

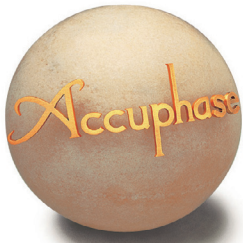
Accuphase

CLASS-A STEREO POWER AMPLIFIER

A-70

- Pure Class A operation delivers quality power: 60 watts x 2 into 8 ohms
- Power MOS-FET output stage features 10-parallel push-pull configuration and delivers linear high power progression to ultra-low 1-ohm impedances
- Ultra low-noise instrumentation amplifier principle used in input stage
- Amplification stage implements further evolved MCS+ topology
- Current feedback principle combines stable operation with outstanding sound quality
- Bridged connection mode allows upgrading to monophonic amplifier
- Two selectable meter types: digital power meters showing true power values and bar graph indicators





Ushering in a New Era — The Ultimate Pure Class A Stereo Power Amplifier. Input stage features fully balanced signal paths realized with ultra low noise instrumentation amplifier topology in discrete configuration. MCS+ design and current feedback in amplification circuitry deliver S/N ratio and sound quality on a level unrivaled by any stereo power amplifier. Massive power supply and power MOS-FET devices in ten-parallel push-pull configuration sustain linear power output progression down to impedances as low as 1 ohm. Output stage with further lowered impedance realizes a damping factor of 800.

In 2012, on the occasion of the company's 40th anniversary, Accuphase released the Pure Class A Monophonic Power Amplifier A-200, an epoch-making product that elevated performance and sound quality to a whole new level, garnering the highest praise from experts around the world. Inheriting many outstanding technology features of the A-200, the A-70 represents a full model change from the A-65, ready to take its place as the ultimate pure class A stereo power amplifier.

The alluring sound of properly executed pure class A operation has always been an object of aspiration for the true audiophile. Accuphase has a long and distinguished history in this field, accumulating a wealth of know-how and expertise over the years. While reflecting this tradition, the A-70 also implements latest technology such as the ultra low-noise instrumentation amplifier principle realized in a discrete configuration, along with optimized signal input and power amplification stages, resulting in an astonishing 127 dB S/N ratio (at -12 dB gain), surpassing even the formidable earlier Accuphase stereo amplifier lineup. Strictly selected parts and materials of the highest grade further contribute to peerless performance and supreme sound quality.

The output stage of the A-70 features power MOS-FETs renowned for their excellent frequency response, sonic performance, and superior reliability. For each channel, ten of these devices are arranged in a parallel push-pull configuration driven in pure class A. The power supply features a large toroidal power transformer equipped with thermal dissipation fins, along with two oversized 82,000 μF filtering capacitors, which provides plenty of reserves to ensure linear power progression down to ultra low 1-ohm impedances. In the output circuitry, ultra-heavy-gauge edgewise coils with a surface area more than three times larger than conventional units, combined with MOS-FET switches are used in place of relays, to eliminate mechanical contacts and improve long-term reliability. Top-grade materials, sophisticated circuit pattern technology, and various other measures result in low impedance and enable the realization of a damping factor of 800, which represents a two-fold improvement over the A-65. The power meters are designed to provide meaningful information and offer a choice between true power readings in digital format and bar graph indication representing voltage values.

- 10-parallel push-pull arrangement of power MOS-FETs delivers linear power progression: 480 watts (music signal) into 1 ohm, 240 watts into 2 ohms, 120 watts into 4 ohms, or 60 watts into 8 ohms.
- Strong power supply uses massive high-efficiency toroidal transformer with reinforced shielding for minimal leakage flux, along with two large 82,000 μF filtering capacitors.
- Power meters with output level indication switchable between 5-digit numeric readout and 32-point LED bar graph.
 - Meter operation on/off switch.
 - Digital power meter showing true power values, based on output current detected by a Hall element
 - Switchable peak hold time: 1 second or infinite
- 4-stage gain selector (MAX, -3 dB, -6 dB, -12 dB) also minimizes residual noise.
- Operation mode switch supports dual mono operation and allows bi-amping connection.
- Bridging allows upgrade to monophonic amplifier with even higher power, delivering 960 watts into 2 ohms (music signal), 480 watts into 4 ohms, or 240 watts into 8 ohms.
- Instrumentation amplifier principle allows fully balanced signal transmission. Current feedback amplification circuit drastically improves signal/noise ratio.
- Two sets of large speaker terminals enable easy bi-wiring connection.
- Semiconductor (MOS-FET) switches used for protection circuitry prevent contact problems and ensure long-term reliability. Eliminating mechanical contacts from signal path also further enhances sound quality.



