

# Accuphase

## DUAL CHANNEL POWER AMPLIFIER

# PRO-2

- 3-Parallel Push-Pull Output Stage
- Low-Impedance Setting
- Front-Intake and Rear-Exhaust Forced-Air Cooling System for Overheat Protection
- 400W (at 4 ohms) Monophonic Operation

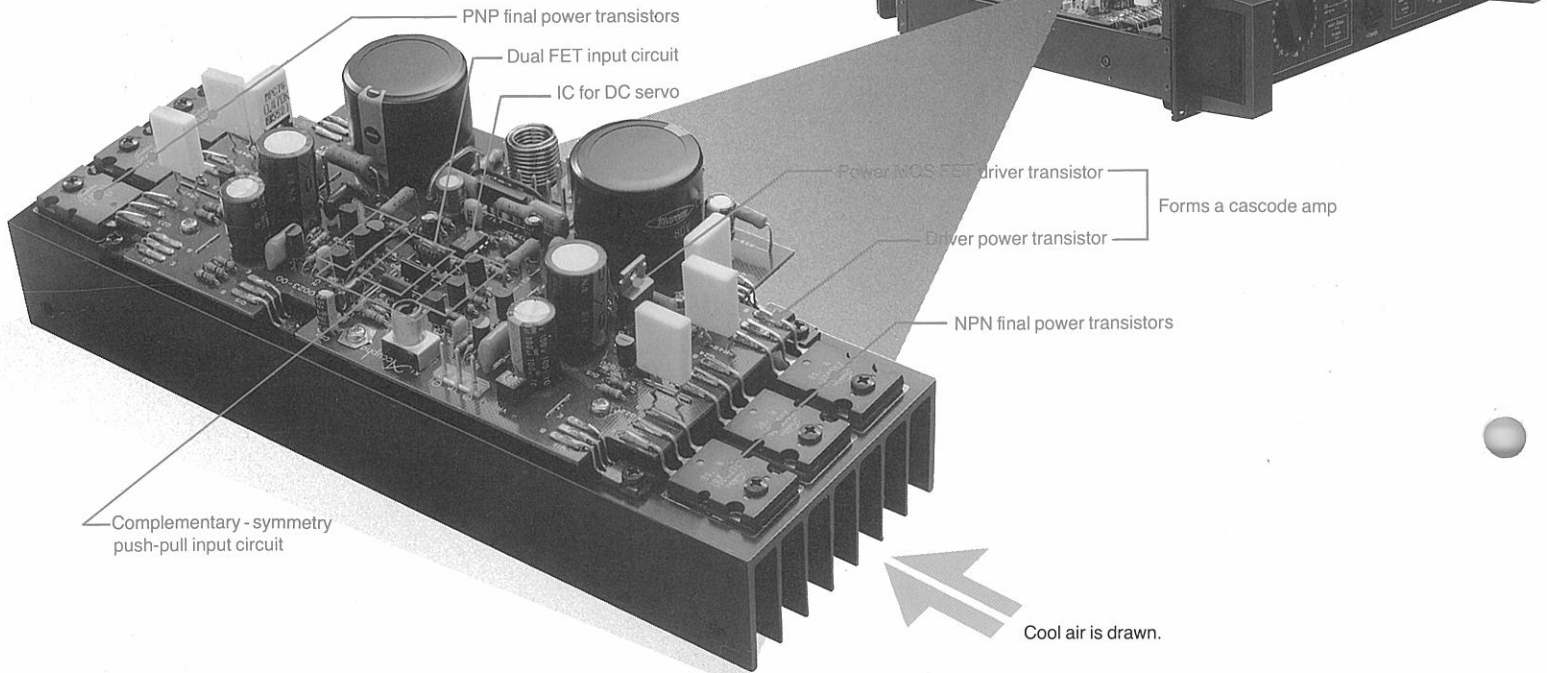


### Professional Series

# All stage push-pull configuration. 3-parallel push-pull power stages guarantee stereo

## By using the low impedance setting, even an extremely low impedance speakers of

The output transistors, the main source of heat in the amplifier, are mounted on a large, square conduit type heat sink and cooled by a fan mounted on the rear panel by forcibly drawing cool air from the intake louvers on the front panel. The photograph below shows one channel amp unit.



