Accuphase

INTEGRATED STEREO AMPLIFIER

E-250

● Revolutionary AAVA-II volume control ● Parallel push-pull output stage with high-power transistors delivers plenty of quality power ● Instrumentation amplifier principle in power amplifier section allows fully balanced signal transmission ● Current feedback topology ● Logic-control relays for straight and short signal paths ● Robust power supply with large transformer and high filtering capacity

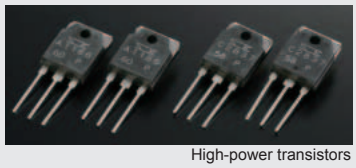
Integrated amplifier with innovative AAVA-II volume control – In the power amplifier stage, high-power transistors in a parallel push-pull arrangement are supported by a power supply with massive transformer and large filtering capacitors. Experience 90 watts per channel (into 8 ohms) of quality power before a perfectly silent background. Instrumentation amplifier configuration allows balanced signal transmission. Current feedback design ensures optimal high-range characteristics.

The Accuphase E-200 series of basic integrated amplifiers enjoys an excellent reputation both in Japan and on the international stage. The E-250 represents a full model change of the E-213, featuring the new AAVA-II volume control and reflecting the latest design technology advances achieved by Accuphase. Carefully selected high-quality materials and parts are used throughout, in order to bring out even the finest nuances of the source. Using this integrated amplifier affords pure musical enjoyment.

In the category of integrated amplifiers, AAVA implemented in the E-550 and AAVA-II in the E-450 and E-350 have received high praise for being a clearly superior volume control principle. The E-250 inherits this advanced design technology. In order to fit within the more limited space available, circuitry and component layout have been further refined and advanced integration technology is used to increase mounting density. This was achieved while retaining the outstanding performance that made AAVA and previous AAVA-II implementations such impressive feats of technology. AAVA-II in the E-250 of course also completely eliminates variable resistors from the signal path. Amplification and volume control are integrated in a single entity consisting only of top-quality and highly reliable semiconductor parts. This eliminates mechanical wear and associated problems, allowing the control to function perfectly for many years.

The power amplifier section is configured as an advanced instrumentation amplifier, which enables fully balanced signal transmission throughout. In conjunction with the current feedback principle, this makes for even better electrical characteristics. The output stage uses high-power transistors designed for audio applications arranged in a parallel push-pull configuration, greatly improving the capability of the amplifier to drive low impedance loads. Speaker operation is sustained by a large power transformer with a maximum rating of 400 VA and amply dimensioned filtering capacitors, allowing the amplifier to deliver plenty of quality power: 2 × 115 watts into 4 ohms or 2 × 90 watts into 8 ohms. Power amplifier inputs and an EXT PRE function let you use the power amplifier separately in a stand-alone configuration.

- **Parallel push-pull power amplifier unit achieves 115 watts per channel into 4 ohms or 90 watts into 8 ohms.**
  The output stage devices feature excellent frequency response, current amplification linearity, and switching characteristics. These high-power transistors have a rated collector dissipation of 100 watts.
- **Instrumentation amplifier principle in power amplifier section**
  This allows the configuration of fully balanced signal paths from the input jacks to the output stage, including the signal input stage. In addition, the current feedback design ensures outstanding high-range phase characteristics.
- **Large and highly efficient 400 VA transformer and two 22,000 µF filtering capacitors selected for sound quality provide ample reserves.**
- **Option board installation slot provides further versatility. With AD-20 board, MC/MM switching on E-250 front panel is possible.**
- **EXT PRE switch and power amplifier input connectors allow independent use of power amplifier section.**
- **Use of metal thin-film resistors in all signal paths ensures superb low-noise performance.**
- **Large analog power meters show direct power output levels.**
- **Logic-controlled relays for signal switching ensure high sound quality and long-term reliability.**
- **Loudness compensator for enhanced bass at low listening levels**
- **"High Carbon" cast iron insulator feet further enhance sonic purity.**
- **Versatile array of inputs with balanced connectors to shut out external noise interference.**
- **Two sets of large-size speaker terminals designed for Y lugs.**