Large toroidal transformer

Filtering capacitors



Digital power meter/bar graph meter



Hall elements



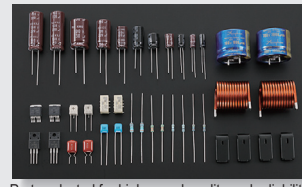
Gain control selector



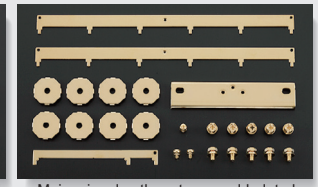
Operation mode selector



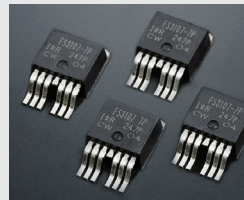
Ultra-heavy-gauge edgewise coil



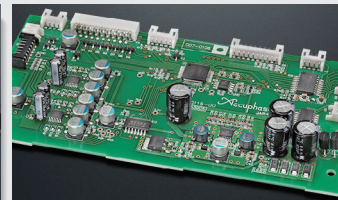
Parts selected for high sound quality and reliability



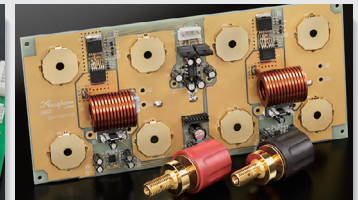
Major signal path parts are gold-plated



MOS-FET switches



Microprocessor assembly



Protection circuit assembly

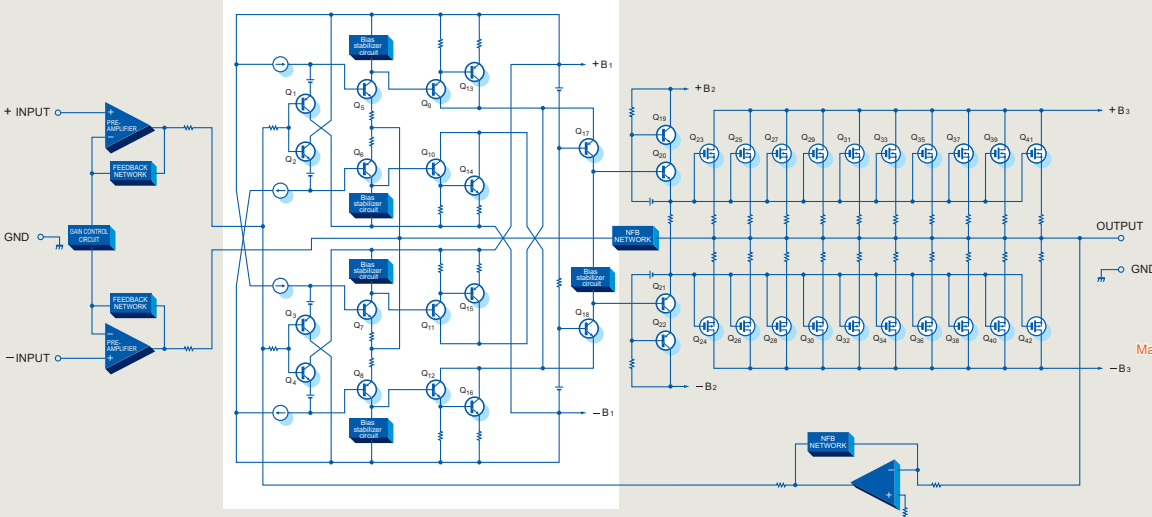
Signal input stage GAIN 22 dB

GAIN < MAX, -3, -6, -12 dB >

Signal amplification stage GAIN 6 dB

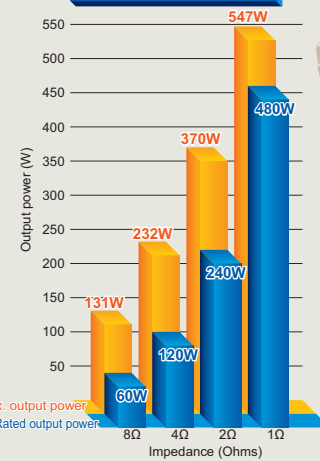
MCS+ (Multiple Circuit Summing)

Power MOS-FETs



Circuit diagram of amplifier section (one channel)

Output power characteristics

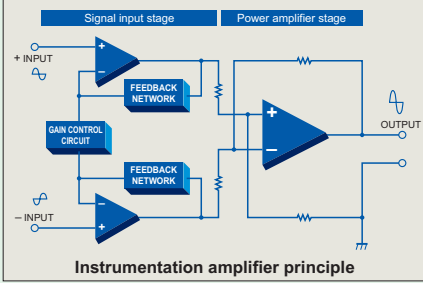


Power MOS-FETs

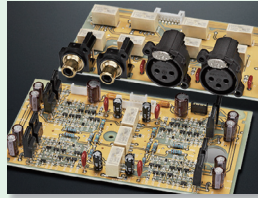
Ultra low-noise instrumentation amplifier configuration and further refined MCS+ topology

Amplification stage features ultra low-noise instrumentation amplifier topology for fully balanced signal paths

