AMPLIFIER RESEARCH LARGE AMPLIFIER POWER AND COOLING REQUIREMENTS

COOLING SYSTEM ELEMENTS	1000L	2500L		7500L	10,000L	10,000L	250W1000A	500W1000A	1000W1000C	2000W1000A	3000W1000	4000W1000	200S1G4/240S1G3	400S1G4/450S1G3	3500A100	250A250	250A250A	2500A250	5,000A250	10,000A250	500T1G2	500T2G8	500T8G18	1000T1G2	1000T2G8	1000T8G18
TYPE OF SYSTEM		WATER COOLED	AIR COOLED			AIR COOLED																				
Heat Transfer Medium (internal)																										
Oil		X	X	X	X	X																				
Water																										
None	X						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Heat Exchange																										
Oil/Water		X		X	X																					
Oil/Air			X			X																				
Water/Air																										
Heatsink							X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Heat Dissipation																										
Water		X		X	X																					
Air	X		X			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
PRIMARY POWER																										
To be supplied through customer provided circuit breaker. With slow acting response of 400%. Overload for 1 second before trip	3 Phase Common Trip 380 ±5% VAC 50/60Hz 35 Amps Per Phase Min. 208 ±5% VAC 50/60Hz 60 Amps Per Phase Min.	3 Phase Common Trip 380 ±5% VAC 50/60Hz 40 Amps Per Phase Min. 208 ±5% VAC 50/60Hz 60 Amps Per Phase Min.		3 Phase Common Trip 380 ±5% VAC 50/60Hz 175 Amps Per Phase Min. 208 ±5% VAC 50/60Hz 225 Amps Per Phase Min.	3 Phase Common Trip 380 ±5% VAC 50/60Hz 175 Amps Per Phase Min. 208 ±5% VAC 50/60Hz 225 Amps Per Phase Min.	3 Phase Common Trip 380/415 ±5%VAC 50/60Hz 175 Amps Pwer Phase 50Hz 208 ±5%VAC 50/60Hz 225 Amps Per Phase Min	1 Phase Common Trip 120/240 VAC 40/400Hz 17 Amp @ 120V 8.5 Amp @ 240V	1 Phase Common Trip 200-250 ±5% VAC 50/60Hz 40 Amps Per Phase Min.	3 Phase Common Trip 200-240 VAC Delta or 360-435 VAC Wye 50/60Hz 30 Amps Per Phase Min.	3 Phase Common Trip 200-240 VAC Delta or 360-435 VAC Wye 50/60Hz 2 @ 30 Amp Per Phase Min. 1@ 10 Amp Single Phase	3 Phase Common Trip 200-240 VAC Delta or 360-435 VAC Wye 50/60Hz 3 @ 30 Amps Per Phase Min. 1@10 Amps Single Phase	3 Phase Common Trip 200-240 VAC Delta or 360-435 VAC Wye 50/60Hz 4 @ 30 Amps Per Phase Min. 1@10 Amps Single Phase	1 Phase Common Trip 120-240 VAC 50/60Hz 20 Amp Min.	1 phase common trip 120-240 VAC, 50/60Hz 2 @ 20 amps min, 1 @ 7.5 amps	3 Phase Common Trip 180-267VAC Delta(4 wire) 360-435VAC Wye(5 wire) 47/63Hz 15,000 Watts @ .99PF	Single Phase 180-264 VAC 47-440Hz 1400 Watts @ .99 PF	Single phase common trip 180-264 VAC, 47-440Hz 10 amps	3 Phase Common Trip 346 - 480 VAC 47/63 Hz 25 Amps per Phase min 200-240 VAC 47/63Hz 50 Amps per Phase min	3 Phase Common Trip 346 - 480 VAC 47/63 Hz 50 Amps per Phase min. 200-240 VAC 47/63Hz 100 Amps per Phase min	3 Phase Common Trip 346 - 480 VAC 47/63 Hz 100 Amps per Phase min. 200-240 VAC 47/63Hz 200 Amps per phase min	3 Phase Common Trip 200/208/240 VAC 50/60Hz 20 Amps Per Phase Min.	3 Phase Common Trip 200/208/240 VAC 50/60Hz 20 Amps Per Phase Min.	3 Phase Common Trip 200/208/240 VAC 50/60Hz 20 Amps Per Phase Min.	3 Phase Common Trip 200/208/240 VAC 50/60Hz 40 Amps Per Phase Min.	3 Phase Common Trip 200/208/240 VAC 50/60Hz 40 Amps Per Phase Min.	3 Phase Common Trip 200/208/240 VAC 50/60Hz 40 Amps Per Phase Min.
