

# DENON

A/V SURROUND AMPLIFIER

## AVC-A1XV

DVD AUDIO-VIDEO/SUPER AUDIO CD PLAYER

## DVD-A1XV

A/V SURROUND AMPLIFIER  
**AVC-A1XV**

## Reflecting the intentions of content producers in the home environment

The AVC-A1XV incorporates a host of new technologies, circuits and functions to achieve DENON's ultimate aim for all its amps, which is to recreate the producer's original intent with absolute fidelity. The "New DDSC-Digital" surround processor, developed around DENON's design concepts for high-quality sound reproduction, is now equipped with the latest 32-bit floating-point DSP as well as newly-developed AL24 processing, high-performance 24-bit/192-kHz D/A converter, and other much improved technologies. The AVC-A1XV is also endowed with a wide range of features such as a hefty 10-channel power amp capable of bi-amp drive, new Auto Set-up utilising multi-point measurement and analysis to support the entire listening area, Room EQ (equaliser) featuring Audyssey MultEQ XT technology, advanced digital audio interfaces including DENON Link and IEEE 1394, support for THX Ultra2, multi-zone capability, newly-developed analog video scaler, DVI/HDMI video selector, and full up/down video conversion.

These new technologies, circuits and features enable the AVC-A1XV to reproduce the original intent of content producers from a wide range of sources such as surround sound, multi-channel audio, 2-channel stereo, and video.





## Audio Section

### 'New DDSC-Digital,' for dramatically improved processing performance

The New DDSC (Dynamic Discrete Surround Circuit) - Digital is a high-quality surround sound reproduction circuit designed by DENON and forms the core of the design concept that DENON pursues for all its A/V amps; to faithfully reproduce the original intent of content producers. DENON has succeeded in developing a fully discrete design for the New DDSC-Digital in which high-performance ICs are used in independent blocks to form a signal processor that reproduces surround sound and the discrete design ensures that all channels are endowed with identical response and quality of sound.

The New DDSC-Digital represents a version of this circuit that has been vastly improved for the AVC-A1XV. Besides the latest 32-bit floating point DSP that has been incorporated for the first time in the heart of the circuit, the New DDSC-Digital also includes newly-developed Advanced AL24 Processing circuitry, a 24-bit/192-kHz high-performance D/A converter, a DIR and A/D converter capable of 24-bit/192-kHz processing, and a large-capacity FPGA that controls these digital devices and performs high-speed signal processing.

As a result, the AVC-A1XV is endowed with large-capacity, real-time signal processing capabilities that can reproduce up to 16 channels of program sources, not just for the main zone (main room / 9.1-channel playback) where the primary home theatre is located but also for a second zone (second room / 5.1-channel playback) which could be a home theatre as well. These capabilities enable the AVC-A1XV to faithfully recreate all the information contained in

the original recording with exceptional quality through all channels and allow listeners to enjoy the program in the way the producer intended.

In addition, DENON has tapped its considerable expertise in pure audio to fine-tune all the circuits, not just the audio circuits, and optimise the AVC-A1XV's performance. The AVC-A1XV is not only a master at recreating surround soundfields for home theatres, it also reproduces superior quality sound from pure audio sources.



#### 1. New 32-bit floating point DSP

The decoder for the main zone is equipped with three of the latest 32-bit floating point DSPs. These new DSPs, with considerably more processing power than the previous DSPs, are amply capable of processing high-speed 192-kHz signals and handling complex decoding. Accuracy has been dramatically improved and a higher level of perfection in surround decoding has been achieved.

The DSP at the first stage decodes surround formats related to DENON Link, Dolby Digital, DTS and others; the DSP at the second stage handles bass management, THX processing, and matrix decoding for Surround EX; and the DSP at the third stage performs processing tasks such as Auto Set-up and Room EQ with high accuracy.

The AVC-A1XV also has a separate DSP that processes signals for the second zone. This latest-generation 32-bit floating point SHARC DSP, renowned for its high performance, executes operations and processing exclusively for the second zone. High-quality, stable signal processing accuracy is thus achieved for both the first and second zones.

#### 2. 24-bit/192-kHz D/A Converter

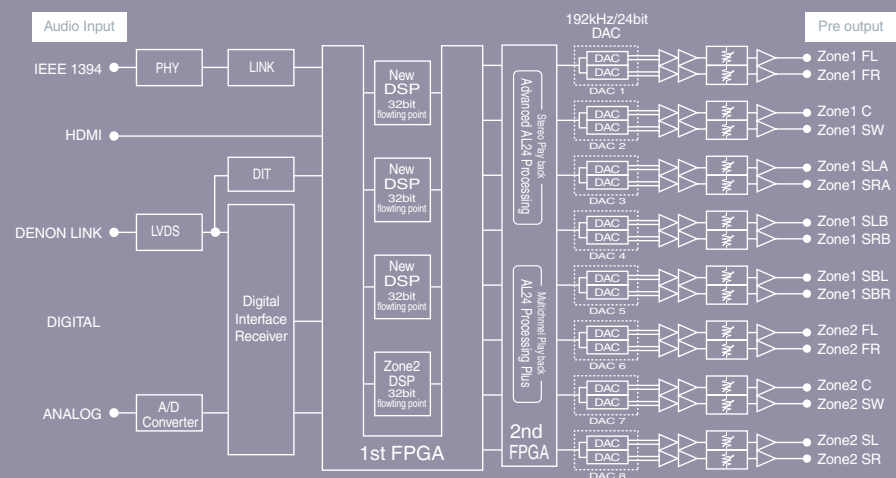
The latest high-accuracy 24-bit/192-kHz D/A converter has been employed for the audio DAC. The AVC-A1XV has 8 of these D/A converters for 16 circuits, achieving differential drive for all 16 channels and digital-to-analog conversion with wide dynamic range at a high S/N.

