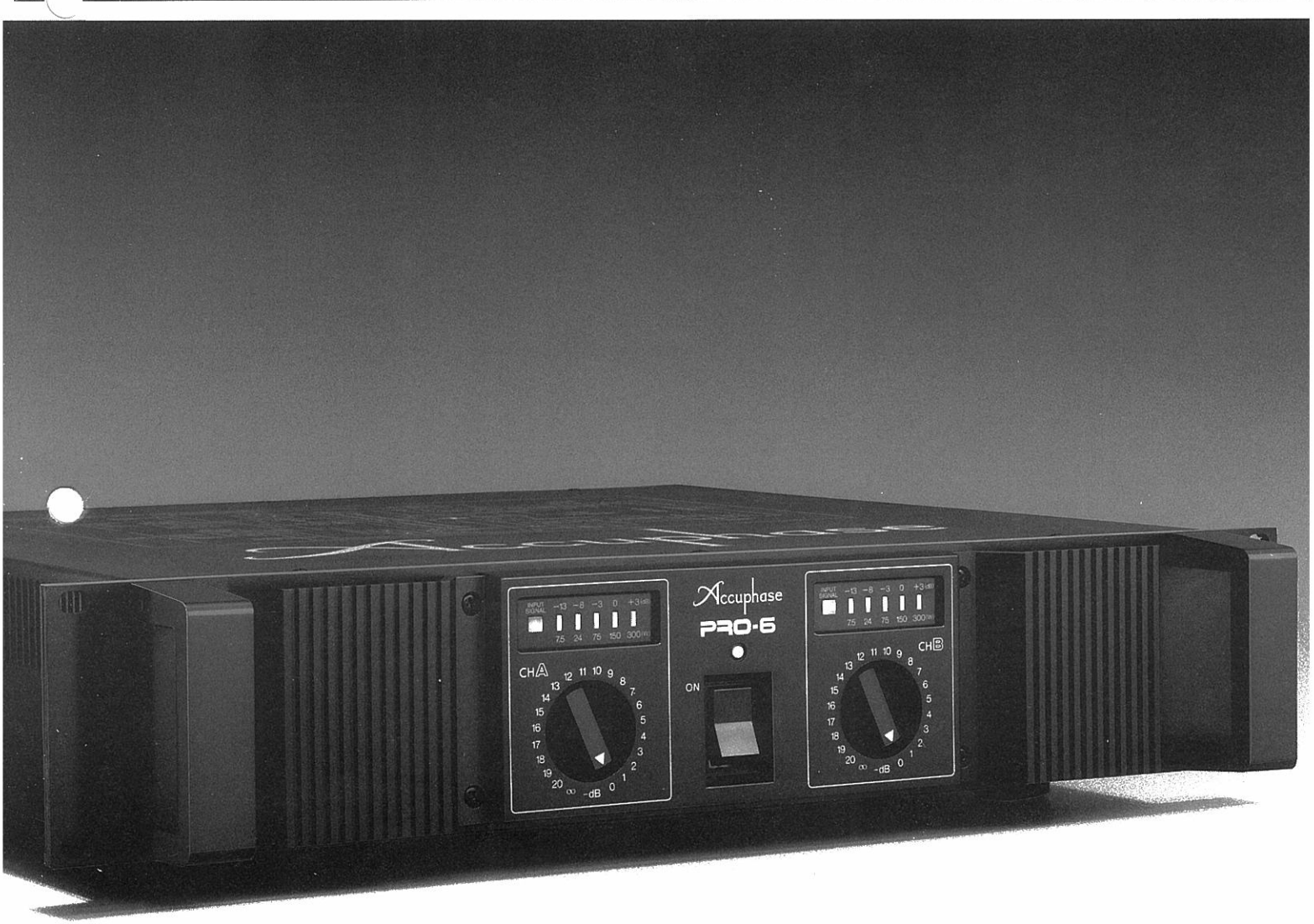
Accuphase

DUAL CHANNEL POWER AMPLIFIER

PRO-6

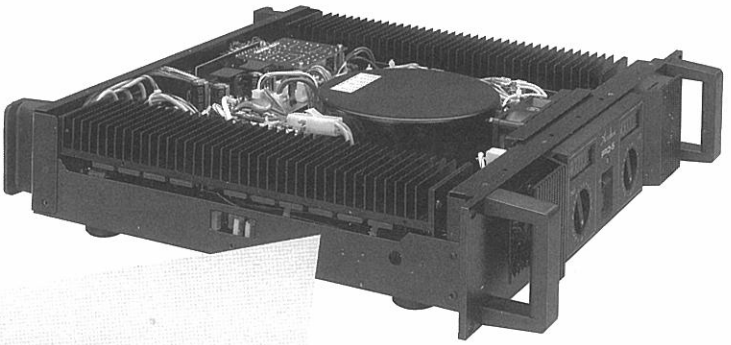
- 9-Parallel Push-Pull Output Stage
- Low-Impedance Setting
- Front-Intake and Side-Exhaust Forced-Air Cooling System for Overheat Protection
- 1,000W (at 4 ohms) Monophonic Operation

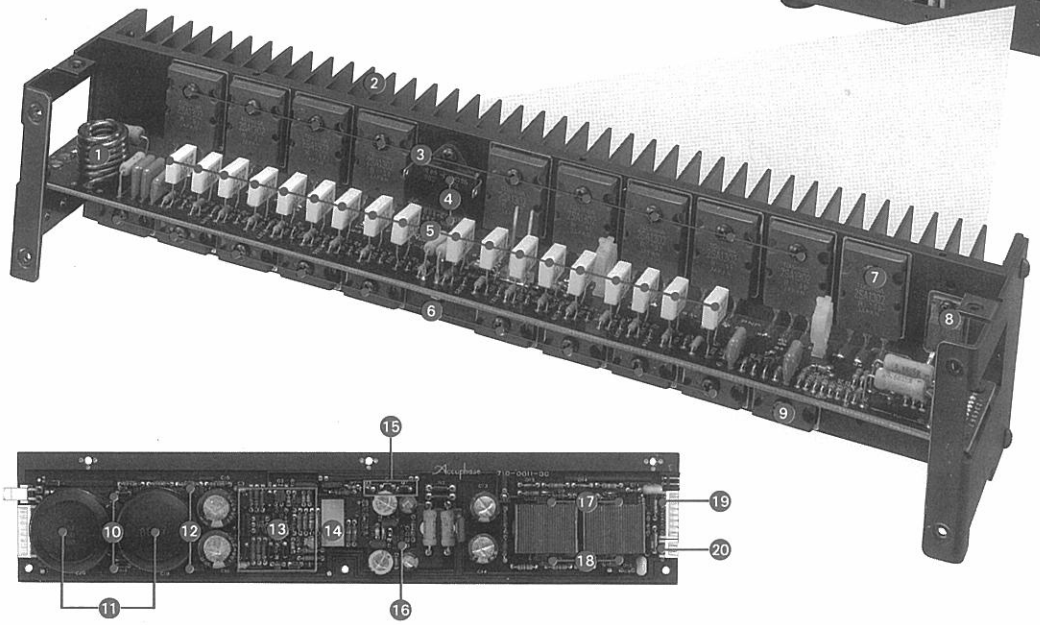


Professional Series

All stages push-pull configuration. 9-parallel push-pull power stages guarantee stereo=300
By using the low impedance setting, even an extremely low impedance speaker of 0.5 ohm

The output transistors, the main source of heat in the amplifier, are mounted on a large heat sink and are cooled by a fan mounted inside the front panel by forcibly drawing cool air from the intake louvers inside the front panel. The photograph below shows a heat sink with a pre-drive board, which constitutes an amplifier unit for single channel, and output transistors.