The second proud product of the Accuphase PRO amplifier series is the PRO-2. This is a 2-channel power amp with a rated output of 100W/ch at 8 ohms (20 to 20,000 Hz). Based on a number of years of innovative Accuphase development technologies for high-class audio amps, the PRO-2 was designed to provide the highest reliability and durability required for professional amps yet with an intense focus on superior sound quality. As evidenced by its rated power output, the PRO-2 is best suited for middle- and high-frequency ranges in multi-amplification use. However, it can also be adopted for full-range use since it provides a power output as large as 340W at 8 ohms for monophonic operation.

This amplifier's basic development scheme and circuit configuration follow that of the PRO-5, which is universally prized by its users. In designing the PRO-2, we aimed at the limits of audio technology at every point. For instance, the PRO-2's forced cooling system (with front intake and rear exhaust) is a rarity among other makes of power amps in this class. This cooling system helps to ensure trouble-free operation even under the most taxing, heavy-duty operating conditions. Moreover, separate indicators for output/input signals and for overheat protection permit you to easily check and monitor the amplifier's operation while on site.

The amplifier circuit is made up entirely of parallel push-pull circuits from input to output stages following the proven system Accuphase traditionally has adopted for its amplifiers. The sound quality of the PRO-2 has also been heightened to obtain sound with excellent transparency – a major requisite for professional power amps. The result is a superior amp that we are convinced can satisfy the high-quality sound and reliability requirements expected by even the most selective sound-system professionals.

**POWERFUL OUTPUT STAGE  
PRODUCES STEREO AT 200W/ch  
(2 ohms), 100W/ch (8 ohms), AND  
MONOPHONIC AT 400W/ch  
(4 ohms) – GUARANTEED**

To appreciate PRO-2's unique circuit design, take a look at Fig. 1. The output stage has a total of six bipolar transistors per channel, each with a maximum power dissipation (Pc) of 150W. These form three parallel push-pull output circuits with a total power capacity of 900W. The purpose of this powerful output stage is to supply sufficient power even for low-impedance loads and yet have improved durability even in the event of speaker wiring shorts.

The powerful output stage guarantees the rated output values of 100 W/ch at 8 ohms, 170 W/ch at 4 ohms, and 200 W/ch at 2 ohms. The PRO-2 can also be used as a monophonic power amp of 340W at 8 ohms and 400W at 4 ohms by setting the OPERATION selector switch on the rear panel to MONO.

**A LARGE, HEAT-SINK CONDUIT  
AND FORCED-AIR, REAR-VENT  
SYSTEM ARE COMBINED FOR  
PERFECT PROTECTION AGAINST  
OVERHEATING**

In professional amplifiers, countermeasures

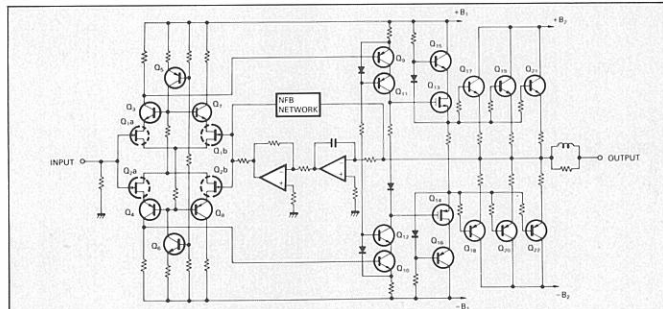


Fig. 1 PRO-2 Circuit Diagram

against overheating are indispensable. In the PRO-2, these have been provided by mounting the output transistors (the main source of heat) on a large, flow-through heat sink. Cooling air is drawn into the heat sink by a rear-mounted fan through intake louvers on the front panel and expelled from an exhaust vent at the rear. Some of this forced air also passes the unit's electrolytic capacitors and power transformer with added cooling effect.