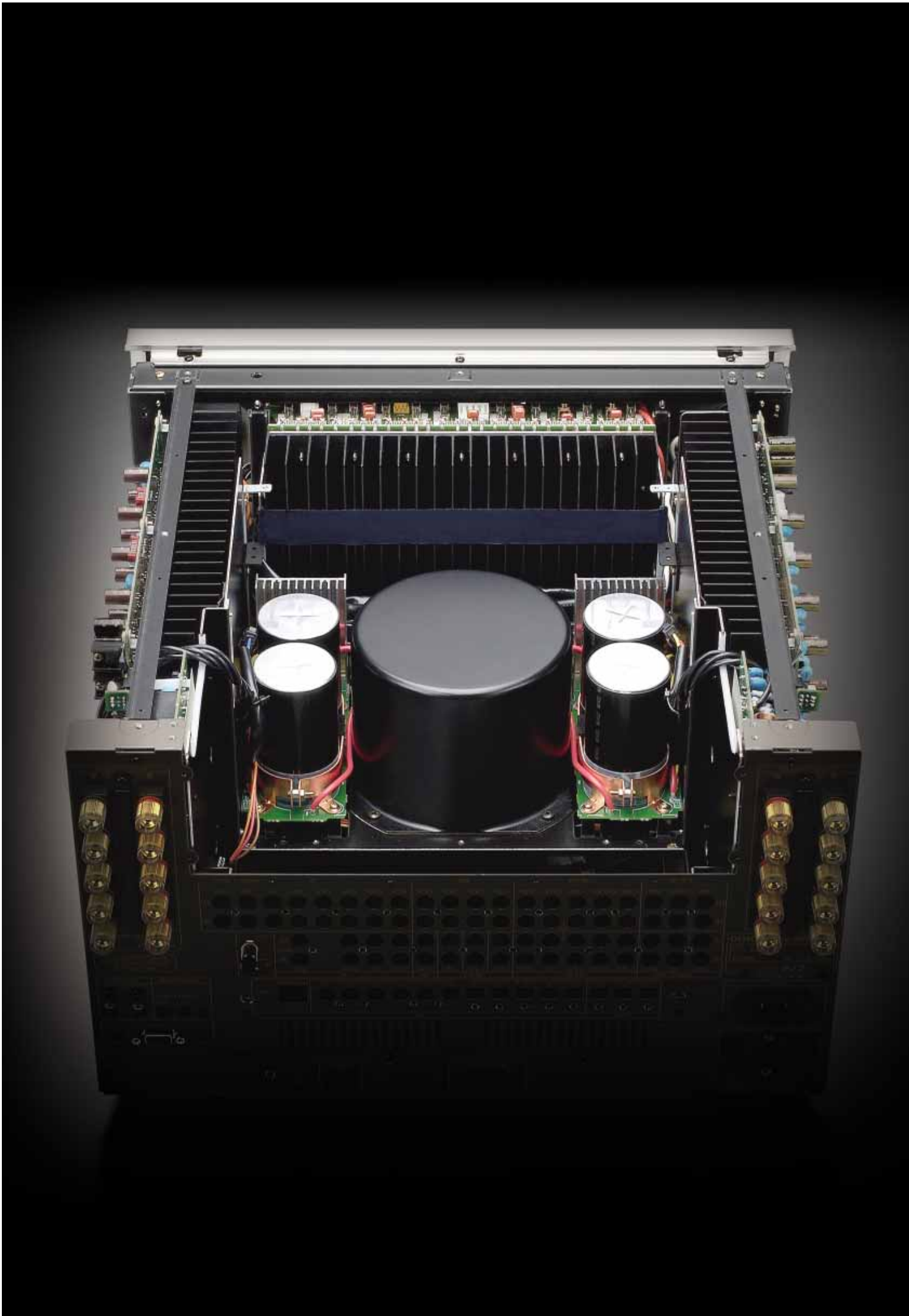
When high-grade D/A conversion of digital information obtained from high-accuracy signal processing is performed with equal quality across all channels, the overall surround space is filled with surround sound of a uniform quality.

During 2-channel playback, these D/A converters switch to double differential operation, delivering audio playback of even higher quality.

#### 3. High-performance A/D Converter, for high-quality surround playback of analog sources

A high-performance A/D converter of 24-bit/192-kHz quality has been used to significantly boost S/N and dynamic range.





### 'Advanced AL24 Processing,' the latest technology for high sound quality

The AVC-A1XV employs Advanced AL24 Processing, the ultimate analog waveform reproduction technology developed by DENON, for use during PCM signal input (during stereo signal processing). In addition to the data expansion of existing AL24 Processing Plus technology, algorithms developed by DENON for use in large-capacity calculation processors such as DSPs and FPGAs are used to interpolate data along the time axis and up-converted sampling is used to achieve natural interpolation without losing original data. Greater optimisation in digital filtering has also been achieved for ringing-free pulse response and for pulsive music data and attack sounds. Moreover, when Advanced AL24 Processing operates in these situations, the D/A converter shifts to double differential operation. This enhances naturalness in the reproduction of spatial information such as the delicate nuances in the music, the locations of the performers, and the breadth, height, and depth of the concert hall.

### DENON Link, enabling high-speed, high-grade digital signal transmission

DENON Link is a balanced transmission technology that uses a high-speed transfer device to achieve high-speed, high-grade transmission of digital signals free of jitter and with minimal degradation. Capable of inputting digital signals such as PCM 24-bit/192-kHz and DVD-Audio signals directly from high-speed, high-sound-quality sources, DENON Link takes greater advantage of the AVC-A1XV's audio performance to achieve high-quality sound playback. Connection is very easy via a single cable.

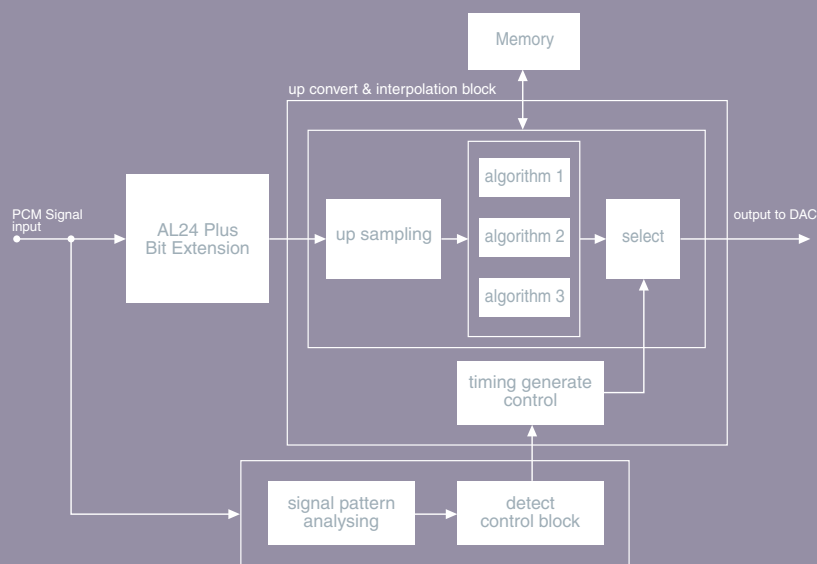
### IEEE 1394 digital interface

The AVC-A1XV comes with two IEEE 1394 input ports, providing another option for high-speed transmission of digital audio signals in addition to DENON Link.

Note: Some equipment may not support IEEE 1394 connectivity.

### Large-output Power Amp Section and Power Supply Configuration, for stable high-power output

The AVC-A1XV is equipped with a total of 10 power amps of uniform quality for each of 10 channels, and each amp delivers effective maximum high-power output of over 220 watts per channel (6Ω). This is more than enough power to extract all the information included on audio sources for surround sound playback, multi-channel audio playback, and 2-channel stereo playback. The main power unit supporting these power amps is configured of a large dedicated toroidal transformer, high-capacity block capacitors for high sound quality (33,000μ x 4), and high-speed, high-accuracy Schottky barrier diodes and other parts strictly selected for high sound quality. With this stable supply of power from the main power supply block, the power amps are able to ensure that listeners enjoy superior reliability in the quality of sound, even during times of highly dynamic playback of surround sound or multi-channel sound. In addition, this power unit features full separation of the power amps' large toroidal transformers from the primary to the secondary sides for the Left and Right channels. This configuration is ideal for enjoying further improved sound quality when listening to stereo sound sources.