WATER COOLING																										
Flow Rate (Modulated to Zero)																										
Maximum		5 gallon/min 19 liter/min		16 gallon/min 60 liter/min	8 gallon/min 30 liter/min	8496 CFM 4010L/Sec																				
Supply Temperature																										
Preferred		10°C		10°C	10°C	20°C																				
Maximum		20°C		20°C	20°C	40°C																				
Supply Pressure																										
Preferred		35 lb/in^2 2.5 kg/cm^2		35 lb/in^2 2.5 kg/cm^2	35 lb/in^2 2.5 kg/cm^2	75,000 Watts																				
Maximum		60 lb/in^2 4.2 kg/cm^2		60 lb/in^2 4.2 kg/cm^2	60 lb/in^2 4.2 kg/cm^2	Front																				
Heat Dissipated		11,000 Watts		80,000 Watts	60,000 Watts	Rear																				
AIR COOLING																										
Flow Rate Required																										
Maximum	1190 CFM 562 l/sec	562 CFM 265 l/sec	1522 CFM 718 l/sec	1020 CFM 481 l/sec	1020 CFM 481 l/sec	8496 CFM 4010L/Sec	750 CFM 354 l/sec	2000 CFM 944 l/sec	2100 CFM 991 l/sec	4200 CFM 1982 l/sec	6300 CFM 2973 l/sec	8400 CFM 3964 l/sec	1300 CFM 614 l/sec	2700 CFM 1274 l/sec	2200 CFM	300 CFM	300 CFM	1500 CFM	3000 CFM	6000 CFM	400 CFM 190 l/sec	400 CFM 190 l/sec	300 CFM 145 l/sec	900 CFM 425 l/sec	900 CFM 425 l/sec	700 CFM 330 l/sec
Supply Temperature																										
Preferred	20°C	20°C	20°C	20°C	20°C	20°C	20°C	20°C	20°C	20°C	20°C	20°C	20°C	20°C	20°C	20°C	20°C	20°C	20°C	20°C	20°C	20°C	20°C	20°C	20°C	20°C
Maximum	30°C	35°C	27°C	30°C	30°C	40°C	40°C	40°C	40°C	40°C	40°C	40°C	40°C	40°C	40°C	40°C	40°C	40°C	40°C	40°C	40°C	40°C	40°C	40°C	40°C	40°C
Heat Dissipated	14,000 Watts	4300 Watts	15,300 Watts	15,000 Watts	15,000 Watts	75,000 Watts	2100 Watts	4000 Watts	8700 Watts	17,400 Watts	27,000 Watts	35,700 Watts	2150 Watts	4500 Watts	15,000 Watts	800 Watts	1400 Watts	12,000 Watts	22,500 Watts	45,000 Watts	4000 Watts	3500 Watt	4000 Watts	8000 Watts	7000 Watts	8000 Watts
Air Intake	Sides and Front	Front	Sides and Front	Front	Front	Front	Bottom	Bottom	Bottom and Front	Bottom and Front	Bottom and Front	Bottom and Front	Bottom	Front/Bottom	Front/Bottom	Sides		Front	Sides, Front	Sides, Front	Rear	Rear	Rear	Rear	Rear	Rear
Air Exhaust	Rear	Rear	Rear	Rear	Rear	Rear	Top	Top	Top	Top	Top	Top	Rear	Rear	Rear	Rear		Rear	Rear	Rear	Rear	Rear	Rear	Rear	Rear	Rear
SPECIAL NOTES																										
	Driver 1 fan @ ∪ 340 CFM Final 1 fan @ ∪ 850 CFM	Driver 1 fan @ ∪ 350 CFM Final 2 fans @ ∪ 106 CFM Heat Exchg. ∪ 1400 CFM		Driver 1 fan @ ∪ 350 CFM Final 2 fans @ ∪ 106 CFM Heat Exchg. ∪ 800 lbs. Amp Assy ∪ 1300 lbs.	Driver 1 fans @ ∪ 350 CFM Final 2 fans @ ∪ 106 CFM Heat Exchg. ∪ 800 lbs. Amp Assy ∪ 1300 lbs.	Driver 1 Fan@ = 350 CFM Final 2 Fans @ = 106 CFM Heat Exchg. = 7800 CFM Amp Assy = 1300 lbs Heat Exchg = 1400 lbs	Cooling fans 6 @ 130 CFM ea.	Cooling fans 10 @ 200 CFM ea.																