This highly efficient system means the PRO-2 functions normally even in a carrying case or other confined space where the upper/lower and side panels are tightly sealed. The intake louvers can be easily dismantled for cleaning or replacement.

**CURRENT LIMITER-TYPE  
PROTECTION CIRCUIT AND  
OVERHEAT INDICATORS ENSURE  
TROUBLE-FREE OPERATION**

The protection circuit of the PRO-2 uses a current limiter. This method, while providing superior power supply capabilities for low-impedance loads compared to the ASO detection method, requires considerable reserves from the output stage. Fortunately, the Pc values of the PRO-2 are more than adequate and we have been able to adopt this method for excellent protection of the transistors in the event of speaker wiring shorts as well as to guarantee powerful output of 200 W/ch at 2-ohm load. If the temperature of the heat sink exceeds 80°C, the top element of the LED output meter lights continuously to warn of the overheated condition.

100W/ch (8 ohms), monophonic = 340W (8 ohms).

2 channels (stereo = 200W/ch) can be fully driven.

Accuphase **PRO-2**

**HIGH-QUALITY SOUND REALIZED BY ALL PUSH-PULL STAGES**

As shown in Figure 1, the amplifier circuit is configured entirely of complementary-symmetrical push-pull circuits, from input to output stages.

Having employed this circuit configuration for more than a decade for professional audiophile equipment, Accuphase is well acquainted with its design technique and can confidently say that it is an ideal one for amplifiers. A stable NFB can be applied to the circuit, ensuring consistent operation even under the extreme load conditions required for professional power amps.

**INPUT SIGNAL CHECK FUNCTION**

Should no sound be heard after starting up the system, a check for the presence of signals in each component is required. To facilitate this checking, the PRO-2 is provided with an input signal indicator on the front panel. This indicator illuminates whenever signals are input to any of the input terminals of the unit regardless of the position of the input level control.

**TWO PAIRS OF BALANCED/UNBALANCED INPUT TERMINALS; 2-POLE BANANA JACKS OR OPTIONAL XLR CONNECTORS FOR OUTPUT TERMINALS**

Phone jacks provide unbalanced input (parallel connection) for each channel. For the balanced inputs, two XLR-type connections (XLR-31 and XLR-3-32) are available for each channel. The polarity of the XLR-type connectors are (1) ground, (2) hot, and (3) cold.

The standard output terminal is a two-pole banana jack. The left and right poles are separated by 19 mm for easy connection of the banana jacks even when the PRO-2 is operating in monophonic mode. Connection of an XLR-type connector or phone jack is possible by replacing the mounting board with an optional conversion board.

**1dB-STEP INPUT LEVEL CONTROL**

The PRO-2 is provided with 1dB-step input level control within a range of 0 to -20dB for each channel, assuring accurate level control. These control knobs, being recessed in the front panel, do not protrude from the front panel and thus help prevent accidental rotation.

**FOUR-SEGMENT LED OUTPUT METERS**

Bar graph indication output meters with LEDs are adopted for the PRO-2 for the sake of increased durability. Two four-segment displays are adopted. Two scales are provided on the output meters: one in dBs and the other in watts at 8 ohms.

**GUARANTY SPECIFICATIONS**

**PERFORMANCE GUARANTY**

All Accuphase product specifications are guaranteed as stated.