## 10-channel power amp, supporting multiple uses

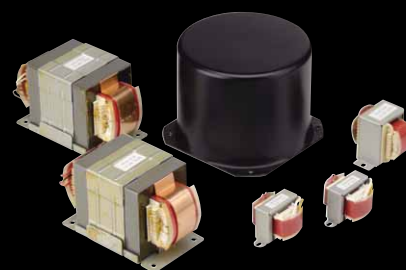
The 10 power amps in the AVC-A1XV are equipped with a power assignment function that allows them to be efficiently used in a variety of listening situations. Since the 10 speaker terminals can be assigned to any channel, the AVC-A1XV can be used to enjoy home theatre entertainment in the following configurations:

- One dynamic 9.1-channel surround system in a single room
- 5.1-channel second zone theatre: 5.1-channel theatre environments in two different rooms, both operating simultaneously
- Multi-zone system: 10 channels of output are divided for enjoyment in three rooms, with a 7.1-channel theatre in the main room, a 2.1-channel environment in a second room, and a monaural environment in a small third room.
- "Bi-amp" system: Front (L/R) and Centre speakers are bi-wired in a 7.1-channel theatre to improve playback quality in the front for enhanced listening enjoyment.

## Stabilised, independent power supplies for each circuit

A major issue in bringing out the maximum potential of each circuit in an A/V amp that houses a number of different circuits is how to construct an ideal power supply for each circuit and eliminate electrical interference among the circuits. Ideal power supplies have been achieved in the AVC-A1XV by separating and strengthening the stabilised power sources and grounds for each circuit. The power circuitry has been divided into six independent blocks (for the power amp section, audio section, video section, video microprocessor, main microprocessor, and displays), each with its own power transformer, and the secondary side of the transformers has been further divided into a total of 14 coil windings according to the application of each block. The power supply and ground required by each circuit are supplied to the stabilised power circuits segment the power into voltages required by individual circuits and stabilise the power before supplying the power and grounds to

the various circuits. By thoroughly eliminating electrical interference among the circuits, this design achieves an ideal power supply configuration for an A/V amp.



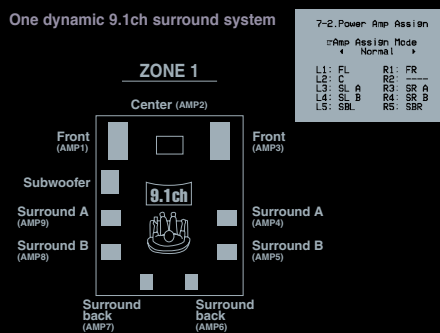
## Chassis construction

The AVC-A1XV incorporates a chassis construction that has addressed issues concerning mutual interference among circuits and vibration that adversely influences sound and picture quality. The use of independent blocks to shield each circuit protects the circuits from mutual interference.

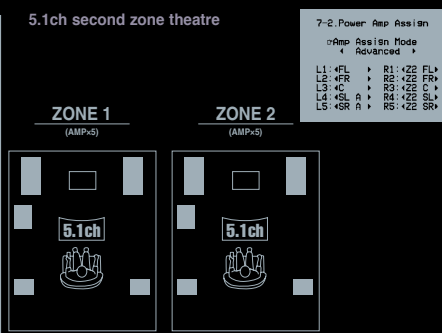
In the area of vibration-resistant design, the construction uses a 2mm thick copper plate to suppress the effect of vibration on power transistors that are the most easily influenced by external vibration. The transistors are mounted through this plate to large aluminum heatsinks coated with black alumite to protect the transistors from radiant heat and preserve sound quality. These heatsinks are mounted directly to a strong chassis base on the left and right sides. The four feet have also been mounted directly to the corner sections of the base to lower the centre of gravity and suppress vibration. The power transformer is positioned at the centre of the chassis to optimise the overall balance of weight, and a fifth foot made of machined aluminum supports this centre area that bears the greatest weight of the transformer and suppresses unwanted vibration from the transformer.

The chassis of the AVC-A1XV that contains these heatsinks, power transformer, and various circuits also uses a 1.6mm copper plate coated with black alumite with superior heat-resistant characteristics to suppress vibration and ensure stable operation of the internal circuits.

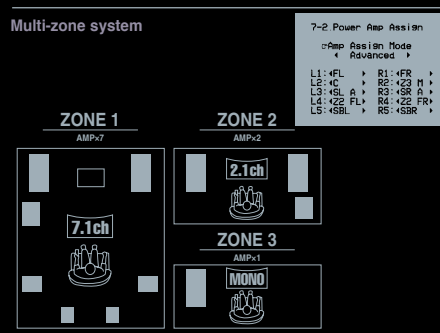
One dynamic 9.1ch surround system



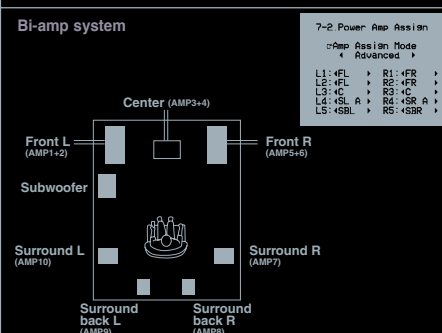
5.1ch second zone theatre



Multi-zone system



Bi-amp system





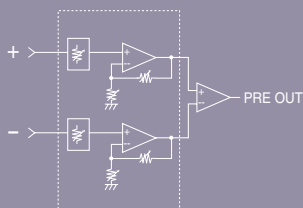


## Pure Direct mode, for the pure enjoyment of music in high-quality sound

The AVC-A1XV includes a Pure Direct mode that allows listeners to enjoy pure music of remarkably high quality. (When Pure Direct is selected via key operation on the main unit, power to the video circuitry and the fluorescent display is automatically turned off. During analog sound input, power to the digital circuitry is also turned off, and adverse influences by other circuits on the audio circuitry are suppressed to the maximum extent possible.)

## Variable Gain Volume and Pre-amp

A variable gain volume configured of a high-voltage-resistant process that secures high dynamic range and low distortion is used for all channels. The S/N ratio in the actual range is vastly improved by varying the pre-amp's gain to match the output level. The use of the volume in differential operation and a new amp in a low-noise FET configuration results in a pre-amp circuit in which the variable gain volumes are directly connected in DC to further improve sound quality.



## New Auto Set-up and Room EQ, for overall listening area support

The AVC-A1XV includes an Auto Set-up function that performs basic settings for the speakers based on frequency response data for the speakers and the listening room that was measured by a supplied high-performance microphone, and a Room EQ (equaliser) function that optimises frequency response characteristics for the listening room. The AVC-A1XV is also capable of obtaining data for up to 8 listener positions which it analyses using Audyssey's newly-formulated algorithms (world's first), and performs equalization to match the overall listening area and create an ideal home theatre environment.

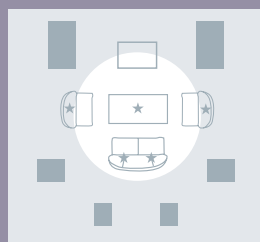


### 1. Auto Set-up

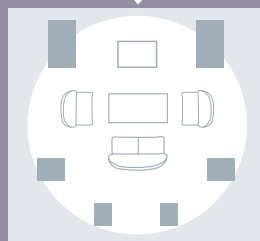
Auto Set-up performs the following basic settings for the speakers: Speaker connection, speaker size, speaker level, speaker distance, speaker phase, and crossover frequency.