The newly adopted ultra low-noise instrumentation amplifier principle is realized with discrete components, allowing optimization of the redesigned signal input stage and power amplification stage, and resulting in a 6 dB improvement in signal-to-noise over the A-65. Approaching the A-200's pinnacle performance, the A-70 is rated for 127 dB (at -12 dB gain) or 121 dB (at maximum gain). The



entire power amplifier including the input stage is configured as a symmetrical push-pull circuit with fully balanced signal paths. Outstanding performance characteristics include excellent resistance against external noise and minimal THD. The amplifier also is impervious against changes in ambient conditions, resulting in further improved operation stability.

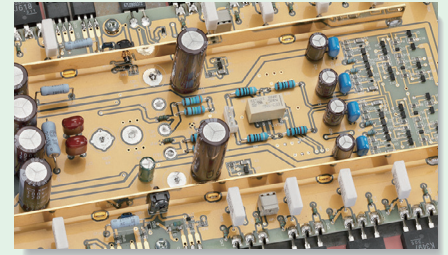


Input connectors and balanced amplifier assembly

Further refined MCS+ topology for even lower noise

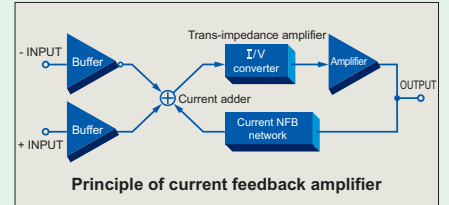
Accuphase's original MCS (Multiple Circuit Summing) principle uses a number of identical circuits connected in parallel to achieve superior

performance characteristics. MCS+ is a further refined version of this approach. By extending parallel operation to the class-A drive stage of the current/voltage converter, the noise floor has been lowered further.



Current feedback principle assures excellent phase characteristics in high range

As shown in the illustration, the A-70 uses the output signal current rather than 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.



