

Accuphase

Class A
INTEGRATED STEREO AMPLIFIER

E-550

- Revolutionary AAVA volume control
- Power MOS-FETs in triple parallel push-pull configuration driven in pure class A
- Current feedback principle and MCS+ topology in power amplifier section
- Logic-control relays for straight and short signal paths
- Sturdy power supply with large toroidal transformer and high filtering capacity
- EXT PRE button allows independent use of preamplifier and power amplifier sections





The ultimate integrated pure class A amplifier – Power MOS-FETs arranged in triple parallel push-pull configuration. Innovative AAVA volume control. Strong power supply with large toroidal transformer and high filtering capacity supports linear output progression of 120 watts/ch into 2 ohms, 60 watts/ch into 4 ohms, or 30 watts/ch into 8 ohms. Power amp section uses current feedback for optimum high-frequency phase characteristics and MCS+ topology.

The first integrated pure class A amplifier from Accuphase, the E-530, drew a lot of attention and praise. The E-550 now takes over as a further improved and fully redesigned successor model. It stands at the pinnacle of integrated amplifiers, featuring latest technology and strictly selected high-quality parts. For the first time in an integrated amplifier, it offers the revolutionary AAVA type volume control. In AAVA, amplification and volume control are fully unified, and no variable resistors are used. This ensures excellent sound quality and performance, but the circuitry requires a

considerable amount of space. In order to enable the use of AAVA in an integrated amplifier, advanced design know-how and mounting technology were brought into play, to increase component density while keeping sonic purity and performance at the high level that is the hallmark of Accuphase. The result speaks for itself.

The power amplifier section features the highly acclaimed current feedback principle developed by Accuphase, as well as further improved "MCS+" circuit topology, for even better electrical characteristics. The output stage devices are

power MOS-FETs famous for their musical qualities, arranged in a triple parallel push-pull configuration and driven in pure class A. Low output impedance and constant voltage drive ensure superb speaker control. The large high-efficiency toroidal transformer (430 VA) in the power supply, along with eight 10,000 µF filtering capacitors selected for their sonic properties support linear progression of output regardless of impedance, with a per-channel rating of 120 watts into 2 ohms, 60 watts into 4 ohms, or 30 watts into 8 ohms.

AAVA (Accuphase Analog Vari-gain Amplifier) volume control

■ Volume control 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 and uniform frequency response

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 or alteration of frequency response. Changing the volume with AAVA does not mean introducing noise or detracting from the high performance of the amplifier.

■ 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.

■ 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

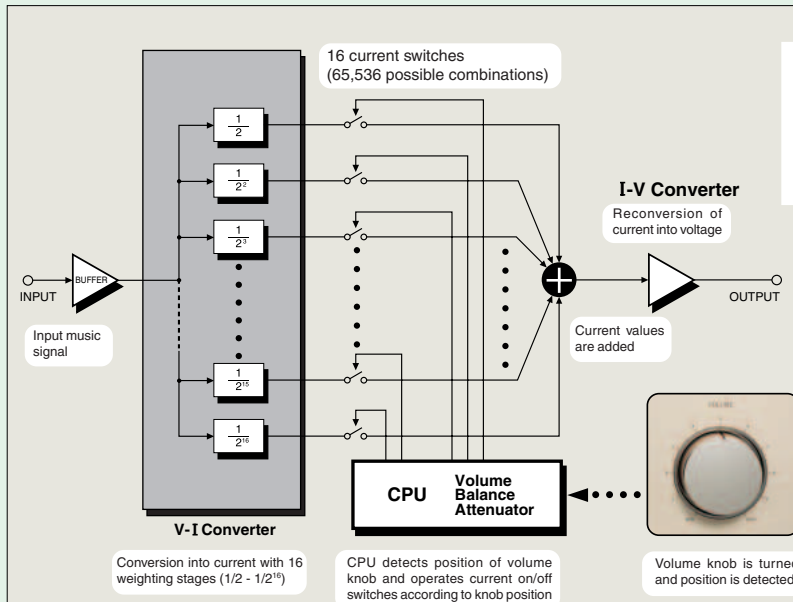
The AAVA circuit converts the music signal from a voltage into a current, switches gain by means of current switches, and then reconverts the current into a voltage. The entire process is carried out in the analog domain.

■ 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.

■ 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.

