Accuphase

CLASS-A STEREO POWER AMPLIFIER

A-47

● Pure Class A operation delivers quality power: 45 watts x 2 into 8 ohms ● Power MOS-FET output stage features 6-parallel push-pull configuration ● Instrumentation amplifier principle used in amplification stage ● Further evolved MCS+ circuit topology ● Current feedback principle combines stable operation with outstanding sound quality ● Bridged connection mode allows upgrading to monophonic amplifier ● Large high-efficiency toroidal power transformer ● 4-stage gain control

The Exhilaration of Pure Class A——An amplifier operating in pure Class A always produces its full rated output power, regardless of the actual output requirement. This no-holds-barred approach which requires a hefty power supply and output stage results in fabulous audio performance, making such a power amplifier the dream of audiophiles worldwide. The Pure Class A Stereo Power Amplifier A-47 represents the state of the art in this field. Featuring large external heat sinks that allow well balanced dimensions, it delivers 45 watts of impeccable power into 8 ohms, taking the listener into a new realm of musical enjoyment.

The history of Pure Class A power amplifiers from Accuphase began in 1978 with the introduction of the model P-400. The company has been perfecting the technology ever since, developing numerous technological improvements along the way. The A-47 is a successor model to the A-46, based on the design technology developed for higher-ranked models. It is a full-fledged Pure Class A Stereo Amplifier that produces truly captivating sound.

The output stage of the A-47 uses high-performance power MOS-FETs ideal for audio applications. For each channel, six devices are arranged in a parallel push-pull Pure Class A arrangement. This results in very low output impedance, ensuring that constant drive voltage is available also for low-impedance loads. Superior performance is evident from the linear power progression of 45 watts into 8 ohms, 90 watts into 4 ohms, and 180 watts into 2 ohms. The amplifier is even capable of driving ultra-low 1-ohm impedances with an amazing 360 watts (music signals only).

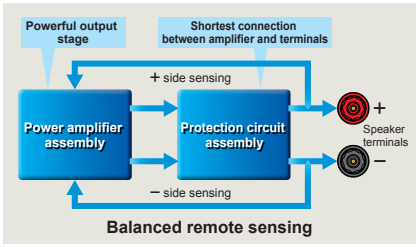
The input stage circuitry is configured as an instrumentation amplifier. This approach makes it possible to achieve fully balanced signal paths, extending from the signal input all the way to the final power amp stage. Extremely low-distortion, low-noise op amps are used in the input stage, combined with measures to prevent any risk of noise intrusion from the input circuitry. As a result, S/N ratio has been further improved.

The A-47 not only eliminates any possible internal source of noise or distortion, as demonstrated by its outstanding performance ratings, it is also highly impervious to changes in ambient conditions. As a consequence, operation stability and reliability which are crucial for a power amplifier have been dramatically enhanced.

Only the finest parts and materials, selected as a result of a series of strict testing are used in the A-47. Latest circuit topology raises electrical performance by another notch, ensuring excellent long-term reliability and producing a further improvement in sound quality. The front panel of the amplifier prominently features two large analog power meters, with switchable peak hold and sensitivity. An on/off switch for the meters is also provided. Using the A-47 in bridged mode creates a mono amplifier with even more impressive power output capability, rated for 180 watts into 8 ohms, 360 watts into 4 ohms, and 720 watts into 2 ohms (music signals only).