Power amplifier assembly

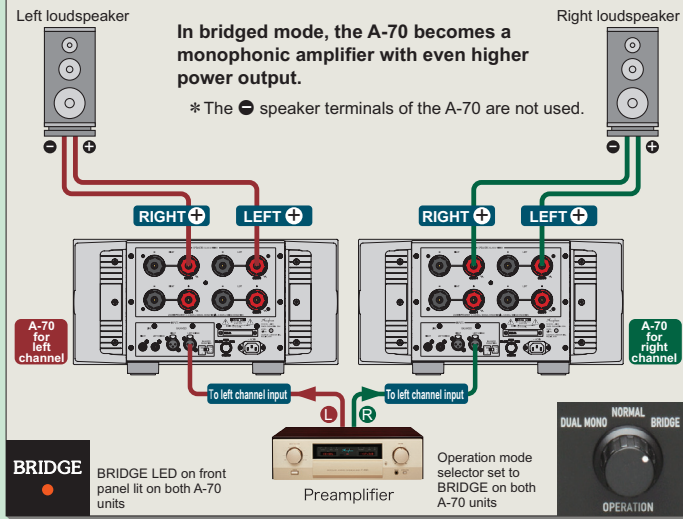
Power amplifier assembly with 10-parallel push-pull power MOS-FET arrangement for output stage mounted directly to massive 7.4 kg diecast aluminum heat sink, also comprising MCS+ circuitry and current feedback amplifier. Two completely identical circuits are used.



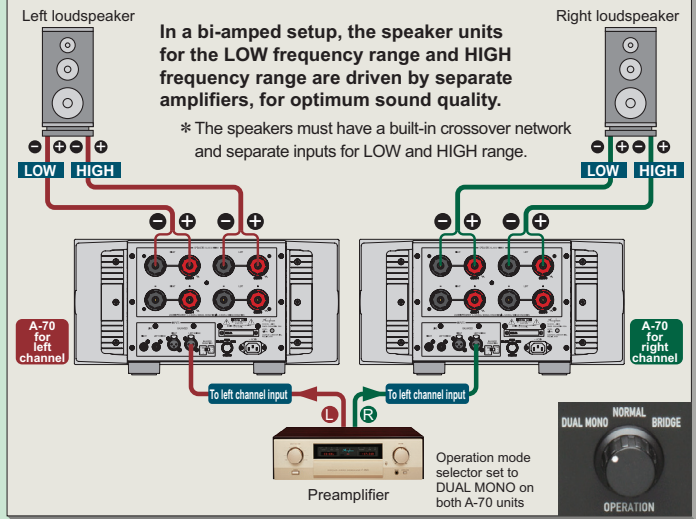
■ Using two A-70 units, upgrade to bridged operation or bi-amping is possible.

■ Use the LEFT (BALANCED or LINE) input connectors for both units.

