

DVD Audio/Video Player

DVD-9000**DENON****High-end DVD A/V Player with 14-bit, 108 MHz Video D/A Converter and PureProgressive™ Circuit**

Denon engineers have pulled out all the stops in its development of the DVD-9000 to ensure that this DVD player reproduces sound and pictures at the highest possible level of quality. The DVD-9000 is packed with PureProgressive™ circuitry for superior Interlaced-to-Progressive video conversion; six 14-bit, 108-MHz video D/A converters, Noise Shaped Video and a Super Sub Alias Filter. For high-quality audio output, the DVD-9000 sports AL24 Processing Plus supporting a sampling frequency of 192-kHz; 24-bit, 192-kHz audio D/A converters and other state-of-the-art audio technologies to extract the maximum potential of DVD-Audio. Along with Denon's critically acclaimed circuit design and chassis construction, the DVD-9000 is a truly remarkable new flagship DVD player from Denon.

**■ Thorough Vibration-resistant Design**

Since the high-density data recorded on DVD must be read with absolute accuracy, vibrations from outside or from internal sources, such as the power supply, will adversely affect sound and picture quality. A variety of designs have been incorporated in the DVD-9000 to suppress these unwanted vibrations. The bottom plate forming the foundation of the chassis is a 6-mm thick, 4-layer hybrid construction made up of a 1.2-mm thick copper-plated metal sheet and three layers of 1.6-mm thick metal sheets. Large insulators of sintered alloy (the same type used in Denon's high-end S1 series) have been used for the DVD-9000's feet to absorb external vibrations. Reinforcing plates for the base, front, and rear are composed of four 1.2-mm thick copper-plated sheets, that have been utilized in a 3-box construction design to strengthen the chassis. The chassis also uses copper plating to bring the ground electric potential of the overall chassis close to equipotential in order to suppress electrical noise. The top cover uses three types of 1.2-mm thick metal sheets in different shapes, while 2.5-mm thick aluminum panels have been used for the sides, giving rigidity to the entire chassis. The DVD mechanism is mounted on a cast-aluminum base between the mechanism and the chassis. Parts made of different materials effectively absorb vibrations caused by the unit itself as well as from outside to ensure stable operation.

■ THX Ultra Certified

The THX Ultra certification standards are comprised of tests in three categories; Audio Quality, Video Quality and User Interface. These tests ensure that the DVD Player is fully capable of bringing out the best visual and sonic quality of your favorite DVD programs.

■ Newly-Developed Loading Mechanism for Suppression of Vibrations

The newly-developed loading mechanism uses a guide and tray painted with protein material that is highly resistant to vibrations in order to prevent unwanted vibrations to the tray.

■ New PureProgressive™ Circuit

The DVD-9000's interlace to progressive converter is the new Sil504 Converter with PureProgressive™ circuitry from Silicon Image. The Sil504 features faster moving picture detection and improved film/video mode recognition capability.

High-speed processing: This Sil504 Progressive Converter is capable of processing 6 billion operations per second, providing the finest in motion-adaptive de-interlacing.

Moving picture detection: PureProgressive™ features 2:3 pulldown detection, which converts 24-fps Film based material to 60-fps TV/Video playback, while also detecting Video based material, animation and graphics. PureProgressive™ is capable of reproducing DVD-Video discs containing both Film and Video material, as well as high picture quality progressive video sources, while avoiding the flickering caused by detection delays of these different formats. In processing moving video signals, a conventional progressive converter performs detection on a full frame-by-frame basis, while PureProgressive™ stores 4 fields of video signals in a 64-Mbit SDRAM buffer, enabling the detection and processing on a pixel-by-pixel basis to achieve greater precision in discriminating between moving and still pictures.

Improved 2:3 pulldown detection: There are cases in which 2:3 pulldown data signals on DVD-Video discs are not in sync. The PureProgressive™ converter will quickly detect the non-sequential points and perform appropriate corrective measures at high speed to minimize picture flickering.

It is now also possible to select Level Detection or Flag Detection as the detection method used for Film and Video material. If an incorrect flag was recorded or the difference between the video level and noise level is very small and distinctions on the disc are difficult to detect, this selection ensures optimum detection capability and minimizes picture quality degradation.

■ 14-bit, 108-MHz Video D/A Converter

The DVD-9000 uses a total of six 14-bit, 108-MHz video D/A converters to tap the maximum potential of the new PureProgressive™ circuit's performance. The DVD-9000 uses independent D/A converters for Progressive and Interlaced picture reproduction.

These converters provide a very high sampling frequency of 108 MHz, with 4x oversampling used for Progressive and 8x oversampling for Interlaced operation, resulting in the highest detailed D/A conversion. Since a filter with ample cutoff characteristics can also be used for the analog low-pass filter, the DVD-9000 reproduces the delicate nuances of video signals, allowing viewers to enjoy the original picture at the highest level of realism.

■ Noise Shaped Video (NSV)

The NSV feature works in the digital domain to reduce noise in the video signal frequency band in order to enhance video signal linearity.

■ Super Sub Alias Filter

The S/N ratio can be improved when unwanted signals of higher than 6.75 MHz following D/A conversion are cut. The DVD-9000 thus uses a Super Sub Alias Filter that produces flat characteristics, ensuring that adverse influences do not affect video signals inside the essential frequency band, and folding noise is eliminated. In the DVD-9000, the Super Sub Alias Filter is applied to the chroma signal as well as the luminance signal, improving color reproduction.