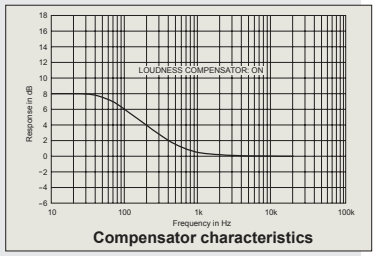

High-power transistors


Massive power transformer

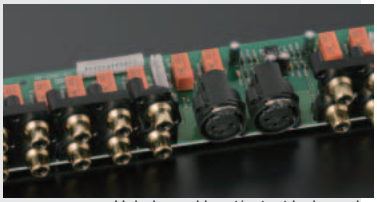

Filtering capacitors

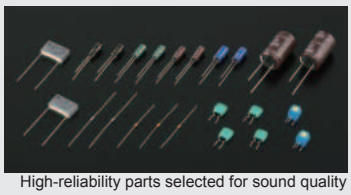
MC/MM Selector button

EXT PRE switch

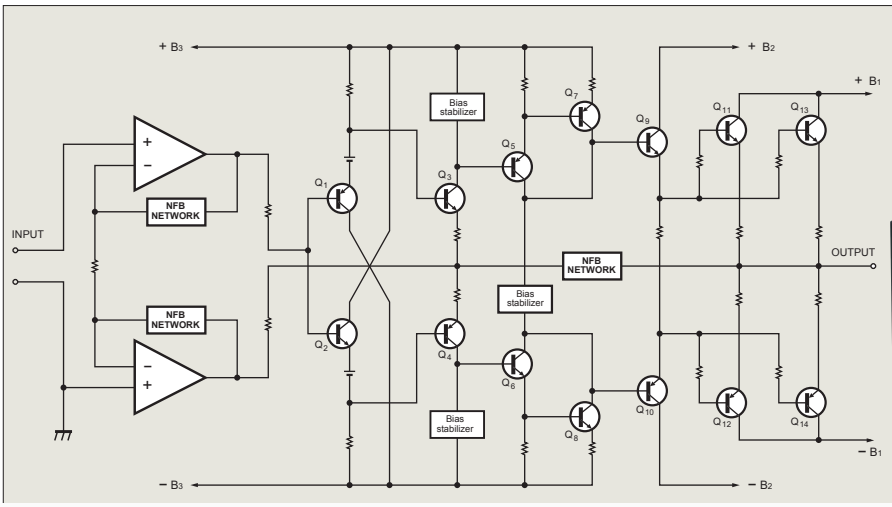


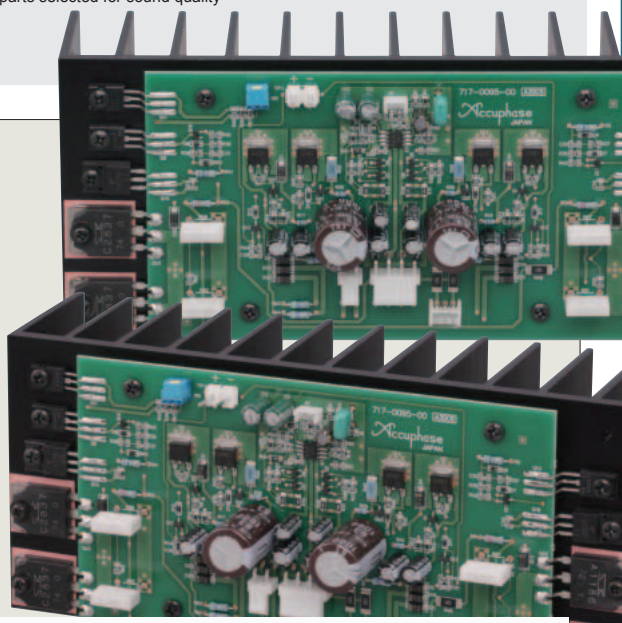
Compensator characteristics


Unbalanced input/output jacks and balanced input connectors


High-reliability parts selected for sound quality


Large speaker terminals

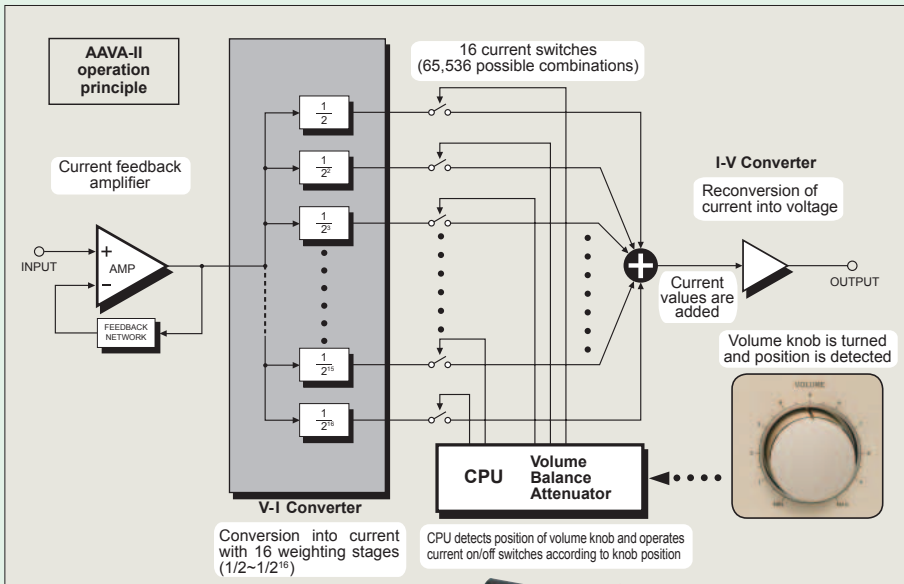




AAVA-II (Accuphase Analog Vari-gain Amplifier) type volume control

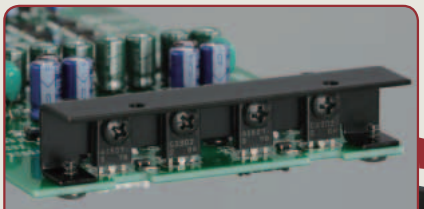
AAVA-II (Accuphase Analog Vari-gain Amplifier) is a novel volume control concept that completely does away with variable resistors in the signal path. Because the music signal does not have to pass through such devices, there is no adverse influence from changes in impedance. This means that the outstanding S/N ratio and low distortion of the amplifier are not compromised in any way, and the same superb sound quality will be obtained at any volume setting.

- **AAVA-II input stage employs current feedback principle that ensures high-speed, low-noise operation and assures excellent characteristics at high output voltages.**
- **Volume control resolution**
  The listening volume is adjusted by a combination of 16 V-I converters. The number of possible volume steps is 2 to the power of 16 = 65,536, as determined by current switches.
- **AAVA-II circuitry is deceptively simple**
  Because AAVA-II employs circuitry that is electrically very simple, long-term reliability is excellent, with performance and sound quality that will remain unchanged also after prolonged use.
- **AAVA-II means analog processing**
  The AAVA-II circuit converts the music signal from a voltage into a current, to allow control by current switches, and then back into a voltage. The entire process is carried out in the analog domain.
- **No more left/right tracking differences or crosstalk**
  Because AAVA-II is an electronic circuit employing only fixed-value resistors, there is virtually no left/right tracking error also at low volume levels, and crosstalk also does not present a problem.
- **AAVA-II maintains high S/N ratio and uniform frequency response**
  Because AAVA-II does not introduce any change in impedance, there is no deterioration of S/N ratio or alteration of frequency response. Changing the volume with AAVA does not mean introducing noise or otherwise degrading the sound quality of the amplifier.
- **Control knob gives same operation feel as with a conventional high-quality volume control.**
- **Attenuator and balance control also implemented by AAVA-II**



How AAVA-II works

AAVA-II 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 the volume. Finally, the combined current is converted back into a music signal voltage by an I-V (current - voltage) converter.



