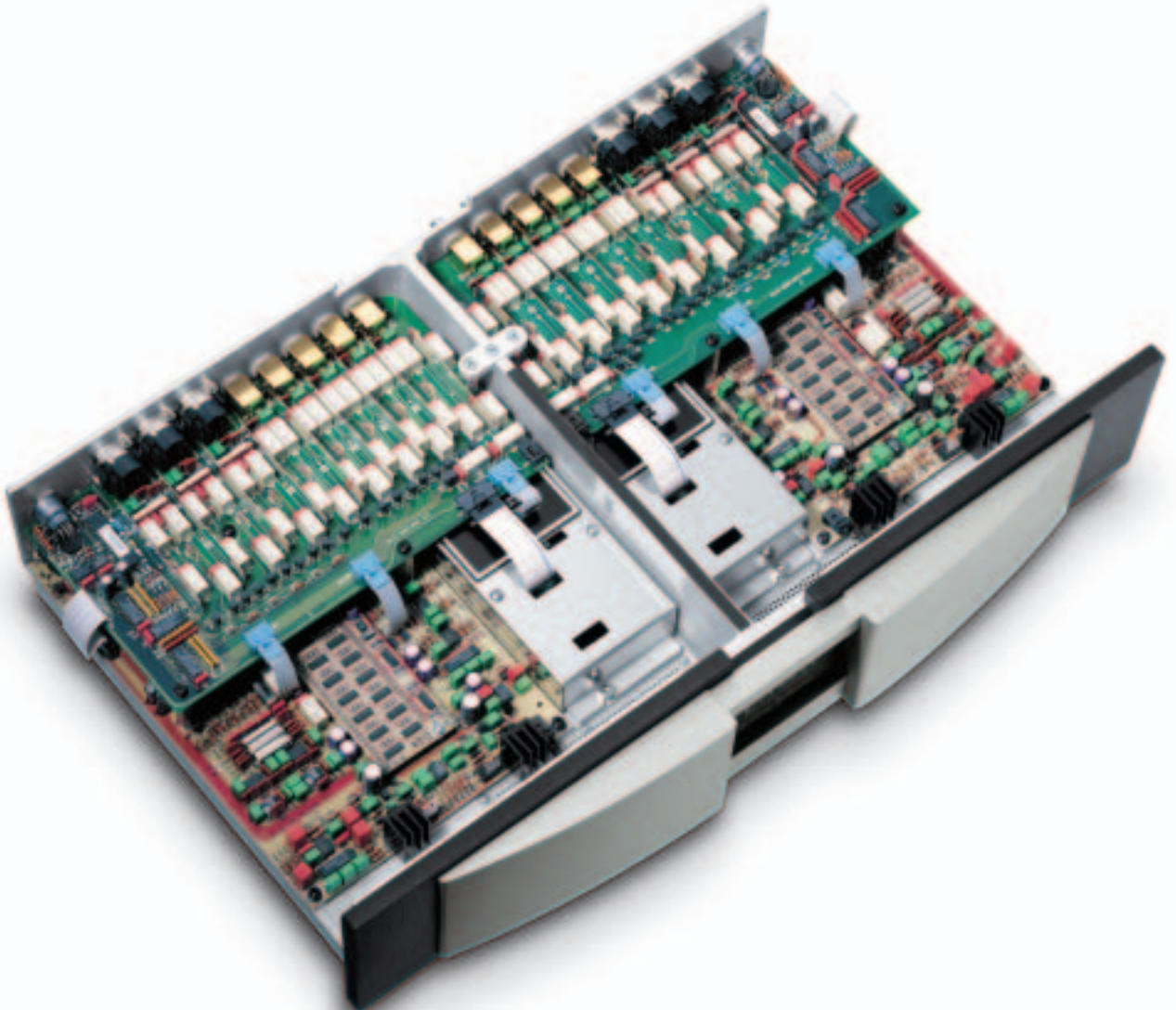
The left and right channels are separated by a solid aluminum divider wall, formed as part of the casting. Each channel is thus sealed into its own environment to prevent the electromagnetic noise of one channel from degrading the other. Because each channel is effectively isolated from the other electrically and physically, the N°32's stereo separation is equivalent to that of two separate mono preamplifiers.

