

# Nº51

MEDIA PLAYER



PRELIMINARY





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## Introducing the Mark Levinson N°51 Media Player

The N°51 is a milestone product for Mark Levinson. An all-new design, the N°51 is the first media player to wear the Mark Levinson name. Its goal is to provide superb playback of DVD-Videos and Compact Discs. As such, it can be viewed as two products in one; a DVD-Video processor that provides extremely high-quality picture and sound for the ultimate in movie cinema reproduction and a CD processor capable of music playback that exceeds that of high-end stand-alone CD players.

There are five areas of design in the N°51. Each carefully crafted element surpasses its design criteria and integrates seamlessly with the other elements to create a product that performs well beyond the sum of its parts.

### The Chassis

The N°51 chassis is designed to integrate with the N°40 Media Console and the 400-series Power Amplifiers. The front panel utilizes thick, machined aluminum pieces, a combination of brushed and painted finishes,

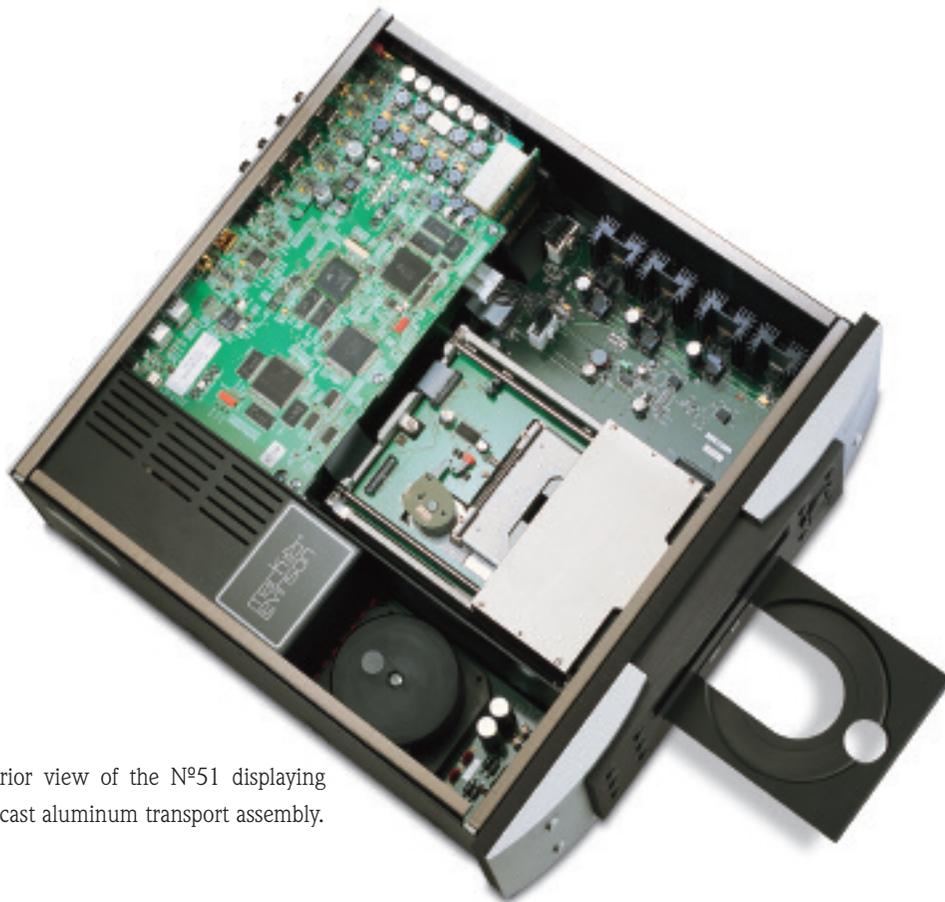
and laser-engraved artwork. The chassis cover is formed from a single piece of aluminum which incorporates a secondary shield to provide a seamless electro-magnetic barrier. The chassis itself is partitioned to provide electrical isolation for critical circuits where needed. In every respect, the N°51 conveys the impression of a product built to withstand the test of time.

### The Transport

The heart of any media player is the transport. The N°51 starts with a solid cast aluminum frame for exceptional rigidity and stability. The drawer is precision milled from aluminum and is mounted on polished stainless steel drawer guides. The loader assembly is comprised of custom-designed components, including the drive lift and the rack-and-pinion drawer actuator, which uses special damping material to isolate the drawer from nearby components. Optical encoders are used to send feedback to the motor control circuit providing precise control over the drawer's motion. To provide a better sound, the transport frame is shock-mounted, decoupling it from the chassis and further isolating







Interior view of the N°51 displaying the cast aluminum transport assembly.

it from the audio section and other sections of the player. The damper bridge is machined from solid aluminum, increasing mass and rigidity, thus helping to eliminate flexure from day-to-day operation and promoting stability in the physical mechanism. All of these design attributes work in concert to provide smooth, quiet, and consistent transport operation.

