

# Accuphase

STEREO POWER AMPLIFIER

## P-4100

- Output stage with 3-parallel push-pull configuration for each channel delivers high power and handles very low impedance loads
- Instrumentation amplifier principle used for signal paths
- Further refined MCS+ circuit topology
- Current feedback circuit combines excellent sound quality with total operation stability
- Bridged connection mode allows upgrading to monophonic amplifier
- Massive toroidal transformer rated for 950 VA
- 4-step gain control





**Stereo power amplifier capable of delivering 500 watts into 1 ohm (music signal) – Instrumentation amplifier principle allows fully balanced signal paths. Further refined MCS+ and current feedback topology assure outstanding S/N ratio, minimum distortion, and excellent performance in all other aspects, resulting in superb sound quality. 3-parallel push-pull arrangement of high-power transistors in each channel, sustained by power supply with massive 950 VA toroidal transformer. 4-step gain control minimizes residual noise.**

The P-4100 is a stereo power amplifier that takes sophisticated sound to the next level. While inheriting design technology from highly renowned Accuphase models such as the P-7100 and M-6000, the new model features instrumentation amplifier topology and a refined MCS+ circuit to lower the noise floor even further. Only specially selected top-grade materials and parts are used throughout with impressive results.

In order to bring out the full potential of the loudspeakers, an amplifier must be able to cope with drastically fluctuating speaker impedance conditions. This can only be achieved by ensuring constant drive voltage at all times. In other words, the output impedance of the amplifier must be kept very low. This also makes it possible to absorb the counterelectromotive force generated by the voice coil, thereby eliminating a major source of intermodulation distortion.

The P-4100 achieves these design goals with ease. The output stage for each channel uses three pairs of high-power transistors with a Pc rating of 220 watts, arranged in a parallel push-pull configuration. This ensures low output impedance. Stable operation is achieved by mounting the devices to massive heat sinks on both sides of the chassis, for efficient dissipation of thermal energy. As demonstrated by the power rating of 500 watts into 1 ohm (with music signals), the P-4100 can easily drive speakers with very low impedance, and speakers with uneven impedance curves are handled with complete authority. Using the P-4100 in bridged mode creates a mono amplifier with even more impressive power capability. The power supply section which acts as energy source for the amplifier employs a massive 950 VA toroidal transformer in combination with large filtering capacitors, providing ample reserves even with drastically fluctuating loads.

The overall configuration of the P-4100 employs the latest instrumentation amplifier principle, allowing fully balanced signal paths throughout. In addition, the power amplifier section features refined MCS+ topology in combination with current feedback, for further enhanced electrical performance characteristics.

■ **Power modules with high-power transistors in 3-parallel push-pull arrangement deliver 500 watts per channel into 1 ohm (music signals only), 360 watts into 2 ohms, 180 watts into 4 ohms, or 90 watts into 8 ohms.**



Toroidal power transformer

■ **Amplified dimensioned power supply with high-efficiency toroidal transformer and large filtering capacity.**

The high-efficiency toroidal transformer is rated for approx. 950 VA, and the two extra-large 47,000µF aluminum electrolytic capacitors were selected for best sonic performance.



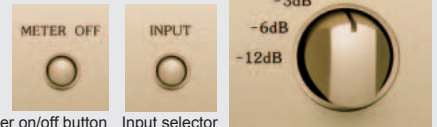
Filtering capacitors

■ **Bridged mode allows upgrading to monophonic amplifier with 1,000 watts into 2 ohms (music signals only), 720 watts into 4 ohms, or 360 watts into 8 ohms.**

Bridged connection increases the output by a factor of 4, creating dramatic power reserves in a monophonic configuration.

■ **Four gain control settings minimize residual noise.**

The gain control alters gain in the first stage of the instrumentation amplifier. Four settings are available (MAX, -3 dB, -6 dB, -12 dB).