**Rated output (20 to 20,000 Hz, distortion: 0.02%)**

Stereophonic operation (both channels driven)  
 200W/ch 2-ohm load  
 170W/ch 4-ohm load  
 100W/ch 8-ohm load  
 50W/ch 16-ohm load

Monophonic operation (bridge connection)

400W 4-ohm load  
 340W 8-ohm load  
 200W 16-ohm load

**Total harmonic distortion**

Stereophonic operation (both channels driven)

0.02% 2-ohm load  
 0.01% 4- to 16-ohm load

Monophonic operation (bridge connection)

0.02% 4-ohm load  
 0.01% 8- to 16-ohm load

**IM distortion (SMPTE-IM)**

0.003%

**Frequency response**

20 to 20,000 Hz +0, -0.2dB  
 (Rated output, input attenuator at MAX)  
 0.5 to 150,000 Hz +0, -3.0dB  
 (1W output, input attenuator at MAX)  
 0.5 to 120,000 Hz +0, -3.0dB  
 (1W output, input attenuator at -6dB)

**Gain**

31.2dB Stereophonic operation  
 37.2dB Monophonic operation

**Load impedance**

2 to 16 ohms Stereophonic operation  
 4 to 16 ohms Monophonic operation

**Damping factor (8-ohm load at 50 Hz)**

200 Stereophonic operation  
 100 Monophonic operation

**Input sensitivity (8-ohm load)**

0.775V 100W output Stereophonic operation  
 0.388V 100W output Monophonic operation

**Input impedance**

20k ohms Unbalanced input  
 40k ohms Balanced input

**S/N ratio (A-weighted, input-shorted)**

110dB Rated output

**Output meters**

LED display 8-ohm load, 50W = 0 dB -20, -5, 0, +3 dB

**Input attenuator**

0 to -20 dB in 1 dB steps, -∞

**Input terminals**

Phone jacks Two terminals\*each for Channels A and B  
 XLR (cannon) XLR-3-31 and XLR-3-32 for Channels A and B  
 connectors Pins: 1 Ground, 2 Hot, 3 Cold

**Output terminals**

Two-pole banana jacks  
 Can be adapted for XLR-type or phone jacks by installing optional board

**Cooling method**

Forced-air cooling method (front panel air intake louvers, rear panel exhaust)  
 Two-speed cooling fan (automatically operates at high speed when temperature exceeds 80°C in heat sink)

**Semiconductors**

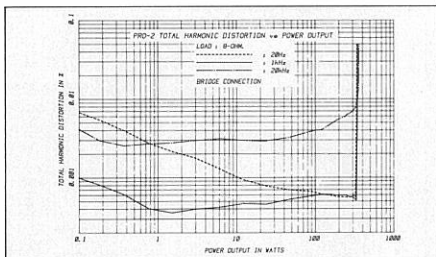
50 transistors, 10 FETs, 8 ICs, 67 diodes

**Power requirements and consumption**

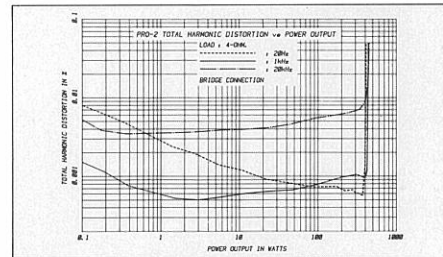
100V, 117V, 220V, 240V, 50/60 Hz  
 70W no signal  
 390W at rated output into 8-ohm load

**Dimensions and weight**

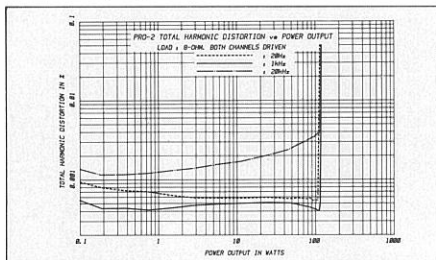
482.5 mm (19 inches)(W) × 107 mm (4-1/4 inches) (Max. height) × 380 mm (15 inches)(D)  
 Refer to dimensioned diagram.  
 Panel height Two units  
 Panel size 482.5(W) × 88 (H) mm  
 Rack mounting Can be mounted in standard 19-inch rack  
 Weight 14.0 kg (30.8 lbs) net, 17.6 kg (38.7 lb) in shipping carton