1. Phase-correcting inductor
2. Forced-cooling heat sink
3. PNP output transistors for 9-parallel push-pu
4. Thermal sensor for controlling cooling fan
5. Emitter resistor array for final transistors
6. NPN output transistors for 9-parallel push-pu
7. PNP transistor for cascode driver
8. P channel power MOS FET for driver
9. NPN transistor for cascode driver
10. Rectifier for high-voltage power
11. Capacitor for filter of driver stage
12. Transistor for ripple filter
13. Cascode pure complementary push-pull inpu amplifer circuits
14. Relay for bridge connection switching
15. Buffer amp for minus input
16. IC for servo amp
17. PNP transistor for cascode predriver
18. NPN transistor for cascode predriver
19. NPN transistor for current limiter
20. PNP transistor for current limiter

Based on the high-class power of the PRO-10 (500W/ch to 8 ohms, 3U), Accuphase PRO-6 has been developed in the pursuit of a relatively compact amplifier of 2U. It ensures a power of as high as 500W/ch to 2-ohm loads, 450W/ch to 4-ohm loads, and 300W/ch to 8-ohm loads.

Furthermore, the PRO-6 is equipped with an Accuphase's original "low-load selector switch," which enables the amplifier to supply 350W/ch to 0.5- to 1-ohm loads. A power of 1,000W can also be supplied to 4-ohm loads and 900W to 8-ohm loads when the PRO-6 is used as a bridged monophonic amplifier. In addition, the PRO-6 can suppy 700W to 1-ohm loads, by using "low-load selector swith."

Of course, the circuit technology Accuphase is so proud of, "all stage push-pull direct coupling," is also adopted, so that the upper-limit performances and natural, rich sound quality can be realized.

The internal circuits are cooled effectively by the selected low-noise forced-air cooling system through the intake louvers on the front panel, and expelled through the exhausts on the side panels. Moreover, the temperature inside the PRO-6 is always monitored and, according to which, the number of revolutions of the cooling fan is automatically changed in three steps.

As the input terminals, XLR-3-31 and XLR-3-32 connectors, and balanced phone jacks are provided. Moreover, an "optional circuit board" is equipped, so that an external input filter circuit can be freely incorporated.

Accuphase is convinced that all these features of the PRO-6 can fully satisfy the high-quality sound requirements of long period of durable professional use.

Powerful Output Stage Consisting of 9-Parallel Push-Pull Circuits per Channel, and Dissipating a Total Heat of 2,700W. 500W/ch into 2 ohms, 450W/ch into 4 ohms, 300W/ch into 8 ohms, and Monophonic 1,000W into 4 ohms.

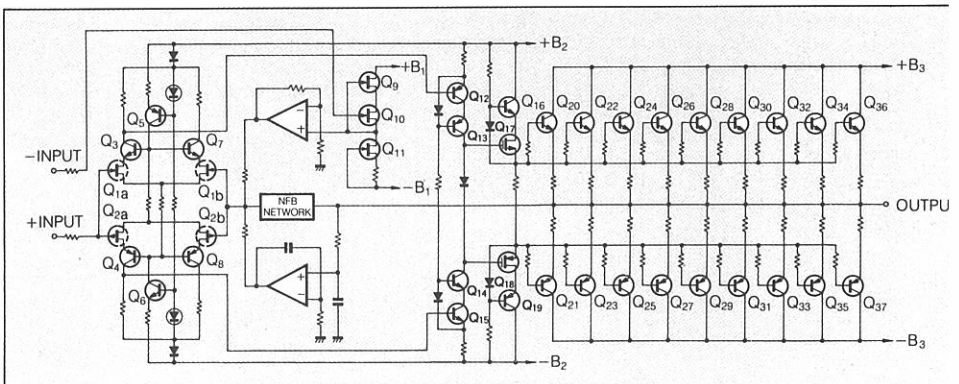
It is important that the output impedance of the amplifier be as close to zero as possible, and that the amplifier be capable of supplying adequate energy to even low-impedance loads. For these purposes, the output stage of an amplifier must be so designed as to produce as high a current as possible. The output stage of the PRO-6 is formed by 9-parallel push-pull circuits per channel, each circuit consisting of large-scale, bipolar transistors with a maximum heat dissipation (Pc) of 150W. This output stage dissipates a total heat of as high as 2,700W. The PRO-6 can consequently supply 300W per channel into an 8-ohm load, 450W/ch into a 4-ohm load, and 5000W/ch into a 2-ohm load. The PRO-6 can also be used as a monophonic amplifier supplying 900W into an 8-ohm load, and 1,000W into a 4-ohm load, when the OPERATION selector switch is set to the MONO position.

