crown

CE 1000

CE SERIES

AC Power Draw and Thermal Dissipation

The information provided on this page is calculated data based on driving both channels to rated output using the 1 kHz Maximum Average Power rating method.

Other parameters used in calculation include a conservative idle current estimate of 90 watts and a conservative estimate of effeciency at 65%.

Information is provided only for getting an idea of current draw and heat produced. Actual performance will vary depending on environment, program material, load, signal, and AC mains voltage and frequency.

Values of calculated current draw are intended to represent average draw corresponding to the thermal breaker requriements that should be met to handle the amplifier as a load on the AC mains.

Peak current draw with dynamic program material may be significantly higher. Thermal information is provided to assist with calculating air conditioning needs. The data here should not be construed as specifications.

Duty cycle of various program material:

Individual speech: 10%
Acoustic/chamber music: 20%
Full-range rock music: 30%
Compressed rock music: 40%
Pink noise: 50%

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

$$\text{AC Mains Power Draw (watts)} = \frac{\text{Total output power with all channels driven (watts)} \times \text{Duty Cycle}}{\text{Amplifier Efficiency (.65)}} + \text{Quiescent Power Draw (watts)}$$

The quiescent power draw is a maximum value and includes power drawn by the fan. The following equation converts power draw in watts to current draw in amperes:

$$\text{Current Draw (amperes)} = \frac{\text{AC Mains Power Draw (watts)}}{\text{AC Mains Voltage} \times \text{Power Factor (.83)}}$$

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

$$\text{Thermal Dissipation (btu/hr)} = \left(\frac{\text{Total output power with all channels driven (watts)} \times \text{Duty Cycle} \times .35}{\text{Amplifier Efficiency (.65)}} + \text{Quiescent Power Draw (watts)} \right) \times 3.415$$

The value used for inefficiency is 1.00-efficiency. 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:

$$\text{Thermal Dissipation (btu/hr)} = \left(\frac{\text{Total measured output power from all channels (watts)} \times .35}{\text{Amplifier Efficiency (.65)}} + \text{Quiescent Power Draw (watts)} \right) \times 3.415$$

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	LOAD														
	2 Ohm Stereo / 4 Ohm Bridge					4 Ohm Stereo / 8 Ohm Bridge					8 Ohm stereo / 16 Ohm Bridge				
Duty Cycle	AC Mains Power Draw (watts)	Current Draw (Amps)		Thermal Dissipation		AC Mains Power Draw (watts)	Current Draw (Amps)		Thermal Dissipation		AC Mains Power Draw (watts)	Current Draw (Amps)		Thermal Dissipation	
		120V	240V	btu/hr	kcal/hr		120V	240V	btu/hr	kcal/hr		120V	240V	btu/hr	kcal/hr
50%	952	9.6	4.8	1337	337	782	7.9	3.9	1135	286	513	5.2	2.6	813	205
40%	779	7.8	3.9	1131	285	644	6.5	3.2	969	244	428	4.3	2.2	712	179
30%	607	6.1	3.0	925	233	505	5.1	2.5	804	203	344	3.5	1.7	611	154
20%	435	4.4	2.2	719	181	367	3.7	1.8	638	161	259	2.6	1.3	510	129
10%	262	2.6	1.3	513	129	228	2.3	1.1	473	119	175	1.8	0.9	408	103

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A Harman International Company

Crown International, Inc.
1718 W. Mishawaka Rd.
Elkhart, IN 46517-9439
TEL: 574-294-8200
FAX: 574-294-8FAX
www.crownaudio.com

For more details refer to the applicable Operation Manual or contact Crown Factory Service. The provided data should not be construed as specifciations.

04/05 138366-1