### 2. Room EQ featuring Audyssey MultEQ XT technology

Room EQ automatically performs ideal corrections for the frequency characteristics of the speaker system and the room. FIR filters with negligible phase change are used as equalisers for each speaker where they perform minute corrections. Three patterns of equaliser curves (Audyssey, Front, and Flat) are calculated in a single measurement, and there is also an option that allows the user to store one pattern of manually equalised settings in memory. (Corrections can be made with a 9-band equaliser using an IIR filter while listening to the desired music.) Since these four patterns stored in memory can be assigned for each surround mode, it is possible to easily set an ideal listening environment that matches the source being played.



★ measuring point



**Audyssey:** Adjusts all frequency responses to achieve the optimum environment for the acoustic characteristics of the overall listening room.

**Front:** Adjusts the responses of other speakers to match those of the front speakers.

**Flat:** Flattens the frequency responses of all speakers. This is appropriate when playing music in multi-channel formats such as Dolby Digital, DTS, DVD-Audio, and Super Audio CD.

### 9.1-channel playback

It is possible to completely separate Surround A and B and make independent delay and level

adjustments. As in earlier models, more accurate surround playback is possible by switching between Cinema and Music type speakers, or using Surround A and B for simultaneous playback and a more spacious sound. Subwoofer settings can be performed for a maximum of 3 channels.

## Full support for the most advanced surround playback formats

The advanced audio technologies of the AVC-A1XV form the foundation of high-quality sound playback performance that brings out the full potential of surround playback. Besides DTS-ES, DTS 96/24, and Dolby Digital EX, the AVC-A1XV also faithfully reproduces high-grade surround sound from THX Ultra2 and other state-of-the-art formats.

- Dolby Digital EX - Dolby Digital - Dolby Pro Logic IIx  
- Dolby Headphone - DTS-ES - DTS 96/24  
- DTS Neo:6 - DTS - HDCD

## THX, THX Surround EX, THX Ultra2

The AVC-A1XV supports the THX Ultra2 format from THX Ltd. Besides THX Ultra2 Cinema mode and THX Music mode, this format offers THX Game mode which further enhances dynamic ambience when playing games. In addition to signal processing by such formats as DTS-ES and Dolby Digital EX, THX implements Timbre Matching and Re-Equalisation circuitry capable of reproducing the same sort of expressive effects that are possible with the playback system in a real cinema. The Timbre Matching circuit facilitates smooth sound movement, and the Adaptive Decorrelation circuit simulates the spacious surround effect of the multiple number of surround speakers used in a cinema. The THX Surround EX mode reproduces 6.1-channel surround signals in the exact soundfield that was designed by the film's acoustic producer at the dubbing stage.

## Original surround modes from DENON

DENON's own DSP surround modes can be used with all signal sources from 2 to 6.1 channels played on a system with a maximum of 9.1 channels. All the DENON modes, including Wide Screen which reproduces the acoustic effect of a cinema auditorium when playing 5.1-channel sources such as Dolby Digital or DTS, can be enjoyed with a 9.1-channel system that includes Surround Back L/R speakers.





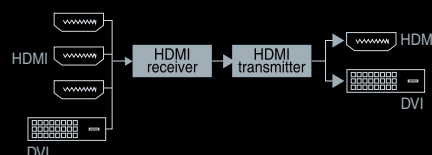
## Video Section

### Newly-developed video circuitry, for high picture quality

To facilitate connection to high-definition displays, the AVC-A1XV's video circuit block is equipped with the latest HDMI/DVI selector and a component video selector, and other functions such as an I/P converter, up/down S-video. Composite video conversion has also been provided to enhance ease of use. In addition, the video circuitry inherits advanced video technologies developed for DVD players, such as the highly-acclaimed Progressive converter from Faroudja and high-speed, high-accuracy 12-bit/216-MHz video DACs from Analog Devices, to realise high-definition images that are more natural and faithful to the originals.

#### 1. HDMI/DVI digital video I/O terminals

The AVC-A1XV is equipped with 3 sets of HDMI inputs and 1 set of DVI inputs, as well as 1 set of outputs that is switchable between the two interfaces, allowing the selection of multiple digital video signals. The HDMI terminals also accept multi-channel digital audio input.



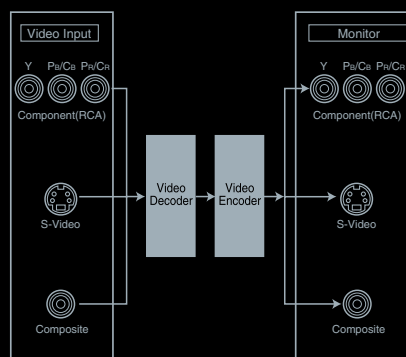
#### 2. Component video switching

The AVC-A1XV has 6 sets of component video input terminals (BNC and RCA, respectively) and 2 set of component video outputs (BNC). There is also a set of component video output terminals to zone 2 (RCA). These component video circuits maintain flat response up to 100 MHz, ensuring sharp HDTV image quality.

#### 3. Video up/down conversion

The AVC-A1XV includes video up/down conversion functions. In the main zone, composite and S-video signals are up-converted to component video, and component video signals are down-converted (\*1) to composite or S-video signals. In zone 2, composite and S-video signals are up-converted to component video, and S-video is converted down to composite video.

\*1. Down-conversion from component video to composite or S-video occurs only with 480i and 576i signals.



#### 4. I/P conversion and scaling

The main zone has a built-in I/P (Interlaced/Progressive) conversion function. A Faroudja DCDi (Directional Correlational Deinterlacing) processor is used to correct the jagginess that occurs when video material is I/P converted and to achieve smooth, high-quality video images. Video signals that are not copy-protected can be further up-converted to HD 1080i signals to let viewers enjoy a higher-quality, more natural picture that is closer to the original image.



#### 5. High-speed, high-accuracy dual 12-bit/216-MHz video DAC

The AVC-A1XV uses a high-speed, high-accuracy dual 12-bit/216-MHz video DAC to take maximum advantage of the high-quality video signals from the I/P converter. This DAC enhances the reproduction of delicate video signals to recreate high-definition images that are faithful to the originals. In addition, NSV (Noise Shaped Video) technology is used to improve the S/N ratio of video signals and enhance their linearity.



## 6. Composite and S-video processing

A 3D Y-C separation circuit is used to convert composite video signals into S-video (for the Main zone). In addition, TBC (Time Base Correction) technology is used when converting composite video or S-video signals to component video in order to suppress the effects of jitter in the video signal and produce a high-quality picture.

## Expandability

### Analog EXT IN terminal

The AVC-A1XV includes an analog multi-channel external input terminal. Signals input through the analog EXT IN terminal can be A/D converted and processed by the DSPs. Besides Down Mix, Bass Management, and Delay processing, signals input through EXT IN can also be THX-processed. In addition, a variety of digital processes can be applied to the analog input of DVD-Audio and other sources. The EXT IN function has been designed with consideration given to future applications and expandability, regardless of whether the signals are analog or digital. In addition, Center and Subwoofer analog down-mixing is possible for external analog multi-channel input signals.