Low-Load Impedance Selector Switch Selecting 350W/ch at 0.5- to 1-ohm Stereo Output or 700W Monophonic Output into 1-ohm Loads

So that the PRO-6 can supply sufficient power to even low-impedance loads, the power amplifier is equipped with an Accuphase's "load impedance selec switch."

If the impedance of the load is as low as 2 ohms, t power amplifier is required to supply so high a volta to the load. Instead, the capability to supply a lar current is demanded from the amplifier. The outp stage of the PRO-6 operates on a high DC voltage that the power amplifier can supply adequate power loads having a relatively high impedance of 4-ohm higher. However, if loads having an impedance as l as 1-ohm or so are connected to the PRO-6, a lar current is allowed to flow through the loads and, cons quently, the output transistors of the power amplif itself are damaged.

The low-load impedance switch is to re t direct current to be applied on the output elements ar at the same time, to supply a sufficient amount current to the loads. This switch has made it possible supply 350W/ch into 0.5- or 1-ohm loads. In additic 700W can be supplied into 1-ohm and 750W into 2-oh loads when the PRO-6 is used as a monophonic a plifier.



Circuit Diagram of PRO-6 Amplifier Section

(8 ohms), monophonic=900W (8 ohms).
reo=350W/ch) can be fully driven.

Accuphase PRO-6

GUARANTY SPECIFICATIONS

Guaranty specifications and performance curves are measured when a 20Hz highpass filter is in the OFF position.

- **Performance Guaranty**
  All Accuphase product specifications are guaranteed as stated.

- **Rated output (20 to 20,000Hz)**
  Stereophonic operation (both channels driven)
  350W/ch 0.5-ohm load (when low-impedance load is driven)
  350W/ch 1-ohm load (when low-impedance load is driven)
  500W/ch 2-ohm load
  450W/ch 4-ohm load
  300W/ch 8-ohm load
  Monophonic operation (bridge connection)
  700W 1-ohm load (when low-impedance load is driven)
  750W 2-ohm load (when low-impedance load is driven)
  1,000W 4-ohm load
  900W 8-ohm load

- **Total harmonic distortion (20 to 20,000Hz, 0.25W to rated output)**
  Stereophonic operation (both channels driven)
  0.2% 0.5-ohm load
  0.1% 1- to 2-ohm load
  0.05% 4- to 16-ohm load
  Monophonic operation (bridge connection)
  0.2% 1- to 2-ohm load
  0.05% 4- to 16-ohm load

- **IM distortion (SMPTE-IM)**
  0.05%

- **(**
  dB (stereophonic operation)
  38.0dB (monophonic operation)

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

- **Load impedance**
  0.5 to 16 ohms (stereophonic operation)
  1 to 16 ohms (monophonic operation)

- **Damping factor (8-ohm load at 50Hz)**
  200 (stereophonic operation)
  100 (monophonic operation)

- **Input impedance**
  20k ohms (unbalanced)
  40k ohms (balanced)

- **Input sensitivity (8-ohm load)**
  0.71V 100W output (stereophonic operation)
  0.36V 100W output (monophonic operation)
  1.23V Rated output (stereophonic operation)

- **S/N ratio (A-weighted, input-shorted)**
  113dB (at rated output)

- **Output meters**
  LED display (−13, −8, −3, 0, +3dB)
  8-ohm load, 150W=0dB

- **Input attenuator**
  0 to −20dB in 1dB steps, −∞

- **Input terminals**
  Phone jacks For both channels A and B, balanced
  XLR (cannon) connector XLR-3-31 and XLR-3-32 for channels A and B
  Pins: ① ground, ② non-inverted, ③ inverted