Meter on/off button

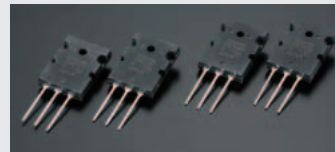
Input selector

Gain selector

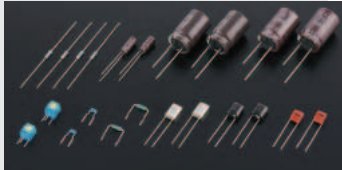
■ **Large analog power meters with on/off switch.**

■ **Mode selector for easy switching between dual mono/stereo/bridged operation.**

■ **Fully balanced input stage shuts out external noise interference.**



High-power transistors used in output stage

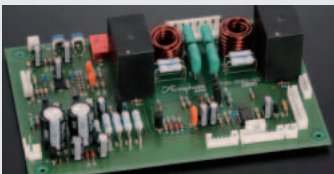


Parts selected for sound quality and reliability

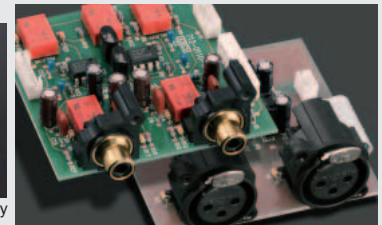
■ **Two pairs of oversized speaker terminals accept also Y lugs plugs.**



Large speaker terminals



Assembly with meter and protection circuitry



Assembly with unbalanced and balanced input connectors

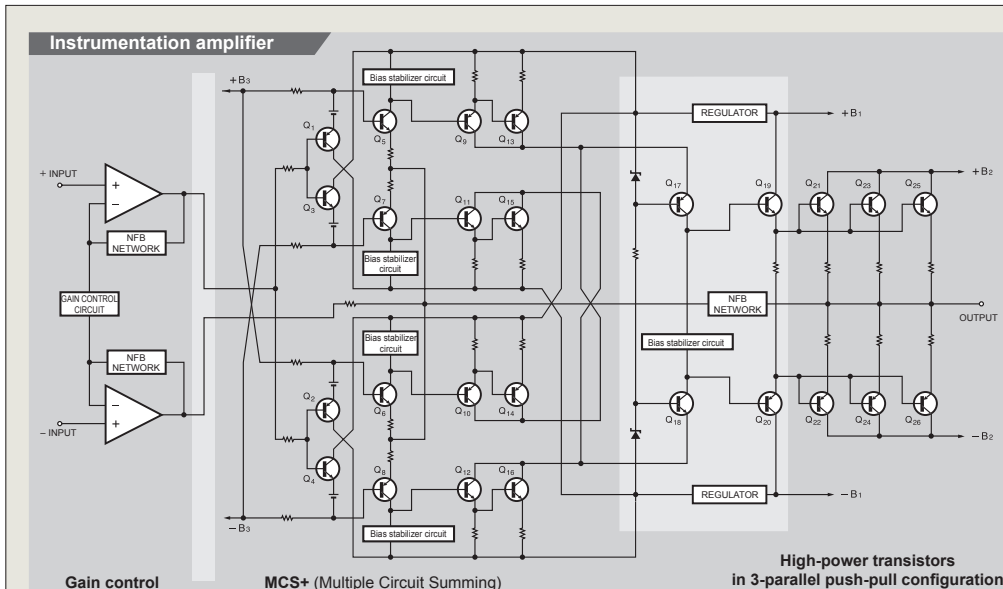


Figure 1 Circuit diagram of amplifier section (one channel)