### 4-zone, multi-room support

The AVC-A1XV has a multi-zone function capable of outputting separate sources to a maximum of 4 zones. There are enough pre-out terminals to output a total of 22 channels to the main zone and other zones (10 channels for the main zone, 6 channels for zone 2, and 2 channels each for zones 3, 4 and 5). Functions such as volume and tone can be controlled independently for each channel. The pre-out output of these 22 channels can be assigned by the power amp assign function to up to 10 channels for output to the speakers (excluding subwoofers).

## Ethernet and RS-232C terminals

The AVC-A1XV's Ethernet and RS-232C ports provide support for serial control using AMX, Crestron and others.

## Other Functions

### Auto Surround Back Channels ON function, for auto-detection of supporting sources

When DVDs and other discs contain identification signals indicating they have been encoded in Dolby Digital EX or DTS-ES, this function detects these identification signals and automatically turns on the Surround Back channels.

### Auto Surround mode

Since the AVC-A1XV automatically memorises the surround modes for each of four types of input signals – (1) 2-channel analog or PCM, (2) 2-channel bit stream (Dolby Digital, DTS), (3) multi-channel bit stream, and (4) external multi-channel input – if a type of input signal changes, the ideal Surround mode for that signal is automatically set.

### New design and ease-of-use

The type of input signal and operation status can now be checked more easily on the front panel's large display. A cursor key for making settings is located behind a trap door and can be used to perform settings on the front panel without relying on the remote controller. Since setting details are displayed on the front panel as well as on the screen while the settings are being made, the screen does not need to be connected when making settings. The trap door also houses audio, video, and digital input terminals, permitting convenient connection of devices such as a game console or video camera.

## 3 user mode buttons

The AVC-A1XV's User Mode function lets you store your preferred input device, surround mode and other settings, and call them up at the touch of a button. (Up to three combinations of settings can be stored.)

### EL remote controller for easy operation

The AVC-A1XV comes with a new type of remote controller that uses an EL display, giving users a refreshing operating experience compared with conventional hard-key types. Keys are grouped according to functions, and function groups are displayed on the EL only as needed to improve ease of use. Display brightness can be varied in three stages to ensure the display is easy to read even in dark room situations. The remote controller includes a pre-set memory function that supports the control codes of TVs and DVD equipment made by other manufacturers, a learning function and a system control function.

### On-screen display for easier, error-free operation

### Variable subwoofer crossover switching

(40/60/80/90/100/110/120/150/200/250 Hz)

### Muting level settings for all zones (∞/-40dB/-20db)

### Audio Delay Function for main zone and zone 2 (max. 6 frames)

Audio delay function corrects slight lags between sound and picture that can occur when a video signal is processed, such as in a Progressive Scan DVD player or onboard video processor.



## Input/Output Terminals For Every A/V System

### Audio Inputs

13 Sets Analog Inputs .....	PHONO, CD, TUNER, CDR/TAPE, DVD, VDP, TV, DBS, VCR-1, VCR-2, VCR-3, VCR-4, V.AUX(FRONT)
1 Set 10-ch Analog EXT. Input .....	FRONT L/R, CENTER, SURROUND (A) L/R, SURROUND (B) L/R, SURROUND BACK L/R, SUBWOOFER
1 Set 6-ch Analog EXT. Input .....	FRONT L/R, CENTER, SURROUND L/R, SUBWOOFER
13 Digital Input .....	OPTICAL x6 (incl. FRONT x 1) COAXIAL x6 DENON Link x1

### Audio Outputs

9.1 Analog PRE Outputs .....	FRONT L/R, CENTER, SURROUND(A) L/R, SURROUND(B) L/R, SURROUND BACK L/R, SUBWOOFER
5 Sets Analog REC Output .....	VCR-1, VCR-2, VCR-3, VCR-4, CDR/TAPE
4 Sets Analog Multi Zone PRE Output...	ZONE2 5.1ch, ZONE2 L/R, ZONE3 L/R, ZONE4 L/R
3 Digital Output .....	OPTICAL x3

### Video Inputs

6 Sets Component Video Input .....	VIDEO-1, VIDEO-2, VIDEO-3, VIDEO-4, VIDEO-5, VIDEO-6 (BNC)
9 S-Video Input .....	DVD, VDP, TV, DBS, VCR-1, VCR-2, VCR-3, VCR-4, V.AUX(FRONT)
9 Composite Input .....	DVD, VDP, TV, DBS, VCR-1, VCR-2, VCR-3, VCR-4, V.AUX(FRONT)

### Video Outputs

3 Set Component Video Output .....	MONITOR x3 (incl. 1 set for ZONE2)
7 S-Video Output .....	VCR-1, VCR-2, VCR-3, VCR-4, MONITOR, ZONE2, ZONE3
7 Composite Output .....	VCR-1, VCR-2, VCR-3, VCR-4, MONITOR, ZONE2, ZONE3

## Specifications

### Power Amplifier Section

Rated output.....*	THD figures are power amp stage values.
Front .....	170 W + 170 W(8 ohms, 20 Hz - 20 kHz, 0.05 % THD) 220 W + 220 W(6 ohms, 1 kHz, 0.7 % THD)
Center (A, B) .....	170 W(8 ohms, 20 Hz - 20 kHz, 0.05 % THD) 220 W(6 ohms, 1 kHz, 0.7 % THD)
Surround (A, B) .....	170 W + 170 W(8 ohms, 20 Hz - 20 kHz, 0.05 % THD) 220 W + 220 W(6 ohms, 1 kHz, 0.7 % THD)
Surround Back.....	170 W + 170 W(8 ohms, 20 Hz - 20 kHz, 0.05 % THD) 220 W + 220 W(6 ohms, 1 kHz, 0.7 % THD)

### Preamplifier Section

Analog	
Input sensitivity / impedance .....	200mV/47kohms
Frequency response.....	10Hz-100kHz: +0,-3dB (Direct mode)
S/N .....	105dB(Direct mode)
Rated output .....	1.2V
Digital	
D/A output .....	2.0V
Phono	
Input sensitivity / impedance .....	2.5mV
R/AA deviation .....	+/-1dB(20Hz to 20kHz)
Rated output .....	150mV

### Video Section

Frequency response	
Composite video/S-video .....	5Hz-10MHz (+0,-3dB)
Component video .....	5Hz-100MHz (+0,-3dB)

### General

Power supply .....	AC230V, 50Hz
Power consumption .....	850 W
Dimensions .....	434 (W) x 280 (H) x 505 (D) mm
Weight .....	44.0kg

### Remote control unit (RC-995)

Batteries .....	R03/AAA Type (four batteries)
Dimensions .....	72 (W) x 238 (H) x 25.5 (D) mm
Weight .....	225 g (including batteries)



DVD Audio-Video/Super Audio CD Player

## **DVD-A1XV**

### New Flagship Universal Player from DENON is Packed with All of DENON's Best Technologies

The DVD-A1XV represents the culmination of various technologies related to high picture and high sound quality that DENON has developed for the many DVD players that it has released in recent years. Along with other audio and visual technologies that have been newly developed for the DVD-A1XV, this model also employs high-performance devices and interfaces that have been newly developed for superior processing capabilities.