■ A Wealth of Picture Quality Adjustment Functions

Contrast, Brightness, Hue, Sharpness, and Gamma can be adjusted as desired by the user.

■ AL24 Processing Plus

Denon has further developed its proprietary AL24 Processing, an analog waveform reproduction technology, to support the 192-kHz sampling frequency of DVD-Audio. This new technology, AL24 Processing Plus, thoroughly suppresses quantization noise associated with D/A conversion of LPCM signals to reproduce the low-level signals with optimum clarity that will bring out all the delicate nuances of the music.

■ 24-bit, 192-kHz Audio D/A Converters

The DVD-9000 uses the Burr-Brown PCM-1704, high-performance 24-bit, 192-kHz D/A converters to faithfully and accurately convert high-quality 24-bit data generated by AL24 Processing Plus. Each main channel (FL/FR) have 2 DACs per channel in a differential configuration, while the Center/Surround Left/Surround Right/Subwoofer channels receive one per channel.

■ Pure Direct Mode

The DVD-9000 includes two Pure Direct modes that further improves sound quality. For example, during analog audio output, Pure Direct can turn off digital signal outputs, video signal outputs, and the front panel display that can easily influence the sound quality of the analog audio signals. The user can define which operations are to be turned off and store those preferences in memory.

■ Layout for High Sound Quality

The DVD-9000's audio, video, digital, and power supply circuit boards have been isolated into independent blocks to prevent mutual interference.

■ Independent Power Supplies

Independent power supplies have been provided for the audio signal processing block, the video signal block and other areas to eliminate mutual distortion with other blocks. Clean supplies of power to the various circuits contribute to high picture and sound quality.

■ Specially Selected Parts for High Sound and Picture Quality

■ Digital Bass Management

When playing multi-channel Dolby Digital, LPCM or DVD-Audio/MLP sources, it is possible to preset speaker configurations and delay times. The crossover point is fixed at 80 Hz with 12 dB high and 24 dB low pass filter slopes.

■ DENON Digital Link

When the DVD-9000 is connected via a shielded twisted pair (STP), RJ-45 fitted cable to a Denon Digital Link compliant A/V receiver, the Denon Digital Link interface enables high-grade LPCM 24-bit / 96-kHz / 6-channel or 24-bit / 192-kHz / 2-channel (*1) digital output. Since the Denon Digital Link uses low-voltage differential signaling (LVDS), transfer capabilities of greater than 1.2 Gbps at a differential voltage of approximately 0.3 Vpp are possible. And since signal transfer is balanced and voltage is lower than coaxial or unbalanced cables, the Denon Digital Link is far less susceptible to radiated noise, ensuring the highest level of signal transfer.

■ HDCD Decoder

■ DVD-R/RW (DVD-Video Recording Mode) Playback (*2)

■ CD-R/RW (MP3 / JPEG) Playback (*2)

The DVD-9000 supports the CD-R/RW format. It plays finalized CD-R/RW discs containing MP3 audio files. It also reads still photos in the JPEG format taken by a digital camera.

■ Kodak Picture CD

The DVD-9000 also plays Picture CDs (Kodak format only).

■ RS-232C Port (Third-party system controls only)

Includes a RS-232C port to support an AMX, Crestron integrated control system.

■ Brilliant Black

DVD-9000 can pass below black video (PLUGE) via the progressive or interlace video outputs for correct monitor setup and optimum picture quality.

■ Self-illuminated GLO-KEY Remote Controller with Easy Recognition Layout

The DVD-9000 comes equipped with a self-illuminating remote controller for easy operation in a dark room.

(*1) If a 24-bit, 192-kHz sound source is copyright protected, the DVD player may convert the digital output.
(*2) Discs that have been poorly finalized following recording may be only partially playable or not playable at all.

Specifications

■ Video Section

Disc played DVD Audio, DVD Video, DVD-R/RW (DVD Video), Video CD, Music CD, CD-R/RW (AUDIO/MP3/JPEG), Picture CD
Composite Video Output: 1.0 Vp-p (with 75 ohms load)
S-Video Output: Y; 1.0 Vp-p (with 75 ohms load),
C; 0.286 Vp-p
Component Video Output: Y, Cb/Pb, Cr/Pr:
Y; 1.0 Vp-p (with 75 ohms load),
Cb/Pb; 0.648 Vp-p (with 75 ohms load),
Cr/Pr; 0.648 Vp-p (with 75 ohms load)

■ Audio Section

Audio outputs 2 Sets Analog Front Channel (FL/FR) Output,
1 Set Analog Multi Channel (SL/SR/C/SW) Output,
1 Set Optical Digital Output,
1 Set Coaxial Digital Output,
1 Set DENON Digital Link
Audio inputs 1 Set Optical Digital Input,
1 Set Coaxial Digital Input

■ General

Power supply AC 120 V, 60 Hz
Dimensions/weight 434 (W) x 136 (H) x 411 (D) mm, 18.5 kg
17.1" (W) x 5.4" (H) x 16.2" (D), 40.8 lbs



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DENON ELECTRONICS (USA), INC.
19 CHAPIN ROAD, P.O. BOX 867, PINE BROOK, NJ 07058-9777 USA
TEL: 973-396-0810 www.denon.com

DENON CANADA INC.
505 APPLE CREEK BLVD. UNIT 5 MARKHAM, ONTARIO L3R 5B1 CANADA
TEL: 905-475-4085 www.denon.ca

DENON, LTD.
3-16-11 YUSHIMA, BUNKYO-KU, TOKYO 113-0034 JAPAN
www.denon.co.jp