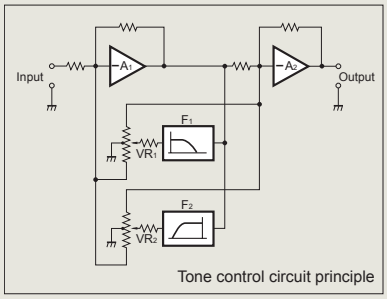
An essential part of AAVA-II: initial stage current feedback amplifier circuitry with high-speed, low-noise operation and excellent high output voltage characteristics

■ AAVA-II volume control assembly with higher integration density of components and circuitry

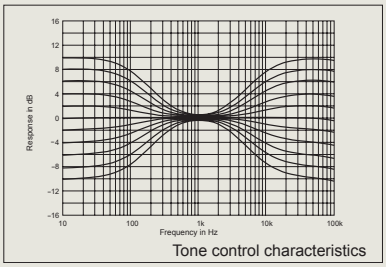
■ **Supplied remote commander RC-200**
Allows volume adjustment and input source switching.

■ Power amplifier assembly featuring parallel push-pull output stage

■ Tone controls using summing active filters for optimum sound quality



Tone control circuit principle

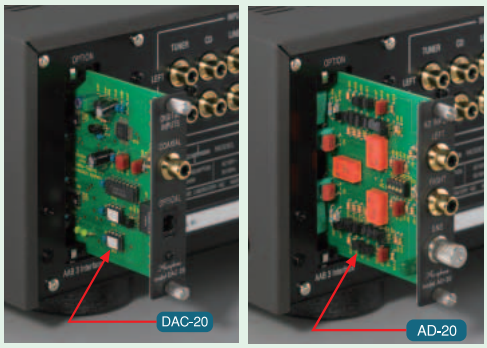


Tone control characteristics

Option Boards

Three types of option boards can be used in the E-250: the Digital Input Board DAC-20, Analog Disc Input Board AD-20, and Line Input Board LINE-10. One of these boards can be installed in the rear-panel slot as required.

- The Analog Disc Input Board AD-9/AD-10 and the Line Input Board LINE-9 can also be used.
- When using the AD-9/AD-10, the MC/MM button of the E-250 has no effect. MC/MM switching must be performed on the board.



Photos show examples for option board installation.

Digital Input Board DAC-20

The board features an MDS++ (Multiple Delta Sigma) type D/A converter and allows direct digital connection of a CD player, MD or other component with digital output (sampling frequency up to 96 kHz, 24 bits), for high-quality music reproduction.

- Inputs for coaxial and optical fiber connections are provided.

Analog Disc Input Board AD-20

This board serves for playback of analog records. It contains a high-performance, high-gain phono equalizer.

- MC/MM switching is possible on the front panel of the E-250.
- Internal DIP switches control MC input impedance and subsonic filter on/off.

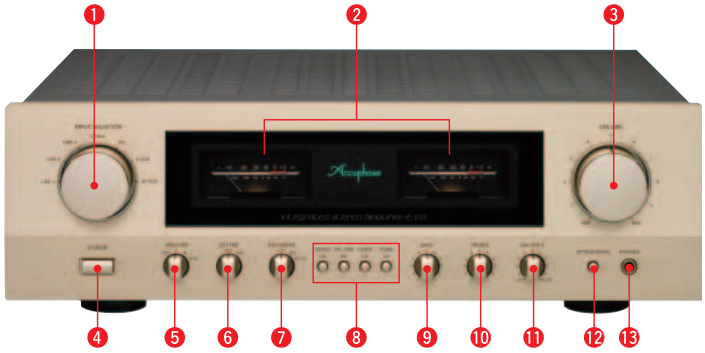
MC Gain : 62 dB
Input impedance: 10/30/100 ohms (selectable)

MM Gain : 36 dB
Input impedance: 47 kilohms

Line Input Board LINE-10

This option board provides a set of unbalanced line level inputs.

