Revolutionary AAVA volume control for top performance and superb sound quality

- Fully modular construction with individual left/right amplifier units arranged on motherboard
- Separate power transformers and filtering capacitors for left and right channels
- Logic-controlled relays for shortest signal paths
- High quality tone controls
- Optional analog record playback capability
Innovative AAVA type volume control guarantees great sound and top performance – Experience volume adjustment without deterioration in S/N ratio or distortion. AAVA and other circuit modules are arranged on motherboard separately for left and right channels. Fully dual monaural construction features two separate power transformers. Dedicated phono equalizer unit allows analog record reproduction with superb fidelity.

The C-2400 inherits the design technology of the outstanding Accuphase C-2800, featuring the same AAVA type volume control. One of the most important aspects of a preamplifier is how it handles volume adjustment. AAVA (Accuphase Analog Vari-gain Amplifier) is an innovative concept that differs radically from conventional variable-resistor type volume controls. Amplification and volume control are fully unified, eliminating all mechanical contact points. Pure analog processing ensures optimum performance and superb sound. Doing away with analog processing ensures optimum performance and superb sound. Doing away with analog processing ensures optimum performance and superb sound.

The newly developed volume control called AAVA (Accuphase Analog Vari-gain Amplifier) is totally different from conventional controls using resistors. Because the music signal does not pass through variable resistors, it is not affected by changes in impedance. This means that high sensitivity-to-noise ratio and low distortion of the signal are maintained. The volume can be adjusted without any deterioration in sound quality.

AAVA resolution
AAVA adjusts the listening volume by means of 16 current switches which are operated by 16 weighted V-I converter amplifiers. The number of possible volume steps set by the combination of these converter amplifiers is 2 to the power of 16 = 65,536.

AAVA maintains high S/N ratio
With conventional volume controls, the impedance increases significantly at settings that correspond to normal listening levels, thereby leading to increased noise. Because AAVA performs adjustment by selective use of V-I converter amplifiers (changing the actual gain), there is no change in impedance and thus no deterioration of S/N ratio. Changing the volume with AAVA does not mean introducing noise or detracting from the high performance of the amplifier.

No more left/right tracking differences or crosstalk
Because AAVA is an electronic circuit employing highly precise metal film resistors, there is virtually no left/right tracking error also at low volume levels. Since channels can be kept separate, crosstalk also does not present a problem.

Simple circuit configuration
AAVA unifies the amplifier and volume control functions, resulting in a circuit that is electrically very simple. Long-term reliability is excellent, with performance and sound quality that will remain unchanged also after prolonged use.

AAVA means analog processing
The AAVA circuit converts the music signal from a voltage into a current, switches gain by means of current switches, and then reconverts the current into a voltage. The entire process is carried out in the analog domain.

Same operation feel as a conventional high-quality volume control
The volume control knob position is detected by a dedicated CPU which in turn selects the current switches for AAVA operation. Operating the knob therefore feels exactly the same as with a conventional control, and as before, operation via the remote commander is also possible.

Attenuator and balance control also implemented by AAVA
The functions of the attenuator and the left/right balance control are covered by the AAVA circuit as well, eliminating the need for additional circuit stages. Keeping the configuration simple helps to maintain high performance and sonic purity.

AAVA operation principle
AAVA operates by feeding the music signal to a V-I (voltage - current) converting amplifier where it is weighted in 16 steps \([1/2, 1/2^2, ..., 1/2^{15}, 1/2^{16}]\). The 16 current steps are turned on or off by 16 current switches, and the combination of switch settings determines the overall volume. The switching operation is controlled by a CPU according to the position of the volume control knob. The combined signal current forms a variable gain circuit that adjusts volume. Finally, the combined current is converted back into a voltage by an I-V (current - voltage) converter.
Selectable preamplifier gain

The overall gain of the preamplifier can be set to 12, 18, or 24 dB with a rear-panel switch. This allows the C-2400 to operate at optimum gain in any kind of system.

Logic-controlled relays assure high sound quality and long-term reliability

The C-2400 offers a host of input and output connectors and functions. Strategically placed relays prevent any signal degradation that could occur if the signal has to travel through long paths for connection and function switching.