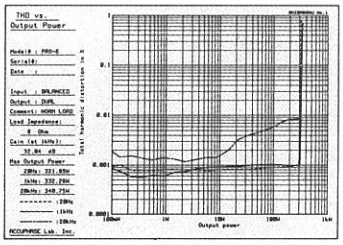
- **Output terminals**
  Two-pole banana jacks
  (can be adapted for XLR-type or phone jacks by installing optional board)

- **Cooling method**
  Forced-air cooling method (front-panel air-intake louvers, side-panel exhaust)
  Three-speed cooling fan (automatically operates when high temperature detected in heat sink)

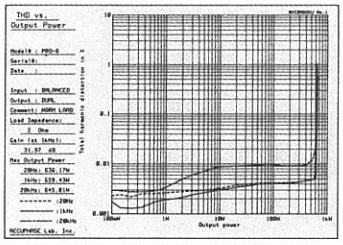
- **Semiconductors**
  79 transistors, 18 FETs, 10 ICs, 132 diodes

- **Power requirements and consumption**
  100V, 117V, 200V, 220V, 240V, 50/60Hz
  100W no signal (NORMAL operation)
  83W no signal (LOW operation)
  950W at rated output into 8-ohm load

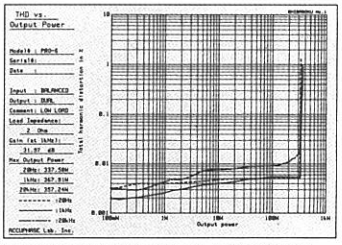
- **Dimensions and weight**
  482.5mm (19") (W)×105mm (4-1/8") (max. height)×424mm (16-11/16") (D)
  (Refer to dimensional diagram.)
  Panel height: Two units
  Panel size: 482.5mm (19") (W)× 88mm (3-7/16") (H)
  Rack mounting: Can be mounted on standard 19-inch rack
  Weight: 21.0kg (46.3 lbs) net
  25.2kg (55.6 lbs) in shipping carton



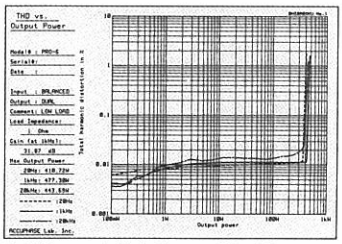
Total Harmonic Distortion vs. Output Power
Load: 8 ohms, Both channels driven



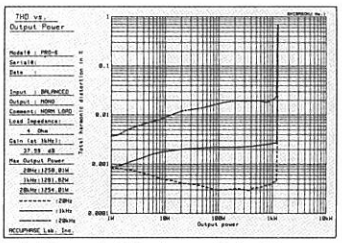
Total Harmonic Distortion vs. Output Power
Load: 2 ohms, Both channels driven



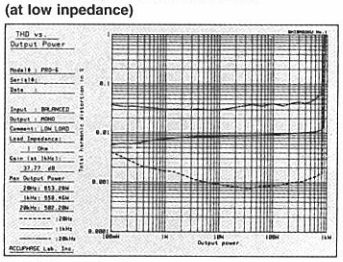
Total Harmonic Distortion vs. Output Power
Load: 2 ohms, Both channels driven
(at low inpedance)



Total Harmonic Distortion vs. Output Power
Load: 1 ohm, Both channels driven
(at low inpedance)



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



Total Harmonic Distortion vs. Output Power
Load: 1 ohm, Bridge connection
(at low inpedance)

5 *A Large Heat-Sink and Front-Intake and Side-Vent Forced-Air System are Combined for Noiseless Protection Against Overheating*

In professional amplifiers, countermeasures against overheating are indispensable. In the PRO-6, these hav[illegible]en 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 fan on the back of the front panel through intake louvers on the front panel and expelled from exhaust vents at the sides. The fan monitors the temperature of the heat sink and automatically changes the number of revolutions in three steps.

4 *Driving Stage of MOS FET Cascode Push-Pulls Improving Major Performances*

The circuit stage preceding to the final stage is an important determinant of the quality of the reproduced sound, and calls for high swing voltage and power. The driving stage of the PRO-6 is configured of "MOS FET cascode push-pull circuits," which are Accuphase's original circuit technique, and hence has performances equivalent to a class A non-switching driver. The cascode configuration has been adopted to make a substantial improvement in the high-frequency characteristics. Consequently, the PRO-6's stable, distortion-free operations are assured over a wide output range—from extremely low to high.