\* 1-ohm operation possible with music signals only

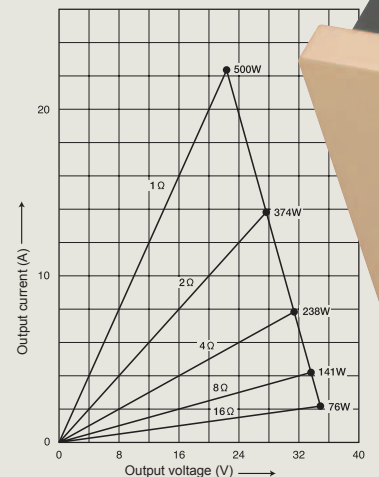
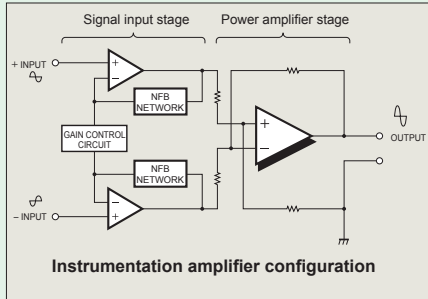


Figure 2 Load impedance vs. output power (output voltage/output current)

# Instrumentation amplifier and further refined MCS+ topology

## Instrumentation amp configuration allows fully balanced signal paths

The newly adopted "instrumentation amplifier" principle ensures that all signal paths from the inputs to the power amp stage are fully balanced. This results in excellent CMRR (common mode rejection ratio) and minimal distortion. Another significant advantage is that external noise and other external influences are virtually shut out. The result is a drastic improvement in operation stability and reliability.



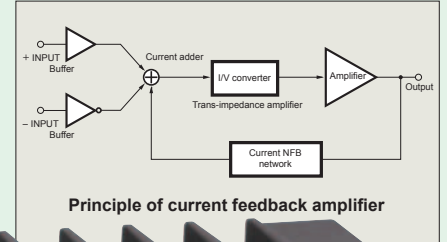
## Further refined MCS+ topology for even lower noise

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 P-4100 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.

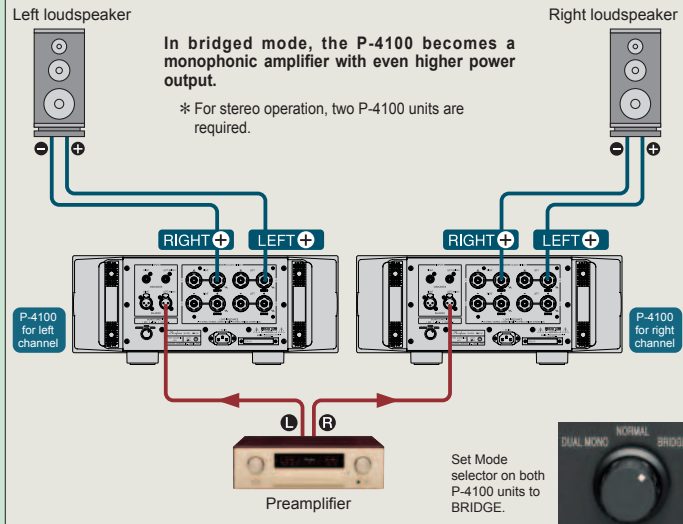


- Power amplifier assembly with three parallel push-pull high-power transistor pairs per channel mounted directly to large heat sink, MCS+ circuitry, and current feedback amplifier.

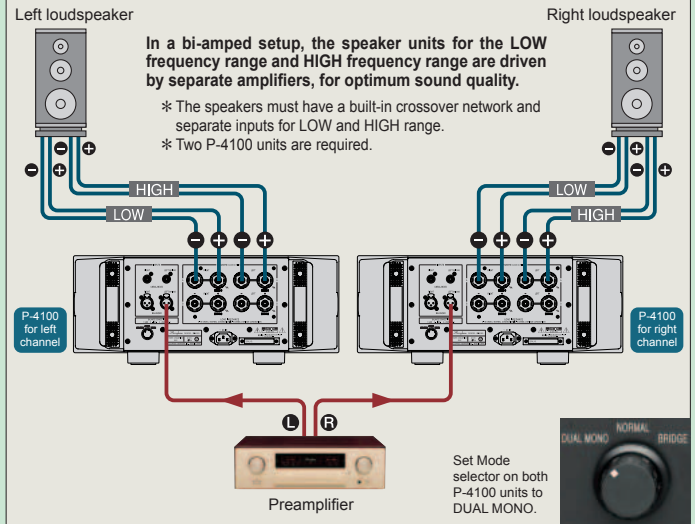


■ You can use two P-4100 units in bridged mode or in a bi-amping setup, for even higher quality. ■ Use the LEFT (BALANCED or UNBALANCED) input connectors for both units.

