

# AMPLIFIER

Amplifiers

## Specifications

### PA Series Power Amplifier Characteristics

PA-Series, Class-AB Amplifiers

Amplifier Model	PA 25E	PA 100E	PA 500L	PA 1000L
Rated Sinusoidal Power Output (matched resistive load)	48 W 5.3 Ω	147 W 2.9 Ω	500 W	1000 W
Maximum Continuous Sinusoidal VA Output. 0.5 pf	48 VA	147 VA	700 VA	1400 VA
Frequency Range at Rated Power	10 Hz - 10 kHz	10 Hz - 10 kHz	10 Hz - 14 kHz	10 Hz - 14 kHz
Total Harmonic Distortion at Rated Output 20 Hz - 10 kHz	Typically 0.3 %	Typically 0.5 %	Typically 0.2 %	Typically 0.2 %
Maximum Output Voltage	16 V rms	20 V rms	40 V rms	80 V rms
Maximum no Load Voltage	24 V rms	32 V rms	45 V rms	86 V rms
Voltage Regulation	1 %	3 %	2 %	2 %
Output Current at Rated VA	2.7 A rms	7 A rms	18 A rms	18 A rms
Maximum Output Current	3 A rms	7 A rms	18 A rms	18 A rms
Random Output Current	5.9 A pk	14 A pk	54 A pk	54 A pk
Overcurrent Trip Level	4.2 A rms	10 A rms	20 A rms	20 A rms
Input Sensitivity for Maximum Output (400 Hz)	1.0 V rms	1.0 V rms	1.0 V rms	1.0 V rms
Signal to Noise Ratio	> 75 dB	> 75 dB	> 75 dB	> 80 dB
Amplifier Efficiency	59 %	58 %	59 %	59 %
Protection	Fast acting current limit	Fast acting current limit	Output device protection	Output device protection

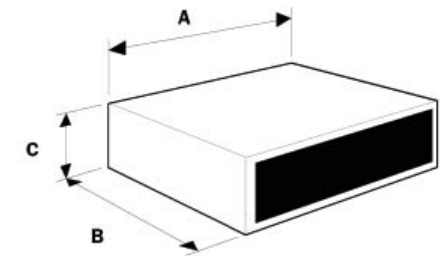
PA Series used with: V101/2, V201/3, V406/8, V450/1, V455/6, V550/1, V555/6, V650/1, V721/2 shakers.

### HPA-K, Class-D Amplifier

Power Range	5 kVA
Input Sensitivity	1 V rms for 100 V rms output (Differential Input)
Rated Output Voltage	100 V rms (Sine)
Input Impedance	10 K Ohm nominal
Signal to Noise Ratio	> 68 dB
Amplifier Efficiency	> 90 %
Module Efficiency	93 %
Total Harmonic Distortion	Typically 0.15 % when measured into resistive load
Switching Frequency	150 kHz
Modulation Range	DC to 5 kHz
Continuous Output Current	50 A rms (Sine and Random)
Transient Output Current	150 A for 100 rms
Full Power Bandwidth	> 75 dB

HPA-K used with: V650 and V780 shakers.

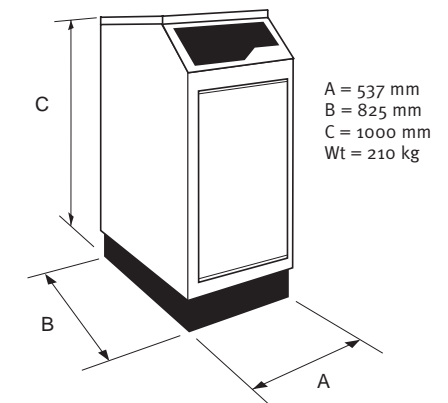
### Dimensions



### PA Amplifiers

Amplifier	Wt kg	A mm	B mm	C mm
PA 25E	9	488	337	92
PA 100E	15	488	337	92
PA 500L	20	448	412	188
PA 1000L	35	482	505	188