### The Power Supply

The power supply is the foundation upon which the audio and video signals are built. The analog audio outputs utilize a dedicated power system. This consists of a custom designed low-noise, toroidal transformer, a secondary analog power section which performs the first stage of regulation and filtering, followed by a final stage of local regulation in the output section itself.

Power to the digital audio and video sections is provided by a switch-mode power supply that delivers a single constant voltage. This is distributed to local modules where it is converted to the voltages required for each individual circuit. This “point of load” power distribution technique prevents unwanted interactions caused by uneven supply during periods of high demand from any single circuit. Another advantage is the efficient distribution of power reducing thermal dissipation and providing a more stable operating environment.

### The Video Processor

The N°51 provides the video performance and flexibility that one would expect from a Mark Levinson Media Player. Custom calibrated scaling and de-interlacing are provided with support for resolutions up to 720p and 1080i. Other features include aspect ratio

conversion to eliminate letter boxing and pillar boxing. High quality 14-bit / 216MHz video Digital-to-Analog Converters (DACs) provide exceptional video output for analog displays. The On-Screen-Display is unique to the N°51 and complements the elegance of its industrial design.

In addition to the standard analog video outputs, N°51 includes a High-Definition Multimedia Interface (HDMI) output for use with digital display devices. By using the HDMI output with a high-definition digital display, the video signal remains in the digital domain all the way from the source to the display. In an analog system, the digital video signal from the disc is converted to analog in the player and back to digital in the display, introducing unnecessary conversions and possible degradations of the picture.

The N°51 also includes a separate monitor output for use with the N°40 Media Processor's preview function.

## The Audio Processor

As in the N°40, the N°51 employs a Direct Digital Synthesis circuit incorporating a very high frequency reference clock. The jitter performance is limited only by the characteristics of the original clock and yields an extremely accurate, stable, time reference. All data and clock signals carrying the digital audio information to the DACs are sent via a balanced Low Voltage Differential Signaling transmission line. This transmission scheme has proven effective in the telecommunications industry, as well as in the N°40 and N°390S. The N°51 also has the ability to output 44.1, 48, 88.2, or 96kHz signals from the S/PDIF, AES, or TOS outputs using a dedicated sample rate converter.

Digital-to-analog conversion in the N°51 is implemented using balanced multi-bit Sigma/Delta DACs delivering superb technical performance. In addition to their multi-bit architecture, these DACs have a differential current output, which allows us to optimize



N°51 remote control constructed from cast aluminum.



the critical current-to-voltage conversion stage with dedicated operational amplifiers possessing superlative rise time and bandwidth characteristics. Each channel incorporates two of these DACs in a dual-mono mode configuration. Following this, a custom active filter circuit sums both halves of the balanced signal and provides excellent common mode noise rejection in addition to its outstanding audio characteristics. This approach to the digital-to-analog circuit topology yields extraordinarily low distortion, improved signal-to-noise ratio and superb, musical sound quality.

Following the active filters, the signal passes through the volume control. The N°51 volume control is built around a dual MDAC 12-bit ladder attenuator, derived from the N°40. Volume controls are a critical part of any audio product, and multi-channel audio is particularly demanding. Offsets in volume level between channels can be large, yet always need to be maintained in a precise relationship over the entire control range. The N°51 volume control uses a hybrid analog/digital attenuation scheme to achieve a remarkable 100dB control range at 0.1dB resolution for the entire range. By applying DSP

based digital attenuation only to fill in the gaps for the very lowest level volume control steps, we do not suffer the loss of resolution associated with pure digital volume controls.

For music reproduction, the N°51 offers separate, fully balanced front left and right outputs in addition to a 5.1-channel output. Additional attention was given to these channels resulting in a design which maintains fully balanced signals from the digital-to-analog conversion stage to the output.

## Conclusion

The N°51 represents the next step in the evolution of the Mark Levinson product line. It combines superb video and audio performance while remaining true to the core principles of Mark Levinson. It is designed to elevate the enjoyment of DVD-Videos and CDs to a remarkably high level. New features, such as HDMI, allow the stunning video quality of the N°51 to be appreciated, while the tried and true analog audio circuitry make it a remarkably musical product. The N°51 Media Player owner can take pride in knowing that they have purchased the finest instrument available for the enjoyment of their film and music collections.

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