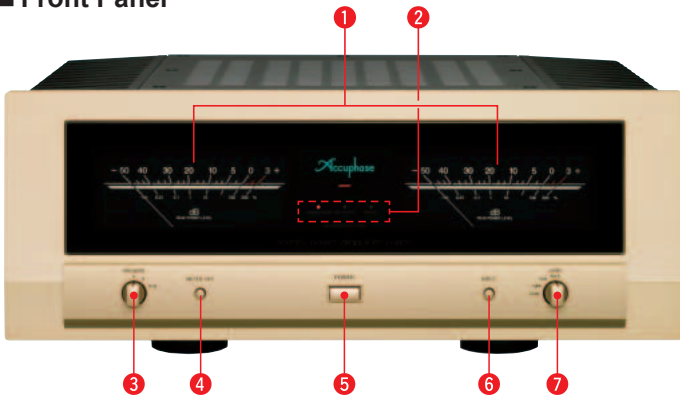
### Bridged connection example



### Bi-amping connection example



### Front Panel



### Rear Panel



- 1 Right/left-channel output power meters (dB and % scale)
- 2 Function indicators  
UNBALANCED BALANCED BRIDGE
- 3 Speaker selector A B A+B
- 4 Meter on/off button ON OFF
- 5 Power switch
- 6 Input selector button  
UNBALANCED BALANCED
- 7 Gain selector  
MAX -3 dB -6 dB -12 dB
- 8 Unbalanced inputs
- 9 Right/left-channel speaker output terminals  
A and B (two pairs)
- 10 Mode selector  
DUAL MONO NORMAL BRIDGE
- 11 Balanced inputs  
① Ground ② Inverted (-)  
③ Non-inverted (+)
- 12 AC power supply connector\*

#### 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 accessory**
- AC power cord

### GUARANTEED SPECIFICATIONS

\* Guaranteed specifications are measured according to EIA standard RS-490.

#### ● Continuous Average Output Power (20–20,000 Hz)

Stereo operation (both channels driven)	500 watts per channel into 1 ohm (*)
	360 watts per channel into 2 ohms 180 watts per channel into 4 ohms 90 watts per channel into 8 ohms
Monophonic operation (bridged connection)	1,000 watts into 2 ohms (*)
	720 watts into 4 ohms
	360 watts into 8 ohms

Note: Load ratings marked (\*) apply only to operation with music signals.

#### ● Total Harmonic Distortion

Stereo operation (both channels driven)	0.05% with 2 ohm load
	0.02% with 4 to 16 ohm load
Monophonic operation (bridged connection)	0.02% 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)  
(in 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

180

#### ● Input Sensitivity (with 8-ohm load, GAIN selector in MAX position)

Stereo operation:	1.07 V for rated output
	0.11 V for 1 watt output
Monophonic operation:	2.14 V for rated output
	0.11 V for 1 watt output

#### ● Input Impedance

Balanced: 40 kilohms Unbalanced: 20 kilohms

#### ● Signal-to-Noise Ratio (A-weighted, input shorted)

120 dB (GAIN selector at MAX)  
125 dB (GAIN selector at -12 dB)  
At rated output

#### ● Output Level Meters

-50 dB to +3 dB (indication in dB and %)  
Logarithmic scale, with defeat switch

#### ● Power Requirements

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

#### ● Power Consumption

60 watts idle  
550 watts in accordance with IEC 60065

#### ● Maximum Dimensions

Width 465 mm (18-5/16")  
Height 190 mm (7-1/2")  
Depth 427 mm (16-13/16")

#### ● Mass

28.2 kg (62.2 lbs) net  
34.0 kg (75.0 lbs) in shipping carton