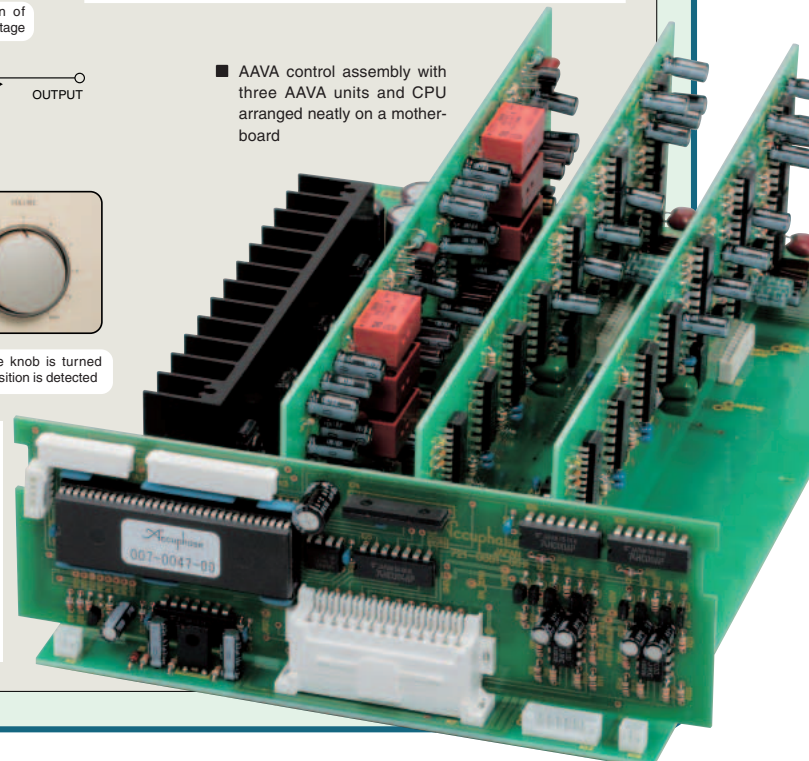


The newly developed volume control called AAVA (Accuphase Analog Vari-gain Amplifier) is totally different from conventional controls using resistors. Because the music signal does not pass through variable resistors, it is not affected by changes in impedance. This means that high signal-to-noise ratio and low distortion of the signal are maintained. Adjusting the volume does not introduce any deterioration in sound quality.

■ AAVA control assembly with three AAVA units and CPU arranged neatly on a motherboard

AAVA operation

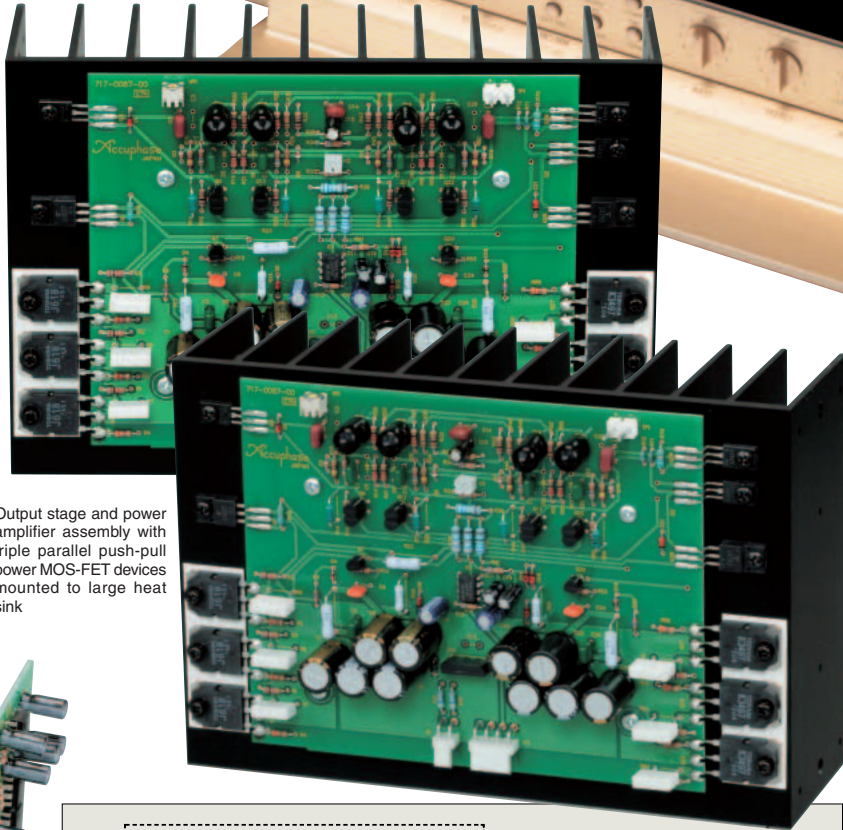
AAVA operates by feeding the music signal to a V-I (voltage - current) converting amplifier where it is weighted in 16 steps [$1/2, 1/2^2, \dots, 1/2^{15}, 1/2^{16}$]. The 16 current steps are turned on or off by 16 current switches, and the combination of switch settings determines the overall volume. 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 voltage by an I-V (current - voltage) converter.