Features and Functions

- **Power modules with 6-parallel push-pull arrangement of power MOS-FETs deliver a guaranteed linear output of 45 watts per channel into 8 ohms, 90 watts into 4 ohms, 180 watts into 2 ohms, or 360 watts into 1 ohm (music signals only).**
- **Strong power supply with massive high-efficiency toroidal transformer and two large 56,000 µF filtering capacitors.**
- **Bridging allows upgrade to monophonic amplifier with even higher power, delivering 180 watts into 8 ohms, 360 watts into 4 ohms, or 720 watts into 2 ohms (music signals only).**
- **Fully balanced input stage shuts out external noise interference.**
- **Shortest output signal path length minimizes output impedance and realizes damping factor of 600 or more.**
- **Input selector button on front panel allows switching between line and balanced signals.**
- **4-stage gain selector (–12 dB, –6 dB, –3 dB, MAX) also minimizes residual noise.**
- **Large analog power meters with operation/illumination/peak hold switch and sensitivity selector.**
- **Operation mode selector supports dual mono or stereo operation and allows bi-amping connection.**
- **Phase selector for balanced inputs.**
- **Semiconductor (MOS-FET) switches used for protection circuitry prevent contact problems and ensure long-term reliability. Eliminating mechanical contacts from the signal path also further enhances sound quality.**
- **PCB copper foil and all major signal path components are gold-plated.**
- **Two sets of large speaker terminals (A / B) also accept Y lugs.**
- **Balanced remote sensing technology provides balanced feedback from near the speaker terminals to ensure low impedance and high damping factor.**

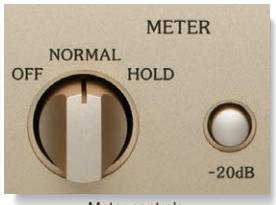


Balanced remote sensing


Large toroidal power transformer

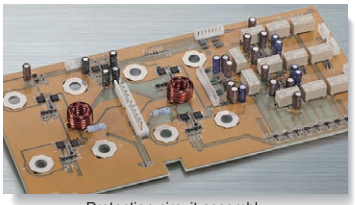

Filtering capacitors

Gain selector

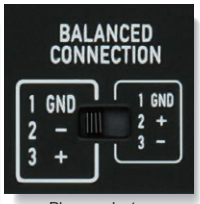


Meter controls

Operation mode selector

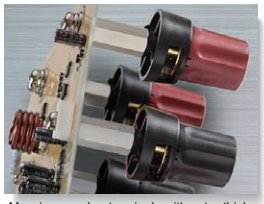

Protection circuit assembly

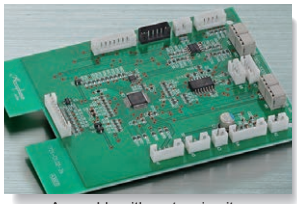

Line and balanced input connectors

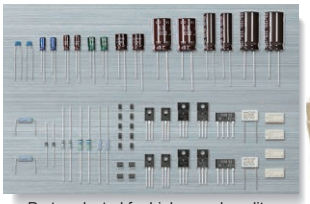


Phase selector

MOS-FET switches


Massive speaker terminals with extra thick metal bars connected directly to output PCB

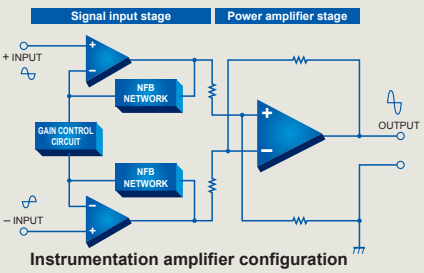

Assembly with meter circuitry


Parts selected for high sound quality and reliability

Low-noise instrumentation amplifier configuration and further refined MCS+ topology

Low-noise instrumentation amplifier allows balanced signal paths

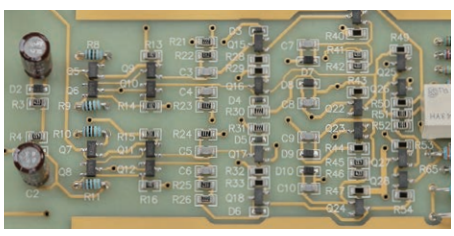
The balanced input stage circuitry features instrumentation amplifier topology such as used in high-precision measuring equipment. This approach ensures perfectly matched input conditions for the positive and negative side and thereby allows the realization of high-performance balanced signal transmission.



Instrumentation amplifier configuration

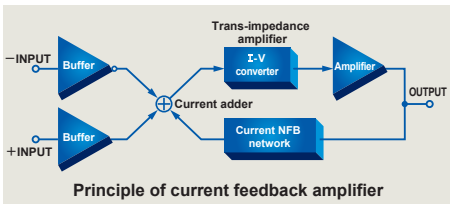
MCS+ (Multiple Circuit Summing) circuit in amplifier section drastically improves S/N ratio

The input stage of the amplifier section features another Accuphase innovation: MCS+ (Multiple Circuit Summing). This innovative method further reduces noise and at the same time ensures rock-stable performance.