	1000L	**2500L**		**7500L**	**10,000L**	**10,000L (Air Cooled)**	**250W1000A**	**500W1000A**	**1000W1000B**	**2000W1000A**	**3000W1000**	**4000W1000**	**200S1G4/240S1G3**	**400S1G4/450S1G3**	**3500A100**	**250A250**	**250A250A**	**2500A250**	**5000A250**	**10,000A250**	**500T1G2**	**500T2G8**	**500T8G18**	**1000T1G2**	**1000T2G8**	**1000T8G18**
DIMENSIONS (W x H x D)																										
														Cabinet 1: 56.1 x 109 x 67.1 cm 22.1 x 43.0 x 26.4 in										
				2 racks each	2 racks each	1 rack								Cabinet 2:												
	56.1 x 149.9 x 58.4 cm	56.1 x 149.9 x 58.4 cm	56.1 x 149.9 x 58.4 cm	68.8 x 149.9 x 82.6 cm	68.8 x 149.9 x 82.6 cm	68.8 x 171.2 x 82.6 cm	50.3 x 47.0 x 61.0 cm	56.0 x 152.5 x 58.4 cm	68.8 x 152.5 x 82.5 cm	201 x 158 x 160 cm	272 x 158 x 160 cm	340 x 158 x 163 cm	56.1 x 109 x 67.1 cm	56.1 x 152.5 x 82.5 cm	56.1 x 152.5 x 99.6 cm	50.3 x 42.7 x 55.1 cm	50.3 x 42.7 x 55.1 cm	68.8 x 132 x 88.9 cm	68.8 x 182.9 x 88.9 cm	142.3 x 182.9 x 88.9 cm	50.3 x 50.8 x 68.6 cm	50.3 x 34.2 x 68.6 cm	50.3 x 40.6 x 68.6 cm	56.0 x 152.0 x 76.2 cm	56.0 x 152.0 x 76.2 cm	56.0 x 152.0 x 76.2 cm
	22.1 x 59.0 x 23.0 in	22.1 x 59.0 x 23.0 in	22.1 x 59.0 x 23.0 in	27.1 x 59.0 x 32.5 in	27.1 x 59.0 x 32.5 in	27.1 x 67.4 x 32.5 in	19.8 x 18.5 x 24.0 in	22.1 x 60.0 x 23.0 in	27.1 x 60.0 x 32.5 in	79 x 62 x 63 in	107 x 62 x 63 in	134 x 62 x 64 in	22.1 x 43.0 x 26.4 in	22.1 x 60.0 x 32.5 in	22.1 x 60.0 x 39.2 in	19.8 x 16.8 x 21.7 in	19.8 x 16.8 x 21.7 in	27.1 x 52 x 35 in	27.1 x 72 x 35 in	56 x 72 x 35 in	19.8 x 20.0 x 27.0 in	19.8 x 13.45 x 27.0 in	19.8 x 16.0 x 27.0 in	22.1 x 60.0 x 30.0 in	22.1 x 60.0 x 30.0 in	22.1 x 60.0 x 30.0 in
						1 rack																				
						68.8 x 149.9 x 97.8 cm								Allow 61 cm (24 in) behind												
						27.1 x 59.0 x 38.5 in								cabinets for interconnect												