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## CONTRACTOR SERIES

## AC Power Draw and Thermal Dissipation

This document provides detailed information about the amount of power and current drawn from the AC mains by the CH2 amplifier and the amount of heat produced under various conditions. The calculations presented here are intended to provide a realistic and reliable depiction of the amplifier. The following assumptions or approximations were made:

- The amplifier's available channels are loaded and full power is being delivered.
- The amplifier efficiency at standard 1-kHz power is estimated to be 65%.
- Quiescent power draw is approximately 60 watts.
- When running at full speed, typical power draw for the internal fan is 12 watts or less.
- The estimated duty cycles take into account the typical crest factor for . each type of source material.
- Duty cycle of pink noise is 50%.

CH2

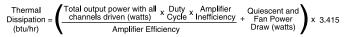
- Duty cycle of highly compressed rock 'n' roll midrange is 40%.
- Duty cycle of rock 'n' roll is 30%.
- Duty cycle of background music is 20%.
- Duty cycle of continuous speech is 10%.
- Duty cycle of infrequent, short duration paging is 1%.

Here are the equations used to calculate the data presented in Figure 1:

AC Mains Power Draw (watts)	=	Total output power with all x Duty channels driven (watts) x Cycle	+	Quiescent and Fan Power Draw (watts)
		Amplifier Efficiency		

The following equation converts power draw in watts to current draw in amperes:

The value used for Power Factor is 0.83. The Power Factor variable is needed to compensate for the difference in phase between the AC mains voltage and current. The following equation is used to calculate thermal dissipation:



The value used for inefficiency is 0.35 (1.00-0.65). The factor 3.415 converts watts to btu/hr. Thermal dissipation in btu is divided by the constant 3.968 to get kcal. If you plan to measure output power under real-world conditions, the following equation may also be helpful:

LOAD 70V,100V DUAL 600W / 140V, 200V BRIDGE 1200W  $4\Omega$  DUAL /  $8\Omega$  BRIDGE  $8\Omega$  DUAL /  $16\Omega$  BRIDGE AC Mains AC Mains AC Mains Current Draw(Amps) Thermal Dissipation Current Draw(Amps) Thermal Dissipation Duty Current Draw(Amps) Thermal Dissipation Power Power Power Cycle Draw Draw Draw 100-120 230-240 230-240 btu/hr kcal/hr 100-120 230-240 btu/hr kcal/hr 100-120 btu/hr kcal/hr (Watts) (Watts) (Watts) 1308 330 237 983 9.8 4.9 10.8 296 675 6.7 3.4 940 50% 1075 5.4 1419 552 5.5 2.8 793 200 40% 872 8.8 4.4 1175 260 8.0 4.0 1088 274 798 3.4 235 2.2 614 218 30% 669 6.7 993 4.3 646 163 6.1 3.1 867 429 466 20% 4.7 2.4 690 174 3.1 1.6 499 126 306 429 4.3 2.2 646 163 10% 263 183 1.8 1.4 89 2.6 1.3 448 113 352 245 2.5 1.3 426 107

Figure 1 Power Draw, Current Draw and Thermal Dissipation at Various Duty Cycles



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CH2