3 *DC Servo, Direct-Coupling Amplifier*

The input signals are directly coupled. Therefore, if equipment causing a large DC drift was connected, the drift would be amplified and output, consequently damaging the speakers. However, this does not occur with the PRO-6, because this amplifier employs Accuphase's original "DC servo system" and effectively cuts off the DC components. Moreover, the DC drift of the amplifier itself, which may be caused by temperature fluctuation, is stabilized.

2 *Three Pairs of Input Terminals; 2-Pole Banana Jacks or Optional XLR Connectors for Output Terminals*

A balanced phone input jack is provided for each channel. In addition, XLR-3-31 and XLR-3-32 connectors are available for each channel. The polarity of the XLR-type connectors are ① ground, ② non-inverted signal, and ③ inverted signal.

The standard output terminal is a 2-pole banana jack. However, connection of an XLR-type connector or phone jack is possible by replacing the mounting board with an optional conversion board.

1 *Input Attenuators Incrementing in 1-dB Steps*

The input attenuators can adjust the gains from 0 to −20dB in steps of 1dB, assuring accurate level control. The control knob of these attenuators is embedded in thick mold and does not project from the surface of the front panel, so that the settings of the control knob will not be changed by accident.

6 *Built-in 20Hz Highpass Filter*

To cut off unwanted components in the extra low range, 20Hz, 6dB/octave highpass filter is provided. This filter can also be switched off by using the selector switch inside the unit.

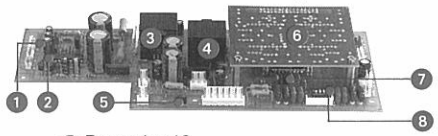
7 *5-Segment LED Output Meters*

Each of the bar graph type output meters consists of 5-segment LED indicators having excellent environmental durability. Two scales are provided on the output meters: one in dBs and the other in watts (at 8-ohm load).

An "input signal indicator" is provided to check the presence or absence of the input signal.

10 *Optional Circuit Board Providing Ancillary Input Circuit*

An optional circuit board can be incorporated in the PRO-6 to create a lowpass, highpass, or bandpass filter as you like. This circuit board can be equipped with optional parts and plugged into the PRO-6. Therefore, you can provide your PRO-6 with, say, balanced, feedback-type 2- + 1-pole 18dB/octave filter.

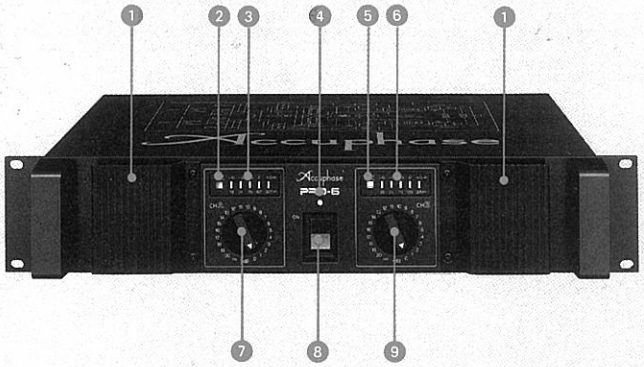


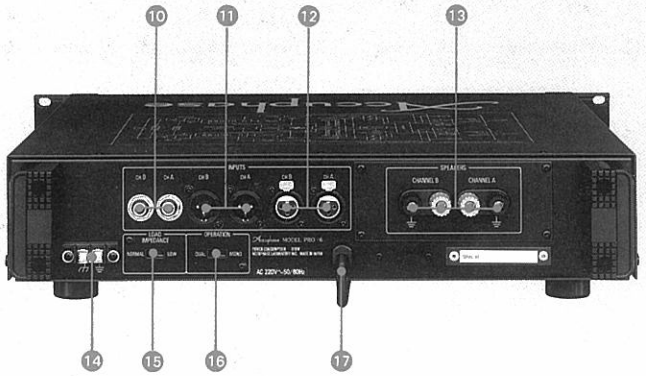
1. Protection IC
2. Timer/counter IC for power supply control
3. Transistor for controlling fan
4. ±15V voltage regulator for optional circuit
5. Transistor for controlling rash-current protection relay
6. Optional circuit board
7. IF for controlling input signal indicator
8. 20Hz highpass filter switch