The DVD-A1XV's video circuitry employs the Dual Discrete Video Circuit (DDVC), a proprietary DENON technology for high-quality picture playback that uses the latest high-performance devices such as the newly-developed I/P converter 'REALTA' realising true 10-bit processing, a digital video scaler, and dual 14-bit, 216-MHz video DACs, delivering enhanced video playback quality. In addition, the audio circuitry features newly-developed Advanced AL24 Processing, a high-performance 24-bit, 192-kHz D/A converter and other audio technologies based on technologies that DENON has developed over many years, ensuring exceptional audio playback performance. To support these technologies, the DVD-A1XV also incorporates an original drive mechanism and vibration-resistant chassis construction that suppress vibration, signal interference, and other adverse influences on the audio and video signals. The DVD-A1XV includes a wealth of audio/video interfaces such as DVI and HDMI digital video outputs, the well-established DENON Link, and IEEE 1394 digital audio output.

When the DVD-A1XV is combined with the DENON AVC-A1XV A/V surround amplifier that was recently released, users will be able to fully experience the remarkable quality of the Premium Series concept, DENON's ideal for home theatre performance.





## Video Section

### Newly-developed Dual Discrete Video Circuit (DDVC)

The DVD-A1XV's video circuit features DENON's own DDVC technology designed to enhance the quality of video signals. The use of dedicated circuits -- one independent block for composite and S-video signals, another block for component signals, and a dual DAC configuration with built-in video encoder -- has made it possible to reproduce detailed video images with greater precision. In order to bring out the maximum quality from both video and audio signals, the DVD-A1XV has a discrete configuration in which the video, audio, and digital blocks that comprise this universal player are all completely isolated from each another in terms of their circuit configuration, boards, and power supplies. DENON engineers have used the expertise gained from their development of earlier universal players to design a configuration that thoroughly suppresses mutual interference among the circuits and prevents noise from affecting the video and audio signals.



### ■ High-speed, high-precision 14-bit 216-MHz video DAC

To ensure that high-grade video signals from the latest high-performance I/P converter are reproduced with utmost fidelity to the original images,

the DVD-A1XV has an extremely fast and accurate 14-bit, 216-MHz video DAC. Oversampling of 8x for Progressive and 16x for Interlaced signals results in sharp, detailed pictures. Composite, S-video and component signals each have their own dedicated video DAC, a design that enhances the reproduction of low-level video signals and reproduces high-definition images that are faithful to the original. In addition, Noise Shaped Video (NSV) technology is used to improve the S/N of video signals and further boost their linearity.

### True 10-bit processing, for unparalleled picture playback quality

#### ■ Latest I/P converter from Silicon Optix, Inc.



The DVD-A1XV uses the latest 10-bit I/P converter 'REALTA' developed through a joint development effort that merged image processing algorithms of Silicon Optix, Inc., and DENON video technology on the foundation of an image processing device from Teranex, a manufacturer of video processing using their HQV technology for broadcast use in the United States. This 10-bit processing offers high conversion performance and dramatically improves motion detection capability. Regularity in pixel-level patterns are rapidly and accurately detected not only in the 2:3 patterns of film sources but in other patterns as well during I/P (Interlaced/Progressive) conversion. Even when sources contain both Video mode and Film mode material, each mode is detected and processed accurately at high speed. Flicker caused by detection

delays is avoided, and Progressive playback with high picture quality is possible from a variety of discs. In addition, Multi-Directional Diagonal Filter (MDDF) technology, used for the first time in the DVD-A1XV, which accurately detects and corrects the directionality of lines on a per-pixel level to avoid "jaggies" that easily appear when video sources are I/P converted, ensuring smooth picture playback.

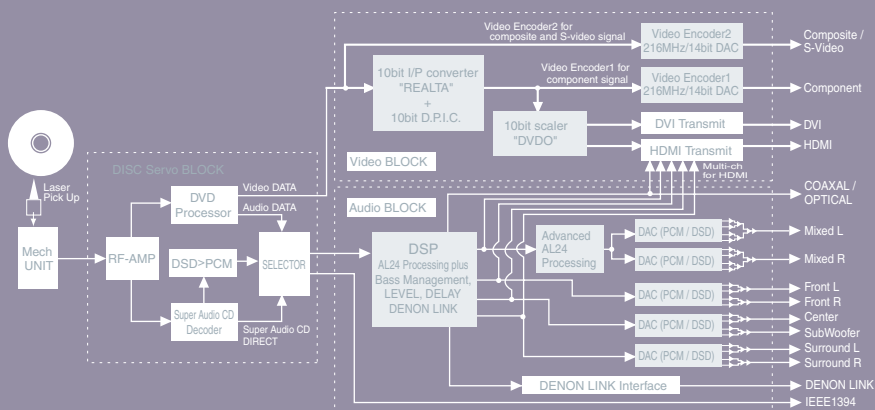
### ■ Newly-developed DENON Pixel Image Correction(DPIC) for more natural contour correction

The DPIC feature that incorporates original DENON enhancement technology and makes high-definition video correction possible, has been advanced to even greater heights in the DVD-A1XV. DPIC performs detection and correction through 10-bit processing to significantly improve contour correction. This new contour correction circuit uses enhancement processing technology that also considers the influence of pixels surrounding the target pixels. It uses new algorithms to sample and analyze a total of 9 pixels of video data around, and including, each target pixel. Video images are detected and processed in vertical, horizontal, and diagonal directions at a highly detailed per-pixel level to produce contours that are visually more natural. Luminance and chroma signals are also processed with the same algorithms to suppress ringing noise and other artifacts that easily occur during enhancement. By performing the type of processing that is most effective for the current video image, the picture is free of degradation and appears more natural.