The N°32 is the first Mark Levinson product to use Arlon 25N® for its circuit boards. This material's superb dielectric properties help the N°32 achieve remarkable performance with complex audio signals. Arlon 25N was chosen

only after extensive listening tests revealed that it was audibly superior to all other materials in this particular application.

Both balanced and single-ended inputs are provided on the rear panel. Single-ended signals have common-mode noise (noise present on both signal and ground) rejected at the input stage. Fully balanced instrumentation amplifiers are employed as the gain stages, and each input can be separately adjusted using the software to offer 0, 6, 12 or 18dB of gain. Using this feature, the N°32 allows the volume control to work in its optimum range even when its sources have substantially different output levels.

While volume control is one of the primary functions of a preamplifier, it is also a source of compromise in many designs. The N°32 introduces a new active attenuator: a discrete design that offers an unprecedented combination of precision and neutral sonic performance. The



attenuator modules are constructed on their own four-layer Arlon 25N circuit boards, whose local power-supply regulation and bypass capacitors guarantee the sensitive switches receive clean power and optimum isolation. An array of precision resistors provides attenuation in 0.1 dB steps down to -57 dB, where step size is increased to 1 dB. With over 65,000 steps available, the N°32's stepped attenuator gives the required precision while acting and sounding like a continuously variable control.

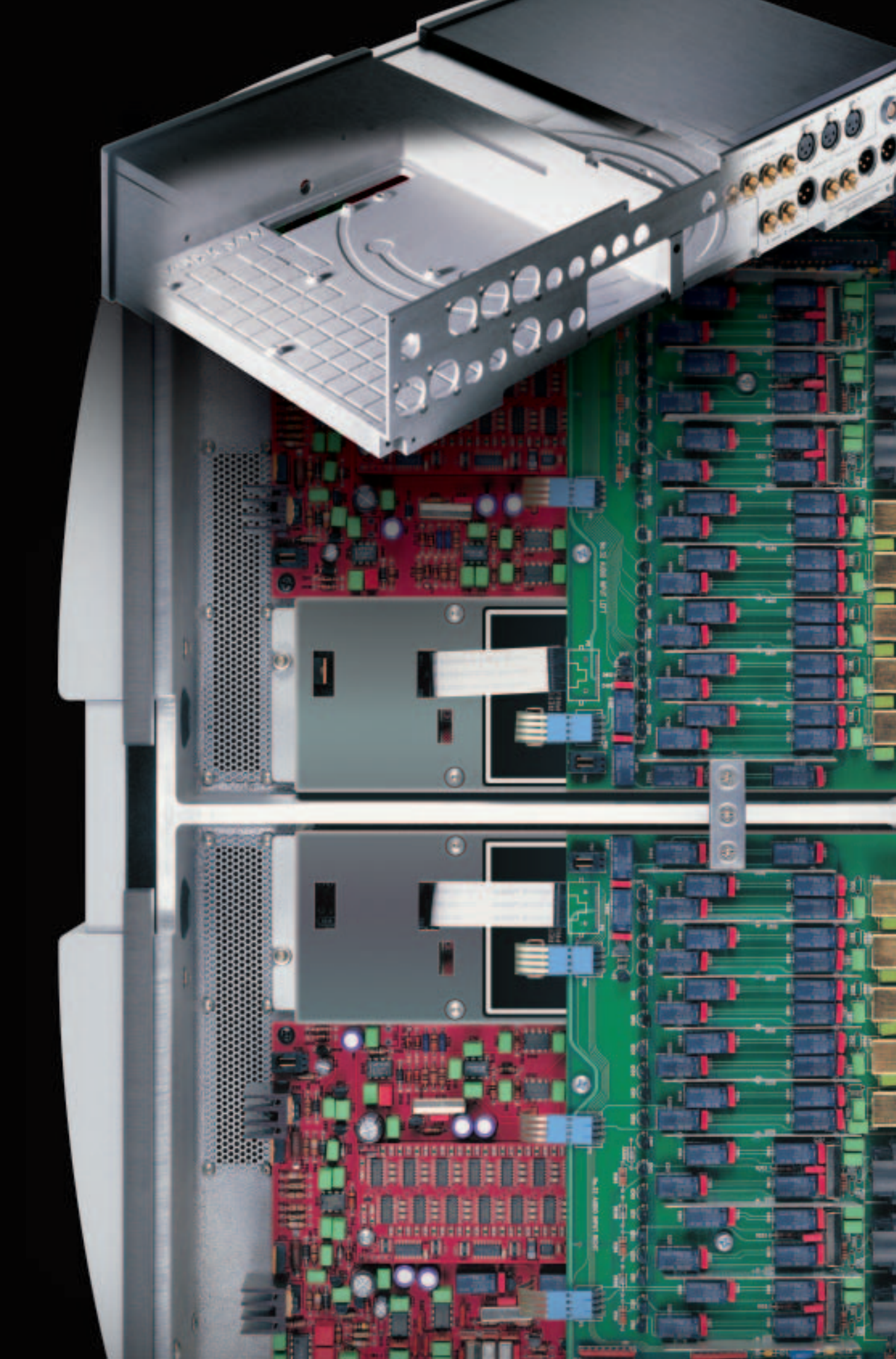
High-performance buffer amplifiers form the output of the N°32. These circuits feature low noise and distortion, low output impedance, high current capability, and broad bandwidth. Single-ended and balanced outputs are independently buffered to allow simultaneous use of both connector types without sonic compromise.