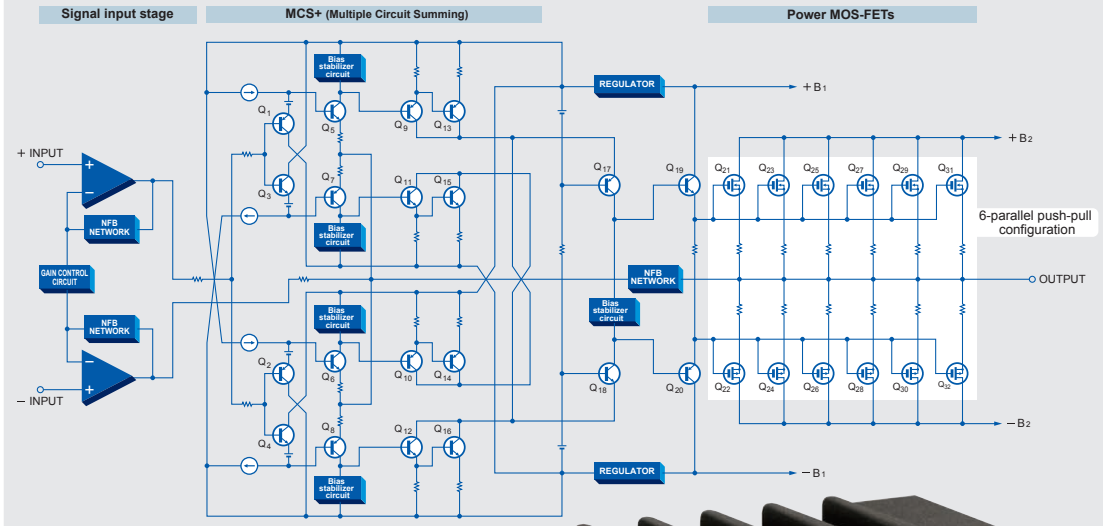
Current feedback principle assures excellent phase characteristics in high range

As shown in the illustration, the A-47 uses the output signal current rather than the voltage for feedback. Since the impedance at the current feedback point is very low, there is almost no phase shift. A minimal amount of NFB therefore results in maximum improvement of circuit parameters. This principle is ideally suited to the circuitry of a power amplifier that has to handle a wide range of signals, from extremely low levels to dynamic, high-volume situations, while maintaining excellent stability.

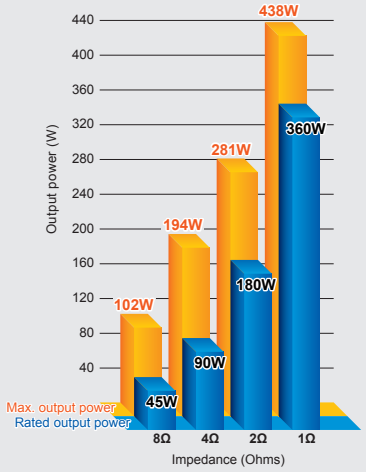


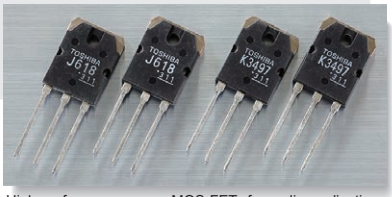
Principle of current feedback amplifier

Circuit diagram of amplifier section (one channel)