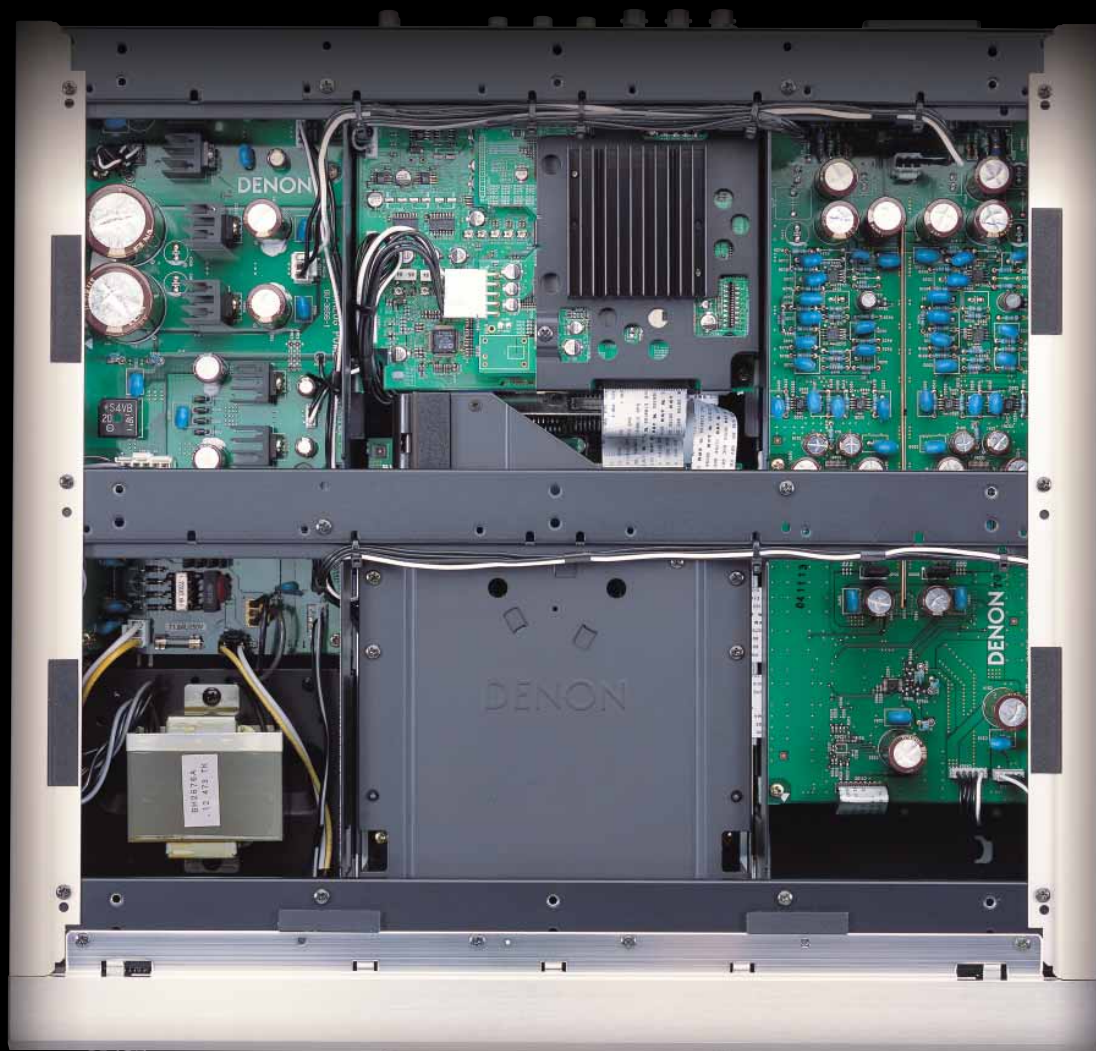
### ■ High-performance DVDO video scaler



The DVD-A1XV includes the latest high-performance video scaler, completed through joint development between Anchor Bay Technologies, Inc. (ABT), owner of the DVDO brand of advanced video technologies, and DENON. This high-precision 10-bit scaler works with HDMI and DVI digital video output signals. This scaler executes optimum conversion to suit the output resolution even though the signals have been recorded on DVD in component signals and are being output in RGB format. Users can enjoy the best picture quality for their particular applications. This newly-developed scaler can also simultaneously output the scaled digital video signals through HDMI and DVI (provided the resolution is the same).

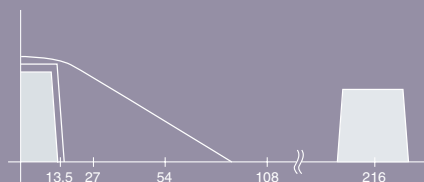






## Super Sub Alias Filter

The DVD-A1XV's Super Sub Alias Filter cuts signals of unwanted frequencies following D/A conversion. This filter produces flat characteristics, ensuring that adverse influences do not affect video signals inside the essential frequency band, sufficient cutoff characteristics are maintained and folding noise is eliminated.



## Supports fine picture quality adjustments

Besides the newly-developed DPIC feature, a total of 12 picture quality adjustments are possible, including contrast, sharpness, white level, chroma level, noise reduction settings, and gamma. Up to five combinations of settings can also be stored in memory, giving the user freedom to adjust picture quality in considerable detail according to individual preferences.

## Simultaneous output through HDMI and DVI digital video interfaces

The DVD-A1XV supports the HDMI and DVI digital video interfaces, and simultaneous output through both is possible. The HDMI port can be used to transmit digital component signals (Y, Cb, Cr) or RGB signals. Since digital transmission of multi-channel audio is also possible when audio is output through the HDMI port (\*1), a single cable for the HDMI interface is sufficient for the digital transmission of both video and audio signals. The DVI-D port allows the transmission of digital video signals in RGB format. Both interfaces support HDCP copyright protection technology (\*2) and can be connected to the digital inputs of high-definition monitors.

(\*1) Version 1.1 compliant. HDMI audio output capacity is dependent on the monitor being used.

(\*2) HDMI and DVI outputs are HDCP compliant. Video cannot be viewed if connected to a monitor that does not support HDCP; video can be viewed only on HDCP-compliant monitors.

## Simultaneous output possible for all video signals

## Supports PAL and NTSC

## THX Ultra certified

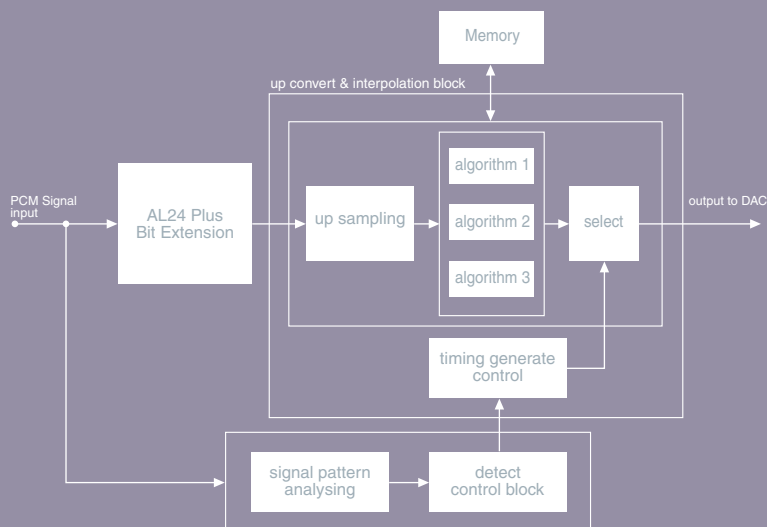
The DVD-A1XV has satisfied the stringent THX Ultra standards established by THX Ltd. governing a DVD player's picture quality, sound quality, and operability when connected to other components.

## Audio Section

### Advanced AL24 Processing, original DENON technology for high-quality audio

The DVD-A1XV employs Advanced AL24 Processing, the ultimate analog waveform reproduction technology developed by DENON, for use during PCM signal input (during stereo signal processing). In addition to the data expansion of existing AL24 Processing Plus technology, algorithms developed by DENON for use in large-capacity calculation processors such as DSPs and FPGAs are used to interpolate data along the time axis and up-converted sampling is used to achieve natural interpolation without losing original data. Greater optimisation in digital filtering has also been achieved for ringing-free pulse response and for pulsed music data and attack sounds. This results in more natural reproduction of spatial information such as the delicate nuances in the music, the locations of the performers, and the breadth, height and depth of the concert hall.

For multi-channel linear PCM audio playback, AL24 Processing Plus technology works to faithfully reproduce the original sound of recordings.



### High-accuracy D/A converters for all channels

Two of the latest high-accuracy 24-bit, 192-kHz differential operation D/A converters have been dedicated to the two stereo channels, and three additional DACs are used for 5.1-channel playback, delivering significantly improved separation and superior S/N, dynamic range and other aspects of audio performance. Since highly accurate D/A conversion is achieved for all channels, the sonic result is refreshingly transparent. During 2-channel stereo playback, these D/A converters are used in monaural mode, operating as differential output converters independently dedicated to the left and right channels, to achieve high-quality playback of stereo signals.