For music lovers using analog disc sources, the N°32 offers optional phono modules shielded

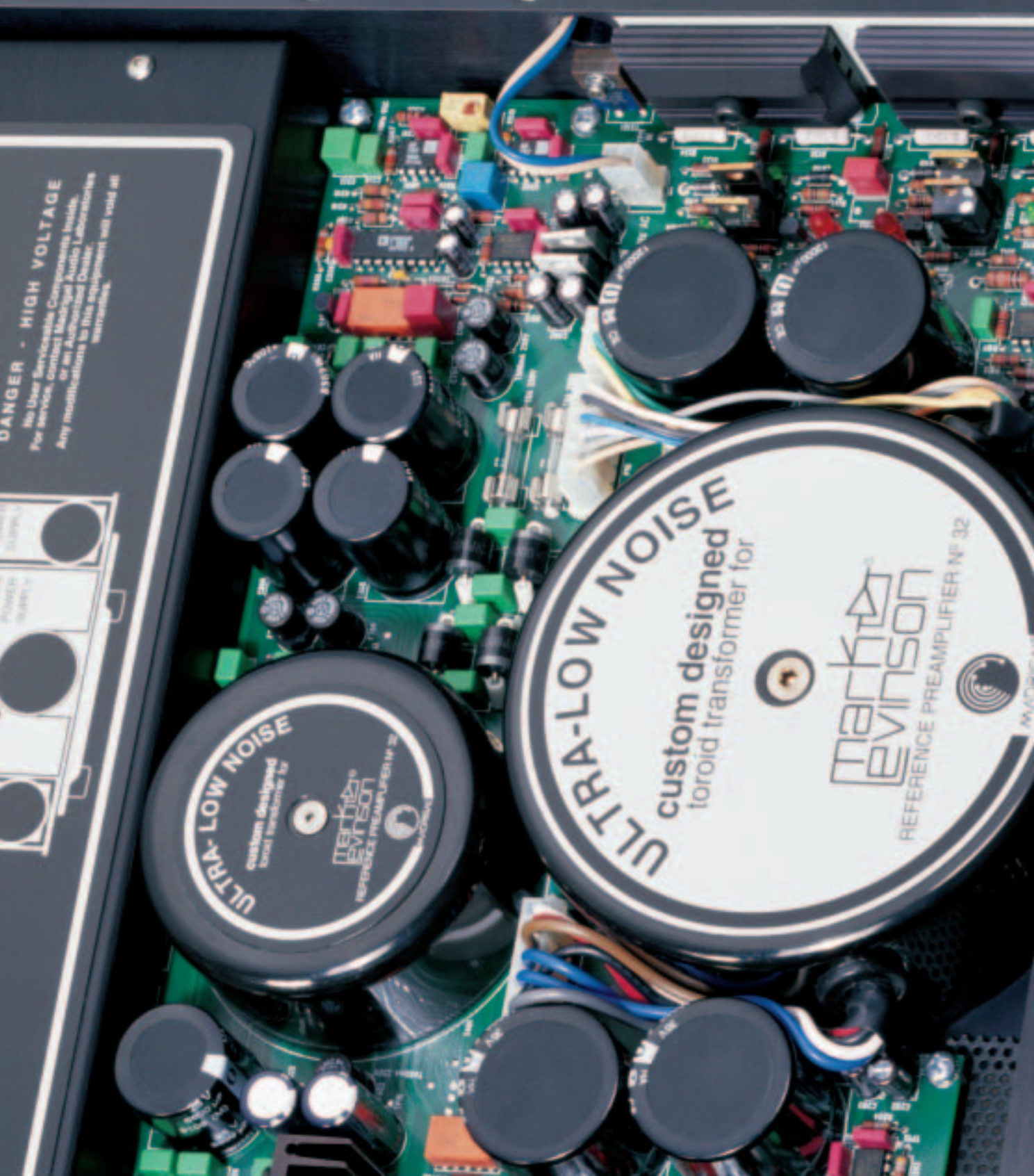
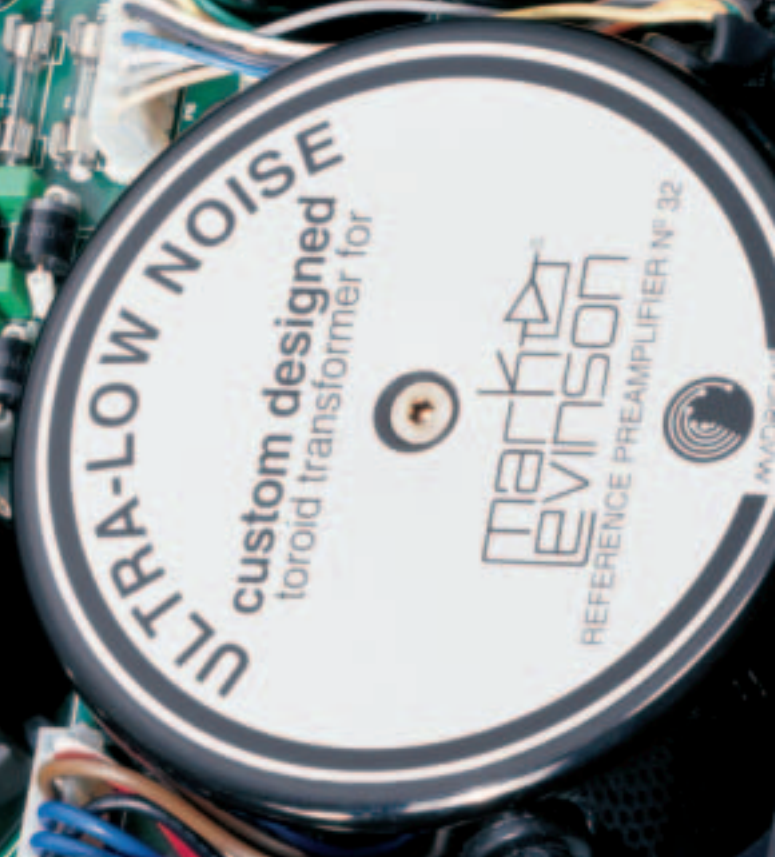
in mu-metal that are easily installed via the rear panel. Setting up and customizing the N°32's phono stage is an analog lover's dream. Its defeatable infrasonic filter, resistive and capacitive loading, and gain can all be selected independently for each of its two inputs. It even has a fine-trim adjustment for balance to compensate for the small channel imbalance found in virtually every cartridge. What's more, all of these variables can be adjusted from the remote control.

We conducted exhaustive listening tests over several years to select topologies, component parts, and operating parameters for the N°32 Reference Preamplifier. We encourage you to spend some time listening to it — we think you'll find the experience its own reward.