■ Output amplifier triple power mounted sink

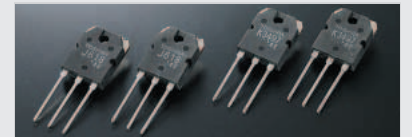


■ Supplied remote commander RC-200 Allows volume adjustment and input source switching



■ Output stage and power amplifier assembly with triple parallel push-pull power MOS-FET devices mounted to large heat sink

■ The output stage uses power MOS-FETs in a triple parallel push-pull configuration driven in pure class A. Output power progression is linear, with a per-channel rating of 120 watts into 2 ohms, 60 watts into 4 ohms, or 30 watts into 8 ohms.



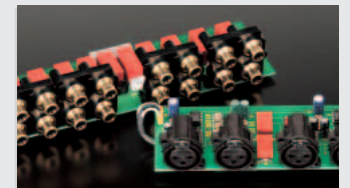
Power MOS-FET devices

■ Power amplifier section uses MCS+ topology and current feedback principle to achieve excellent sound quality and optimum high-frequency phase characteristics.

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

■ Balanced input connectors shut out external noise interference.

■ "High Carbon" cast iron insulator feet with superior damping characteristics further enhance sound quality.



Gold-plated input/output jacks connected directly to relays

■ Ample power supply with large high-efficiency toroidal transformer (430 VA) and 10,000 $\mu\text{F} \times 8$ filtering capacitors

■ Analog peak power meters

■ Option board slots allow functional expansion.

■ Two sets of large-size speaker terminals accept either Y lugs or banana plugs.

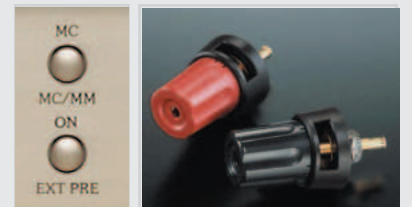
■ E-550 front panel switching enables MC/MM selection for Analog Disc Input Board AD-20.

■ EXT PRE button and preamplifier output/power amplifier input connectors allow independent use of preamplifier and power amplifier sections.



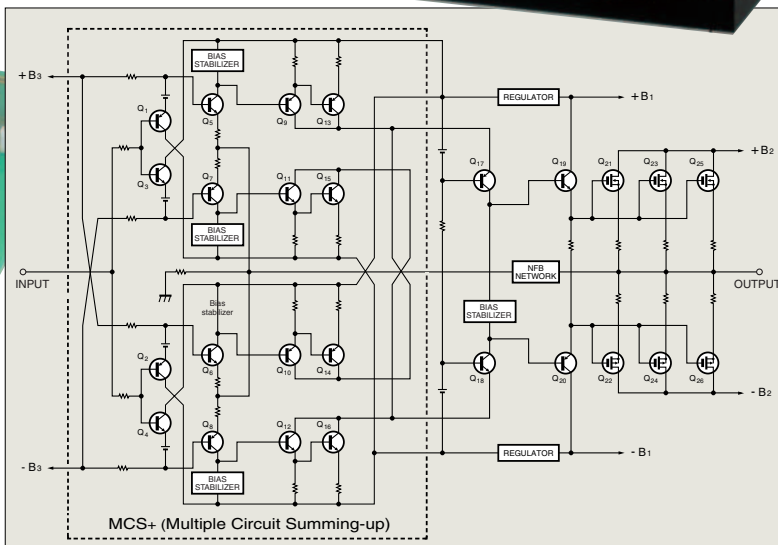
Toroidal transformer

Filtering capacitors



MC
MC/MM
ON
EXT PRE

Large-size speaker terminals



MCS+ (Multiple Circuit Summing-up)

Option Boards

Three types of option boards can be used in the E-550: the Digital Input Board DAC-20, Analog Disc Input Board AD-20, and Line Input Board LINE-10. These boards can be installed in the rear-panel slots as required.

- It is possible to install two identical boards.
- The Digital Input Board DAC-10, Analog Disc Input Board AD-9/AD-10, and Line Input Board LINE-9 can also be used.
- When using the AD-9/AD-10, the MC/MM button of the E-550 has no effect. MC/MM switching must be performed on the board.



Option board installation example

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 DAT recorder or other component with digital output (sampling frequency up to 96 kHz, 24-bit), 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-550.
- Internal DIP switches control MC input impedance and subsonic filter on/off.

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

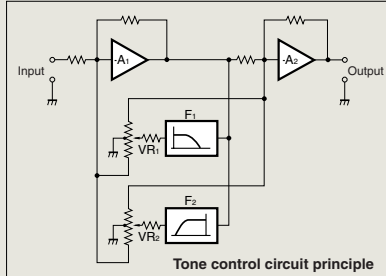
MM Gain: 36 dB
Input impedance: 47 kilohms

Line Input Board

LINE-10

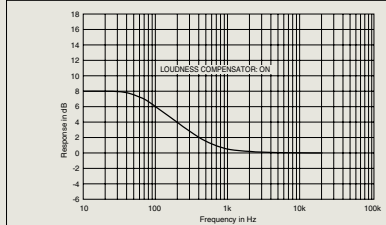
This option board provides an additional set of unbalanced line inputs.