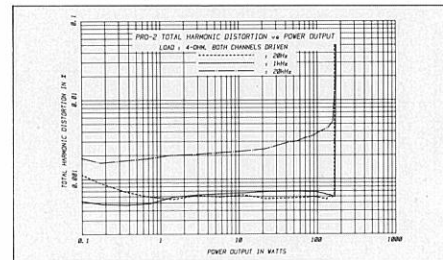
Total Harmonic Distortion vs. Power Output  
 Load: 8 ohms, Bridge connection



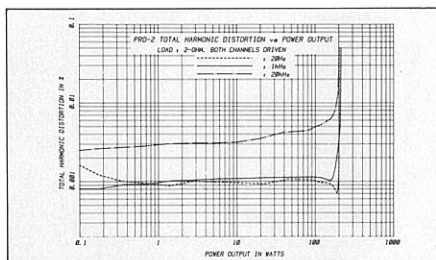
Total Harmonic Distortion vs. Power Output  
 Load: 4 ohms, Bridge connection



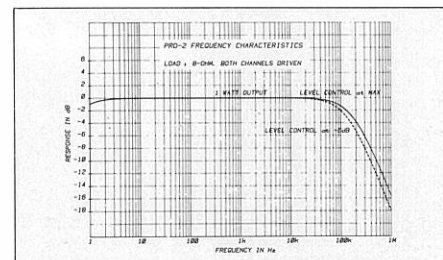
Total Harmonic Distortion vs. Power Output  
 Load: 8 ohms, Both channels driven



Total Harmonic Distortion vs. Power Output  
 Load: 4 ohms, Both channels driven



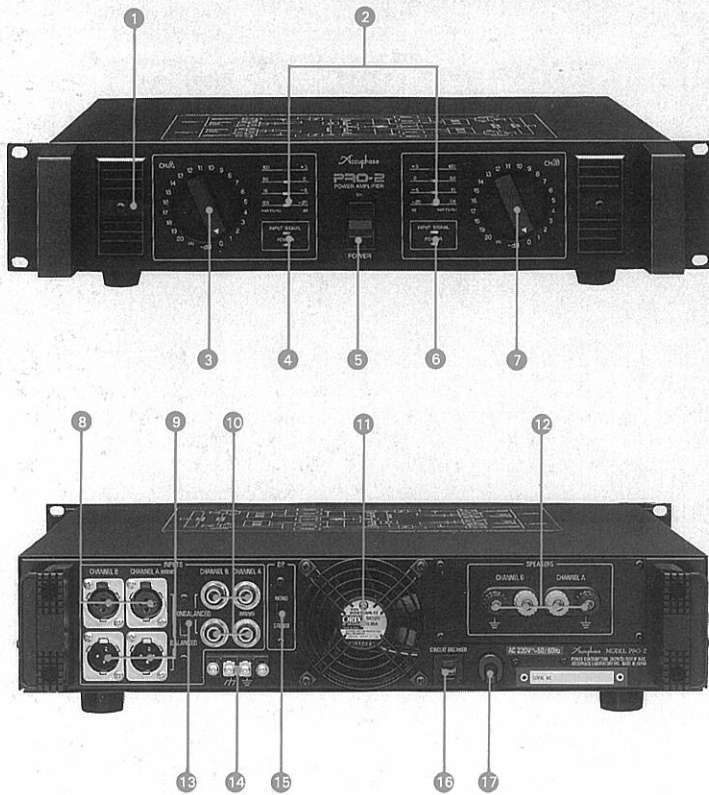
Total Harmonic Distortion vs. Power Output  
 Load: 2 ohms, Both channels driven