Output power characteristics





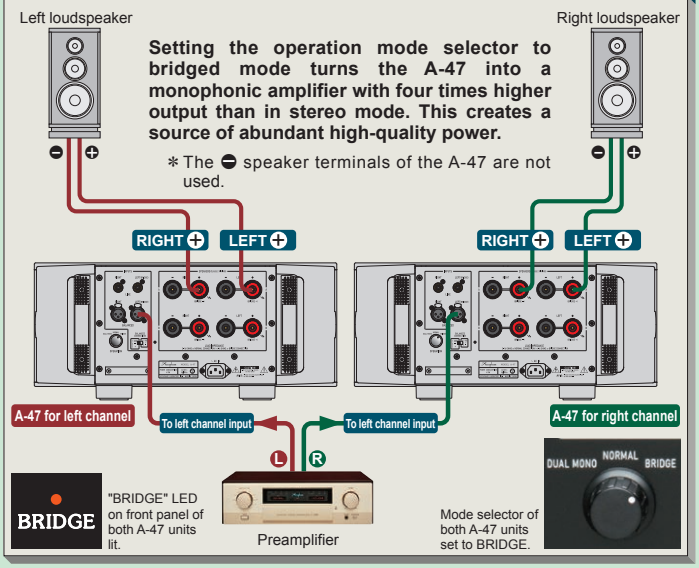
High-performance power MOS-FETs for audio applications

Power amplifier assembly

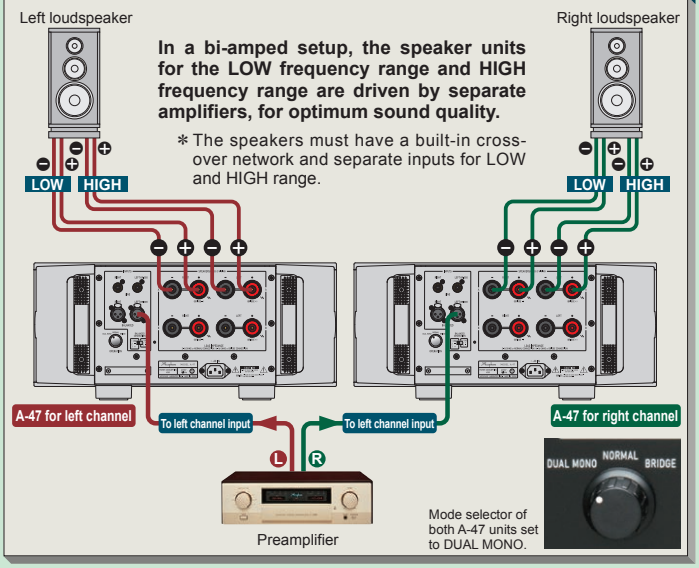
Power amplifier assembly with 6-parallel push-pull power MOS-FET arrangement for output stage mounted directly to large diecast aluminum heat sink, also comprising MCS+ circuitry and current feedback amplifier. Two completely identical circuits are used for left and right.

■ Using two A-47 units, upgrade to bridged operation or bi-amping is possible. ■ Use the LEFT (BALANCED or LINE) input connectors for both units.