■ Front Panel



■ Rear Panel

1. Input selector
   LINE 3 LINE 2 LINE 1 CD-BAL CD
   TUNER OPTION
2. Left/right channel output meters
3. Volume control
4. Power switch
5. Speaker selector OFF A B A+B
6. EXT PRE (preamplifier/power amplifier separator) switch
7. Recorder switch OFF ON PLAY
8. Function buttons
   Stereo/Mono selection, MC/MM selection,
   Loudness compensator ON/OFF, Tone control ON/OFF
9. Bass control
10. Treble control
11. Balance control
12. Attenuator button
13. Headphone jack
14. Line inputs (unbalanced)
15. CD inputs (balanced)
16. Recorder outputs and inputs
17. Power amplifier inputs
18. Left/right speaker output terminals
    A/B
19. AC power connector★

GUARANTEED SPECIFICATIONS

[Guaranteed specifications are measured according to EIA standard RS-490.]

- **Continuous Average Output Power** (both channels driven, 20 – 20,000 Hz)
  115 watts per channel into 4 ohms
  105 watts per channel into 6 ohms
  90 watts per channel into 8 ohms
- **Total Harmonic Distortion** (both channels driven, 20 – 20,000 Hz)
  0.04% with 4 to 16-ohm load
- **Intermodulation Distortion** 0.05%
- **Frequency Response** HIGH LEVEL INPUT/POWER IN
  20 – 20,000 Hz +0, –0.2 dB (for rated continuous average output)
  3 – 150,000 Hz +0, –3.0 dB (for 1 watt output)
- **Damping Factor** 100 (with 8-ohm load, 50 Hz)
- **Input Sensitivity, Input Impedance**

Input	Sensitivity		Input impedance
	For rated output	For 1 W output (EIA)	
HIGH LEVEL INPUT	134 mV	14.2 mV	20 kΩ
BALANCED INPUT	134 mV	14.2 mV	40 kΩ
POWER IN	1.07 V	113 mV	20 kΩ

- **Gain**
  HIGH LEVEL INPUT → OUTPUT: 46 dB
  POWER IN → OUTPUT: 28 dB
- **Tone Controls** Turnover frequency and adjustment range
  BASS: 300 Hz ±10 dB (50 Hz)
  TREBLE: 3 kHz ±10 dB (20 kHz)
- **Loudness Compensation** +6 dB (100 Hz)
- **Attenuator** –20 dB
- **Signal-to-Noise Ratio**

Input	Input shorted (A weighting)	EIA S/N
	S/N ratio at rated output	
HIGH LEVEL INPUT	105 dB	92 dB
BALANCED INPUT	89 dB	92 dB
POWER IN	120 dB	98 dB

- **Power Level Meters** Logarithmic compression, peak reading meters
  Output dB/% scale
- **Load Impedance** 4 – 16 ohms
- **Stereo Headphones** Suitable impedance: 8 – 100 ohms
- **Power Requirements** AC 120 V/230 V 50/60 Hz
  (Voltage as indicated on rear panel)
- **Power Consumption** 46 watts idle
  245 watts in accordance with IEC 60065
- **Maximum Dimensions**
  Width 465 mm (18-5/16")
  Height 150 mm (5-7/8")
  Depth 420 mm (16-9/16")
- **Mass** 19.9 kg (43.9 lbs) net
  26 kg (57.3 lbs) in shipping carton
- **Supplied Remote Commander RC-200**
  Remote control principle: Infrared pulse
  Power supply: 3 V DC (IEC R03 batteries × 2)
  Maximum dimensions: 56 mm × 175 mm × 26 mm
  Mass: 153 g (including batteries)

Remarks

★ *This product is available in versions for 120/230 V AC. Make sure that the voltage shown on the rear panel matches the AC line voltage in your area.*

★ *The shape of the AC inlet and plug of the supplied power cord depends on the voltage rating and destination country.*

■ **Supplied accessories:**
- **AC power cord**
- **Remote Commander RC-200**

Accuphase