Fully dual monaural construction with separate power transformers and separate board-mounted unit amplifiers for left/right

The input buffer, AAVA circuit, balanced output and other amplifier circuitry are configured as five separate units for each channel, arranged neatly on a motherboard. Power transformers and smoothing capacitors are also separate for the two stereo channels. This dual monaural approach assures total freedom from unwanted mutual interaction.

Tone controls use summing active filters for highest sound quality

The tone control circuitry in the C-2400 uses summing active filters. The illustration below shows the operation principle of this circuit. The flat signal is passed straight through, and only when an adjustment is required, the characteristics are created at F₁ and F₂ and added to the signal, thereby producing the desired change. This design provides efficient control without degrading signal purity.

- Flexible input/output configuration
- Dedicated headphone amplifier optimized for sound quality
- EXT PRE function allows use of external preamplifier
- Optional phono equalizer allows playback of analog records
- Supplied remote commander with volume control function
- Versatile features:
  - Recording/playback/monitoring facilities for 2 recorders
  - Copy function
  - Loudness compensator for fuller bass at low levels
  - Subsonic filter removes ultra low frequency noise
  - Phase selector
  - Attenuator
Dedicated Phono Equalizer Unit AD-2800

Analog records can be reproduced by installing the dedicated phono equalizer unit AD-2800 in a rear-panel slot. The AD-2800 uses printed circuit boards made from Teflon material (glass fluorocarbon resin) and is housed in a sturdy aluminum case for complete protection against any external interference. Shortest possible connection between inputs and amplifier circuitry assures outstanding S/N ratio. Highly reliable DIN connectors are used for connection to main unit.

C-2400 Guaranteed Specifications

[Guaranteed specifications are measured according to EIA standard RS-490. AD stands for ‘Analog Disc’. (Specifications are shown for phono equalizer unit AD-2800 installed.)

- Frequency Response
  - Balanced/Unbalanced Input: 3 - 20,000 Hz, +0/-3.0 dB
  - AD Input [MM/36 dB, MC]: 20 - 20,000 Hz, +0/-0.2 dB
  - AD Input [MM/50 dB]: 20 - 20,000 Hz, +0/±3.3 dB

- Total Harmonic Distortion
  - For all inputs: 0.005%

- Input Sensitivity, Input Impedance
  - Balanced/Unbalanced Input: 0.5 - 20,000 Hz +0/-0.3 dB
  - AD Input [MM/36 dB, MC]: 20 - 020,000 Hz ±0.2 dB
  - AD Input [MM/30 dB]: 20 - 020,000 Hz ±0.1 dB

- Output Impedance
  - For Rated Output for 0.5 V Output: 0.2 mV 0.05 mV 10/30/100 Ω

- Rated Output Voltage
  - Balanced/Unbalanced Output: 2 V 50 ohms

- S/N Ratio
  - Input terminal
    - Input Sensitivity: 56 dB for rated output, 252 mV 200 ohms
    - Input Impedance: 0.5 V output

- Maximum Output Level
  - Balanced/Unbalanced Output: 7.0 V
  - REC (with AD input): 6.0 V

- LINE Maximum Input Level
  - Balanced/Unbalanced Input: 6.0 V

- Maximum AD Input Level
  - (1 kHz, 0.005% THD) MM [30/36dB] Input: 300/150 mV
  - MC [62/68dB] Input: 6.0 V

- Minimum Load Impedance
  - Balanced/Unbalanced Output: 600 ohms

- Gain (gain selector: 18 dB)
  - Gain can be set to 12/18/24 dB

- Tone Controls
  - Tuner Frequency and adjustment range
    - BASS: 300 Hz ±10 dB (50 Hz)
    - TREBLE: 3 kHz ±10 dB (20 kHz)

- Loudness Compensation
  - +6 dB (100 Hz)

- Subsonic Filter
  - Gain: -18 dB

- Power Requirements
  - AC 120 V, 230 V, 50/60 Hz (Voltage as indicated on rear panel)

- Power Consumption
  - 33 watts

- Specifications and design subject to change without notice for improvements.

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