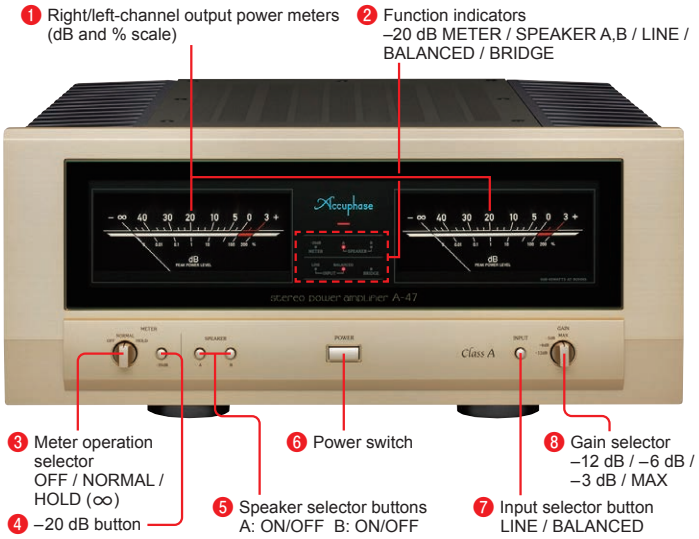
Connection example for bridged setup



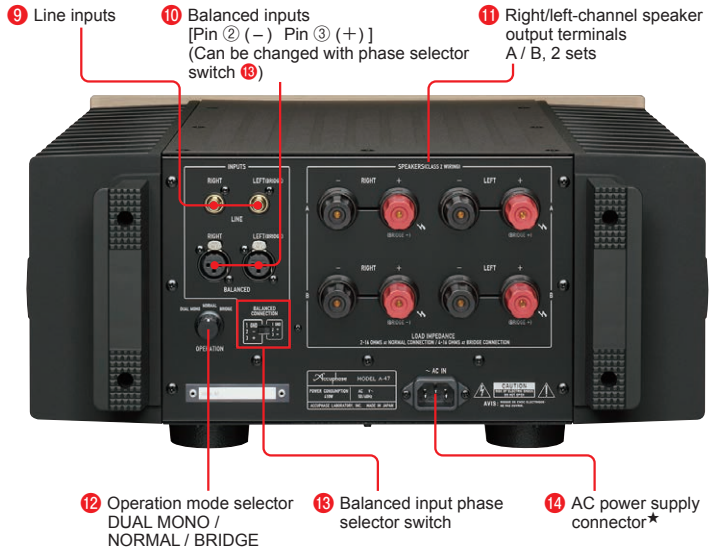
Connection example for bi-amping setup



Front Panel



Rear Panel



A-47 Guaranteed Specifications

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

- **Continuous Average Output Power (20 - 20,000 Hz)**
  Note: Ratings marked with (*) are for music signals only.

Stereo operation (both channels driven)	360 watts per channel	into 1 ohm (*)
	180 watts per channel	into 2 ohms
	90 watts per channel	into 4 ohms
	45 watts per channel	into 8 ohms
Monophonic operation (bridged connection)	720 watts	into 2 ohms (*)
	360 watts	into 4 ohms
	180 watts	into 8 ohms

- **Total Harmonic Distortion** Stereo operation (both channels driven)
  0.05% with a 2-ohm load
  0.03% with a 4 to 16-ohm load
  Monophonic operation (bridged connection)
  0.05% with a 4 to 16-ohm load
- **Intermodulation Distortion** 0.01%
- **Frequency Response** At rated continuous average output:
  20 - 20,000 Hz +0, –0.2 dB
  At 1 watt output: 0.5 - 160,000 Hz +0, –3.0 dB
- **Gain** 28.0 dB (GAIN selector in MAX position)
  (Stereo/monophonic operation)
- **Gain Selection** –12 dB, –6 dB, –3 dB, MAX
- **Output Load impedance**
  Stereo operation: 2 to 16 ohms
  Monophonic operation: 4 to 16 ohms
  [* With music signals only, 1-ohm loads are permissible for stereo operation and 2-ohm loads for bridged operation.]
- **Damping Factor** 600
- **Input Sensitivity (with 8-ohm load, GAIN selector in MAX position)**
  Stereo operation: 0.76 V for rated continuous average output
  0.11 V for 1 watt output
  Monophonic operation: 1.51 V for rated continuous average output
  0.11 V for 1 watt output
- **Input Impedance** Balanced: 40 kilohms
  Line: 20 kilohms
- **S/N ratio (A-weighted, with input shorted)**
  116 dB (GAIN selector in MAX position)
  121 dB (GAIN selector in –12 dB position)
  At rated continuous average output
- **Output Level Meters** –40 dB to +3 dB (indication in dB and %)
  Logarithmic scale, with illumination off switch and sensitivity selector (–20 dB)
- **Power Requirements** 120 V, 220 V, 230 V AC (voltage as indicated on rear panel), 50/60 Hz
- **Power Consumption** 200 watts idle
  410 watts in accordance with IEC 60065
- **Maximum Dimensions** Width 465 mm (18-5/16")
  Height 211 mm (8-5/16")
  Depth 464 mm (18-1/4")
- **Mass** 32.1 kg (70.8 lbs) net
  39.0 kg (86.0 lbs) in shipping carton

Remarks

★ *This product is available in versions for 120/220/230 V AC. Make sure that the voltage shown on the rear panel matches the AC line voltage in your area.*
★ *The 230 V version has an Eco Mode that switches power off after 120 minutes of inactivity.*
★ *The shape of the AC inlet and plug of the supplied power cord depends on the voltage rating and destination country.*

Supplied accessory
● **AC power cord**

• The specifications and appearance of this product are subject to change without notice.

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ACCUPHASE LABORATORY, INC.

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