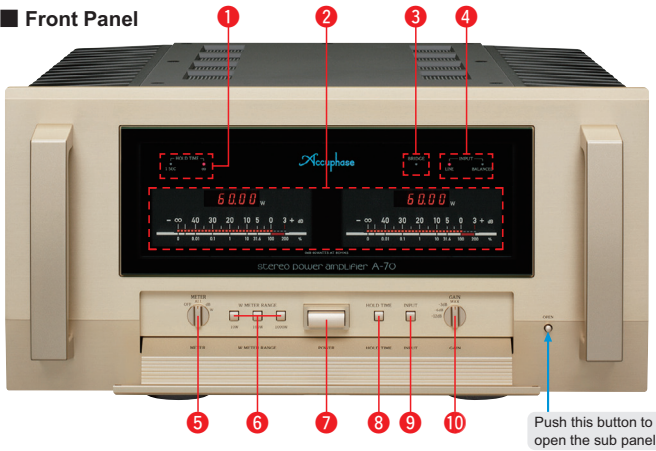
Connection example for bridged setup



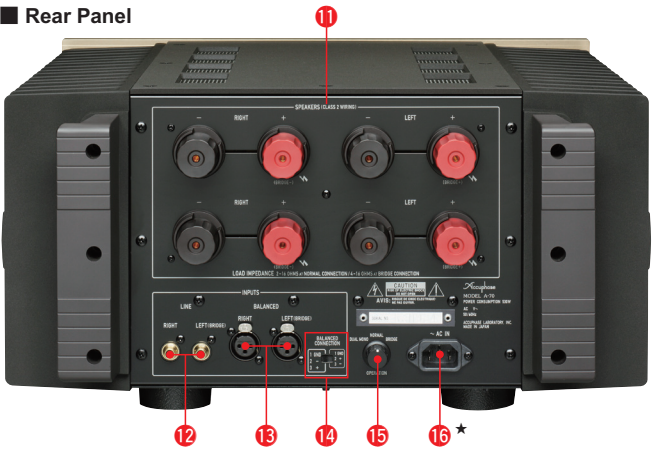
Connection example for bi-amping setup



Front Panel



Rear Panel



- 1 Hold time indicator
- 2 Right/left-channel output power meters (digital and bar graph, switchable)
- 3 Bridge mode indicator
- 4 Input type indicators
- 5 Meter selector OFF / ALL / dB / W
- 6 Digital power meter range buttons 10W / 100W / 1000W
- 7 Power switch
- 8 Hold time selector button 1SEC / ∞
- 9 Input selector button LINE / BALANCED
- 10 Gain selector MAX / -3 dB / -6 dB / -12 dB
- 11 Right/left-channel speaker output terminals (same output at both sets)
- 12 Line inputs
- 13 Balanced inputs ② Inverted (-) ③ Non-inverted (+) (Can be changed with phase selector switch 14)
- 14 Balanced input phase selector switch
- 15 Operation mode selector DUAL MONO / NORMAL BRIDGE
- 16 AC power supply connector ★

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.
- ★ 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

A-70 GUARANTEED SPECIFICATIONS

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

- **Continuous Average Output Power (20-20,000 Hz)** Note: Load ratings marked (*) apply only to operation with music signals.

Stereo operation (both channels driven)	480 watts per channel	into 1 ohm (*)
	240 watts per channel	into 2 ohms
	120 watts per channel	into 4 ohms
	60 watts per channel	into 8 ohms
Monophonic operation (bridged connection)	960 watts	into 2 ohms (*)
	480 watts	into 4 ohms
	240 watts	into 8 ohms
- **Total Harmonic Distortion**

Stereo operation (both channels driven)	0.07%	with 2 ohm load
	0.03%	with 4 to 16 ohm load
Monophonic operation (bridged connection)	0.05%	with 4 to 16 ohm load
- **Intermodulation Distortion** 0.01%
- **Frequency Response** At rated 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 (with GAIN selector at MAX) (Stereo and monophonic operation)
- **Gain Selection** MAX, -3 dB, -6 dB, -12 dB
- **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 monophonic operation.]
- **Damping Factor** 800
- **Input Sensitivity (with 8-ohm load, GAIN selector in MAX position)**

Stereo operation:	0.87 V for rated continuous average output (60 W)
	0.11 V for 1 watt output
Monophonic operation:	1.74 V for rated continuous average output (240 W)
	0.11 V for 1 watt output
- **Input Impedance** Balanced: 40 kilohms Unbalanced: 20 kilohms
- **Signal-to-Noise Ratio (A-weighted, input shorted)**

121 dB (GAIN selector at MAX)
127 dB (GAIN selector at -12 dB)

At rated continuous average output
- **Output Level Meters (digital indication and bar graph)**

Digital meters:	5-digit indication, selectable range (10 W / 100 W / 1000 W)
Bar graph meters:	32-point scale
Hold time:	1 second/∞, switchable

* Display off setting provided
* Monophonic operation: same value for left/right
- **Power Requirements** AC 120 V/230 V, 50/60 Hz (Voltage as indicated on rear panel)
- **Power Consumption** 280 watts idle
530 watts in accordance with IEC 60065
- **Maximum Dimensions**

Width	465 mm (18-5/16")
Height	238 mm (9-3/8")
Depth	515 mm (20-1/4")
- **Mass**

44.3 kg (97.7 lbs) net
54.0 kg (119.0 lbs) in shipping carton