Input circuit mounted on optional circuit board

Accuphase PRO-6

Panel controls

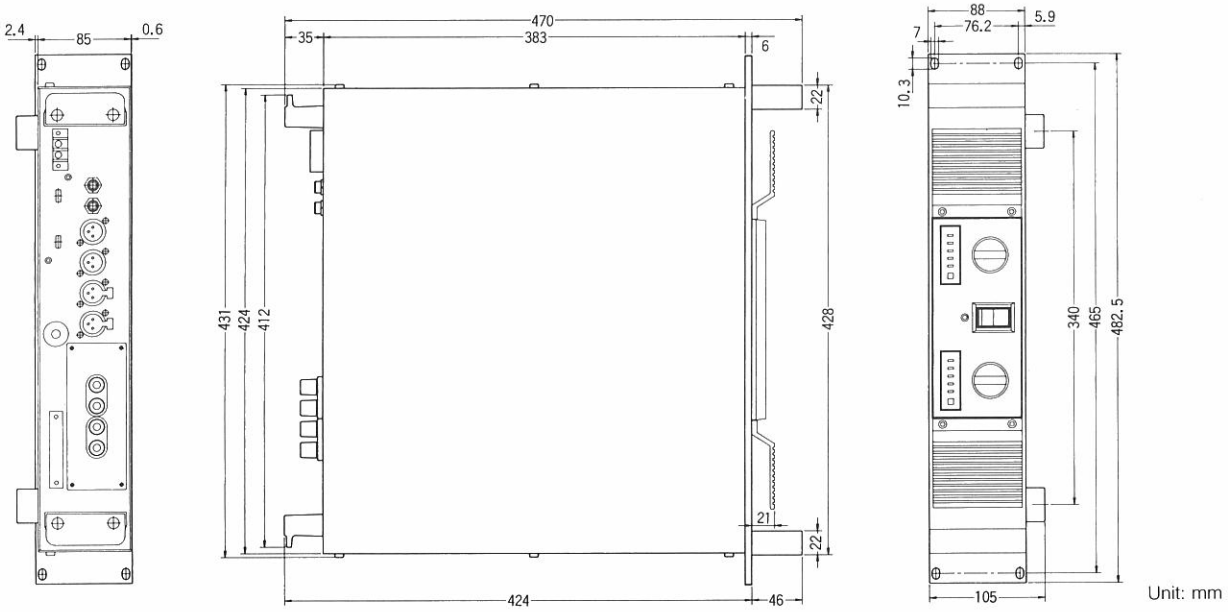




1. **Cool-air intake louvers** (rear view)
2. **Input signal indicator for channel A**
3. **LED output meters for channel A**
   (LED at the most significant digit position lights when overheating occurs in PRO-6)
4. **Power LED which lights in red on power application or with load impedance switch at normal position, and in green with load impedance switch at low position**
5. **Input signal indicator for channel B**
6. **LED output meter for channel B**
7. **Input attenuator for channel A** (use this attenuator for monophonic operation)
8. **Power switch**
9. **Input attenuator for channel B**
10. **Phone stereo jacks** (balanced/unbalanced input)
11. **XLR-3-32 input connectors** (equivalent to XLR-3-11C)
12. **XLR-3-31 input connectors** (equivalent to XLR-3-12C)
13. **Speaker output terminals; 2-pole banana jacks as standard. Phone jacks or XLR-type connectors available by installing an optional board**
14. **Ground terminal board** (ground line selectable)
15. **Load impedance selector switch**
16. **Bridge operation selector switch (MONO)**
17. **AC power cord**

■ **Simple internal layout**

■ **Dimensions**



Unit: mm

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