Tone controls using summing active filters for optimum sound quality



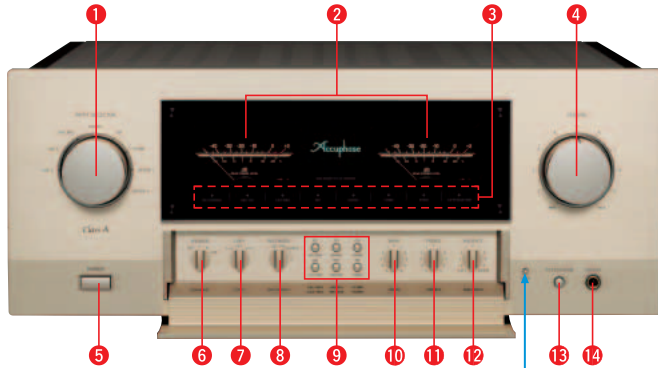
Tone control circuit principle

Loudness compensator for enhanced bass at low listening levels



Compensator characteristics

Front panel



Rear panel



Pressing this button opens the sub panel.

- Input selector
LINE 2 LINE 1 LINE-BAL CD-BAL CD
TUNER OPTION 1 OPTION 2
- Left/right channel output meters
- Function indicator LEDs
- Volume control
- Power switch
- Speaker selector OFF A B A+B
- Copy selector 1→2 OFF 2→1
- Recording output selector REC OFF, SOURCE, 1, 2
- Function buttons
MC/MM, EXT PRE, MONO/STEREO, Meter ON/OFF
Compensator, Tone control ON/OFF

- Bass control
- Treble control
- Balance control
- Attenuator button
- Headphone jack
- Line inputs (unbalanced)
- Tape recorder inputs and outputs
- Left/right speaker output terminals A/B
- CD/LINE inputs (balanced)
- Preamplifier outputs
- Power amplifier inputs
- AC inlet ★

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

GUARANTEED SPECIFICATIONS

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

- **Continuous Average Output Power (both channels driven, 20 ~ 20,000 Hz)**
150 watts per channel into 1 ohm (*)
120 watts per channel into 2 ohms
60 watts per channel into 4 ohms
40 watts per channel into 6 ohms
30 watts per channel into 8 ohms

Note: Ratings marked * are for music signals only.

- **Total Harmonic Distortion (both channels driven, 20~20,000 Hz)**
0.05% with 2-ohm load
0.02% with 4 to 16-ohm load
- **Intermodulation Distortion**
0.01%
- **Frequency Response**
HIGH LEVEL INPUT/POWER INPUT
For rated continuous average output: 20 ~ 20,000 Hz +0, -0.2 dB
For 1 watt output: 2 ~ 150,000 Hz +0, -3.0 dB
- **Damping Factor**
140 (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	77.7 mV	14.2 mV	20 kΩ
BALANCED INPUT	77.7 mV	14.2 mV	40 kΩ
POWER INPUT	0.617 V	113 mV	20 kΩ

- **Output Voltage, Output Impedance** PRE OUTPUT: 0.617 V, 50 ohms (at rated continuous average output)
- **Gain** HIGH LEVEL INPUT → PRE OUTPUT: 18 dB
POWER INPUT → 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) S/N ratio at rated output	EIA S/N
HIGH LEVEL INPUT	98 dB	103 dB
BALANCED INPUT	92 dB	103 dB
POWER INPUT	120 dB	117 dB

- **Power Level Meters** Logarithmic compression, peak reading meters
Output dB/% scale
- **Load Impedance** 2 ~ 16 ohms
- **Stereo Headphones** Suitable impedance: 8 ~ 100 ohms
- **Power Requirements** AC 120 V/230 V (Voltage as indicated on rear panel) 50/60 Hz
- **Power Consumption** 200 watts idle, 300 watts in accordance with IEC-60065
- **Maximum Dimensions**
Width 465 mm (18-5/16")
Height 196 mm (7-11/16")
Depth 427 mm (16-13/16")
- **Mass**
23.9 kg (52.7 lbs) net
30.0 kg (66.1 lbs) in shipping carton
- **Supplied Remote Commander RC-200**
Remote control principle: Infrared pulse
Power supply: 3 V DC (IEC R03 batteries x 2)
Maximum dimensions: 56 mm x 75 mm x 26 mm
Mass: 153 g (including batteries)



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

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