### Audio output dedicated to high-quality 2-channel playback

The DVD-A1XV is equipped with two options for analog audio output: one for multi-channel playback and the other dedicated to 2-channel stereo playback. DENON engineers have paid extra attention to achieving greater purity during 2-channel playback of Hi-Fi stereo audio sources by taking advantage of DENON's acclaimed pure audio technologies in configuring this circuitry and ensuring the highest possible quality in sound.

### Pure Direct mode, for greater purity in the audio signal

With the Pure Direct mode switch, the user can turn off video signal output, digital audio signal output and the display, to minimise adverse influences from the video circuitry on the analog output signal.

### DENON Link, for high-grade audio transmission

The DVD-A1XV is equipped with a DENON Link digital audio output port. High-grade, jitter-free digital audio transmission is possible through the RJ45 connector.

### IEEE 1394 digital interface

The DVD-A1XV includes two IEEE 1394 output ports, providing another option for high-grade transmission of digital audio signals in addition to DENON Link.

Note: Some equipment may not support IEEE 1394 connectivity.

### HDMI output port, for multi-channel audio

The DVD-A1XV's HDMI port supports multi-channel DVD-Video and DVD-Audio output. When connected to an HDMI-equipped display, three types of audio output are possible: 2-channel, Multi (Normal), and Multi (LPCM).

Note: Version 1.1 compliant. HDMI audio output capacity is dependent on the monitor being used.

## Designed for high sound quality

Only the best parts designed for high sound quality, such as electrolytic capacitors with a proven track record for high performance in CD players and other products, have been used in the DVD-A1XV's audio block, power supply block, and other areas. In addition, a copper bypass plate has been used in the ground pattern in order to achieve low impedance for the ground in the audio circuit.

## Bass management function tailored for home theatre environments

The bass management function permits bass control settings, speaker configuration settings, and delay time settings to support greater variety in speaker placements.

## Construction

### Construction designed to thoroughly suppress vibration and mutual interference among circuit blocks

#### ■ Four-box layout to isolate circuits and minimise mutual interference

In the four-box internal layout of the DVD-A1XV's

enclosure, each circuit block is shielded and the boxes of circuits are mounted in isolation from one another. Mutual interference between the circuits is completely eliminated not only by separating the video and audio circuits but by mounting boards in isolation and providing independent power supplies as well.

#### ■ Thorough vibration-resistant construction

The high-density data recorded on DVDs and Super Audio CDs that must be read with complete accuracy can be adversely affected by a wide range of influences on the audio and video signals. Besides external vibration, these influences include internal vibration from such sources as the drive mechanism and power transformer. The DVD-A1XV has been carefully designed to thoroughly suppress the affects of this vibration. The chassis features a 4-layer hybrid construction made up of 1.6mm thick steel plates that form the foundation for frames that cross the chassis in three locations, giving the enclosure considerable strength. In addition, the use of a combination of different materials for the top plate produces a vibration-resistant construction that is highly impervious to external vibration.

## DENON original high-accuracy drive mechanism

The DVD-A1XV is endowed with a highly reliable drive mechanism designed by DENON. The 3-phase brushless spindle motor has enabled an extremely short shaft that not only suppresses mechanism resonance caused by vibration and shaking when DVDs or Super Audio CDs rotate at high speed during playback but also creates a consistently ideal servo environment that suppresses internal resonance caused by off-centre discs. In addition, fine adjustments to absorb all variances, such as axial deviations in the laser beam irradiating on the disc, mechanical flatness of the pickup mechanism base, and the mechanical direction of the brushless motor shaft, have been performed to ensure highly accurate reading of signals and playability. Disc reading accuracy has been further improved by the DVD-A1XV's disc drive that has been stabilised by the loader's Suppress Vibration Hybrid (SVH) hybrid construction incorporating different materials in this highly-regarded mechanism technology developed by DENON.



## Other features

### Supports playback of a wide variety of discs

The DVD-A1XV can also play DVD-R/RW, DVD+R/RW and CD-R/RW discs. Since PC formats are supported as well, it also plays MP3, WMA and JPEG files on CD-R/RW discs.

Note: Discs written under poor conditions may not be playable.

### Playback frequency ranges of Super Audio CDs are switchable (50 kHz / 100 kHz)

### Independent bass management for analog audio output and HDMI audio signals

### Audio adjust function allows you to synchronise picture and sound when required

### Remote controller with backlight keys



## Input/Output Terminals For Every A/V System

### Video outputs

HDMI: 1  
DVI-D: 1  
Component: 2 sets (BNC, RCA)  
S-Video: 2  
Composite: 2 sets  
SCART: 1 (Composite/ S-Video/ RGB\*)

\* Composite video signal, S-video signal, or RGB signal can be selected in setup as a source for SCART output.

### Audio outputs

Optical digital: 1  
Coaxial digital: 1  
DENON Link: 1  
IEEE 1394: 2  
Analog (L/R): 1 set  
5.1-channel (FL/FR/C/SL/SR/SW): 1 set  
SCART: 1

## Specifications

### Video Section

Signal system..... NTSC/PAL selectable  
Disc played..... DVD Audio, DVD Video,  
DVD-R/RW (DVD Video Mode), DVD+R/RW,  
Super Audio CD, Video CD, Music CD,  
CD-R/RW (AUDIO/MP3/WMA/JPEG), Picture CD

### Video outputs

Composite video output .... 1 Vp-p (with 75 ohms load)  
S-Video output ..... Y: 1 Vp-p (with 75 ohms load),  
C: 0.286 Vp-p (NTSC)/ 0.3 Vp-p (PAL)  
SCART Output ..... R: 0.7 Vp-p (with 75 ohms load)  
G: 0.7 Vp-p (with 75 ohms load)  
B: 0.7 Vp-p (with 75 ohms load)  
Component Video Output (BNC, RCA)  
..... Y, Cb/Pb, Cr/Pr:  
Y: 1.0 Vp-p (with 75 ohms load),  
Cb/Pb: 0.7 Vp-p (with 75 ohms load),  
Cr/Pr: 0.7Vp-p (with 75 ohms load)

### Audio Section

Frequency Response  
DVD..... 2 Hz - 88 kHz (192 kHz sampling),  
2 Hz - 44 kHz (96 kHz sampling),  
2 Hz - 22 kHz (48 kHz sampling)  
Super Audio CD ..... 2 Hz - 100 kHz  
CD, VCD ..... 2 Hz - 20 kHz  
Signal-to-noise ratio ..... 125 dB  
Dynamic range ..... 112 dB  
Total harmonic distortion ... 0.0008 %

### General

Power supply ..... AC 230 V, 50 Hz  
Power consumption..... 80 W  
Dimensions ..... 434 (W) x 170 (H) x 432 (D) mm,  
Weight ..... 19.0 kg

### Remote control unit (RC-993)

Batteries..... DC 4.5V, 3 R6P/AA batteries  
Dimensions ..... 72 (W) x 238 (H) x 25.5 (D) mm