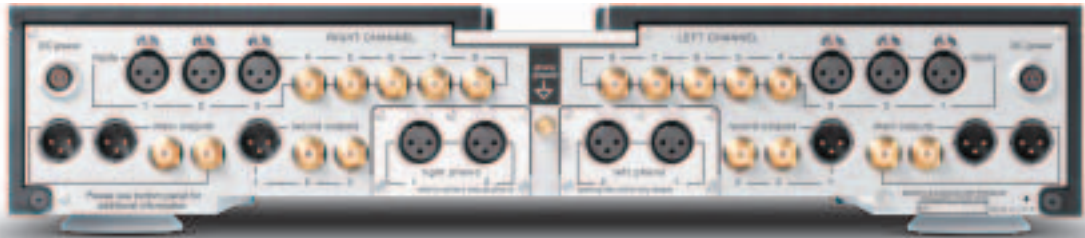
! DANGER - HIGH VOLTAGE
No User Serviceable Components Inside.
For service, contact Mactheta Audio Laboratories
or an Authorized Dealer.
Any modifications to this equipment will void all
warranties.



N°32 Phono Modules

Frequency Response:	
RIAA response	±0.1dB
RIAA/IEC response	+0.1, -0.3dB
Gain:	
	either 40 or 60dB
Total Harmonic Distortion (THD):	
	less than 0.008%, 2V out, 1kHz test signal, 80kHz measurement bandwidth
Residual Noise:	
ref to output w/500µV, 1kHz at input, unweighted	-69dB
Input Complement:	
	(2x) Madrigal RCA connectors per channel or (2x) XLR connectors per channel
Input Impedance:	
Resistive:	(user selectable) 3.3Ω, 5Ω, 7.7Ω, 10Ω, 33Ω, 50Ω, 77Ω, 100Ω, 330Ω, 47kΩ
Capacitive:	0pF, 50pF, 100pF, 150pF, 200pF, 250pF, 300pF, 350pF, 0.01µF
Gold-plated, solderless terminals are available for user-installed load value, inside phono module.	
Input Overload:	
1kHz, 60dB gain:	16mV on XLR, 8mV on RCA
1kHz, 40dB gain:	160mV on XLR, 80mV on RCA





N°32 Reference Preamplifier

Power Consumption:	150W maximum	
Operating voltage:	100V, 120V, 220V, 230V, or 240VAC @ 50 or 60Hz (preset)	
Preamplifier Connectors:	(3) balanced stereo inputs (female XLR) (5) unbalanced stereo inputs (RCA) (2) balanced main stereo outputs (male XLR) (2) unbalanced main stereo outputs (RCA) (1) balanced record stereo output (male XLR) (2) unbalanced record stereo outputs (RCA) (1) earth-reference ground terminal (2) DC power connectors	
Controller Connectors:	(1) IEC-standard AC mains receptacle (1) IR input (1/8-inch/3.5mm mini-jack) (1) trigger input (1/8-inch/3.5mm mini-jack) (1) trigger output (1/8-inch/3.5mm mini-jack) (3) Link communication ports (RJ-45) (1) RS-232 port (RJ-11) (2) control ports (RJ-45) (1) earth-reference ground terminal (2) DC power connectors	
Input Overload:	When gain is set to +18dB: 2V on XLR, 1V on RCA When gain is set to +12dB: 4V on XLR, 2V on RCA When gain is set to +6dB: 8V on XLR, 4V on RCA When gain is set to +0dB: 16V on XLR, 8V on RCA	
Input Impedance:	100k Ω	
Output Impedance:	<10 Ω on balanced (XLR) <20 Ω on unbalanced (RCA)	
Maximum Main Output:	16V on balanced (XLR) 8V on unbalanced (RCA)	
THD + N:	<0.001% balanced	
Crosstalk:	<120dB (any input to any output, input unterminated) <140dB (any input to any output, input terminated)	
Residual Noise:	<120dB (20Hz to 20kHz, input terminated) balanced	
Frequency Response:	10Hz to 40kHz (± 0.2 dB)	
Overall Dimensions:	Controller width: 19.5" (49.5cm) height: 3.03" (7.68cm) depth: 12.96" (32.91cm)	Preamplifier width: 19.5" (49.5cm) height: 3.19" (8.09cm) depth: 11.39" (28.92cm)
Shipping Weight:	Controller 60lbs. (27kg)	Preamplifier 46lbs. (21kg)

Specifications are subject to change without notice.

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Not responsible for typographic errors.

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