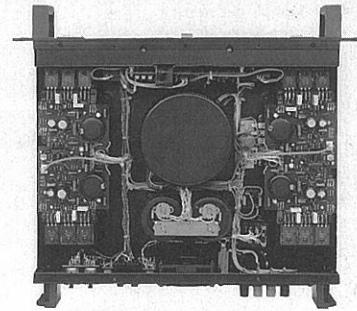
Frequency characteristics

# Accuphase PRO-2

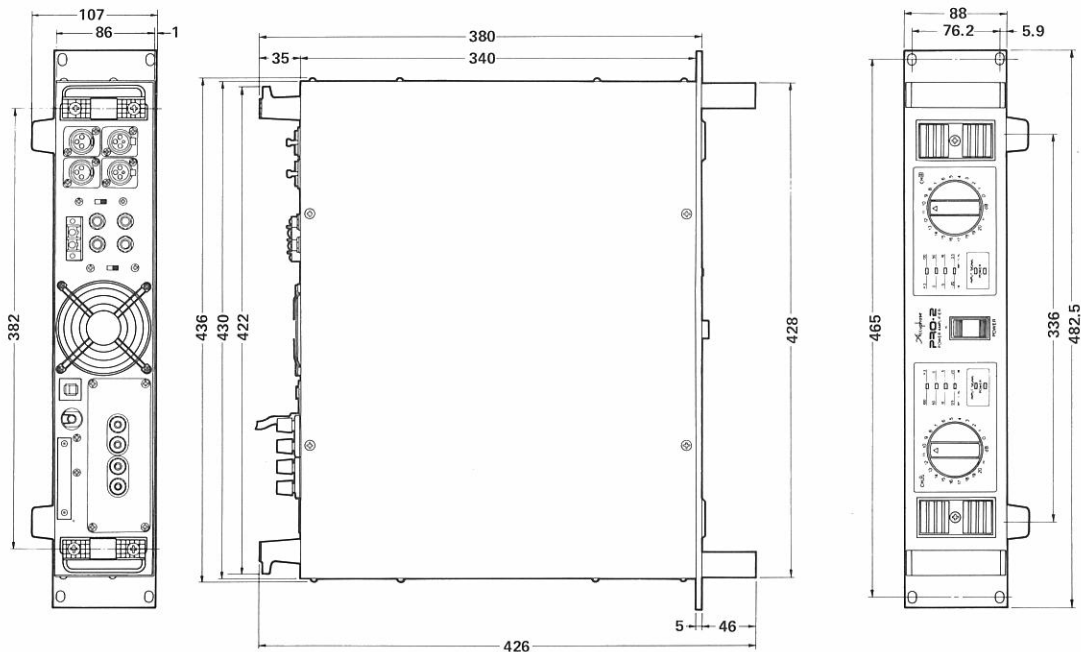
## Panel control



- 1 Cool air intake louvers
- 2 LED output meters (If the temperature of the heat sink exceeds 80°C, the top (red) LED will light continuously to warn of the overheated condition.)
- 3 Input attenuator knob for Channel A (Use this during monophonic operation.)
- 4 Input signal indicator for Channel A
- 5 POWER switch
- 6 Input signal indicator for Channel B
- 7 Input attenuator knob for Channel B
- 8 XLR-type receptacle (XLR-3-31 matchable with XLR-3-12C)
- 9 XLR-type plug receptacle (XLR-3-32 matchable with XLR-3-11C)
- 10 Standard phone jacks (unbalanced input terminals)
- 11 Cooling fan
- 12 Speaker output terminals; two-pole banana jacks as standard. Phone jacks or XLR-type connectors available by installing an optional board
- 13 Balanced/unbalanced selector switch
- 14 Ground terminal board (Ground line select)
- 15 OPERATION selector switch (STEREO/MONO)
- 16 Circuit breaker
- 17 AC power cord



■ Simple internal layout



Unit: mm

Accuphase  
ACCUPHASE LABORATORY INC.