### Dimensions





## SPA-K and DPA-K Amplifiers

Power Range	8-50 kVA in 8 kVA increments (SPA-K) 70-280 kVA in 5 kVA increments (DPA-K)
Input Sensitivity	1 V rms for 100 V rms output (Differential Input)
Rated Output Voltage	100 V rms (Sine)
Input Impedance	10 K Ohm nominal
Signal to Noise Ratio	> 68 dB
Amplifier Efficiency	> 90 %
Module Efficiency	93 %
Total Harmonic Distortion	Typically 0.15 % when measured into resistive load
Switching Frequency	150 kHz
Modulation Range	DC to 10 kHz
Continuous Output Current	80 A rms (Sine and Random) per 8 kVA increment
Transient Output Current	240 A for 100 rms per 8 kVA increment

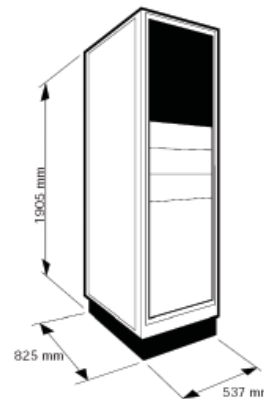
SPA-K used with: V830, V850, V875, V8 and V9 shakers.

DPA-K used with: V964, V984, V994 shakers.

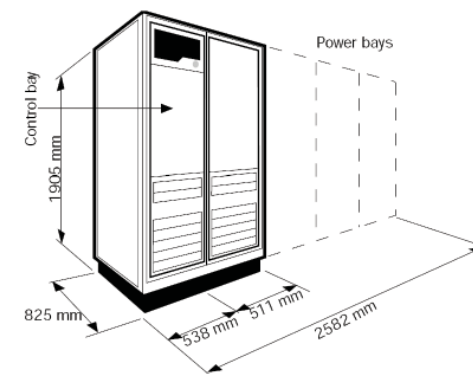
## SPA-K Interlocks

<b>Overcurrent trip level</b>	Sets maximum output current of amplifier
<b>External 1</b>	User-definable interlock
<b>External 2</b>	User-definable interlock
<b>Vibration overtravel</b>	For connection to vibrator overtravel contacts
<b>Vibration cooling</b>	For connection to vibrator cooling thermostat
<b>Slip table oil</b>	For connection to slip table pressure switches

## SPA-K Amplifiers



## DPA-K Amplifiers



## DPA-K Interlocks

## BAY 1 to BAY 4 FAULT

## Eight possible fault conditions:

1. OUTPUT OFFSET
2. AUXILIARY SUPPLIES
3. MODULE FAULT
4. H.T. LEVEL LOW
5. H.T. LEVEL HIGH
6. H.T. RIPPLE
7. OVERCURRENT
8. TRANSFORMER/RECTIFIER OVERTEMP

## OUTPUT OFFSET

Output offset voltage has exceeded the specified limits (greater than 1/2 1 V) during amplifier switch-on

## INPUT OVERDRIVE

Level of drive signal to the amplifier has exceeded the specified limits

## OUTPUT OVERVOLTAGE

Amplifier's output voltage has exceeded the built-in preset limit

## OUTPUT OVERCURRENT

Amplifier's output current has exceeded the user defined preset level

## AUXILIARY SUPPLIES

Fault in Control Unit 1/2 15 V or +5 V power supply

## VIBRATOR COOLING

Failure of the vibrator's cooling system

## VIBRATOR FIELD

Vibrator's field current has fallen below a preset limit

## VIBRATOR

Indicates excessive travel of the vibrator's armature

## OVERTRAVEL EMERGENCY STOP (FEEDBACK)

Ensures All interlocks are in the open state during system initialisation



# Specifications

## SPA-K Amplifiers

### Replacement Amplifiers

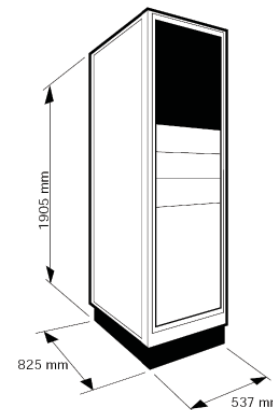
SPA-K amplifiers are available to replace discontinued LDS amplifiers used with the following shakers, and are also available to replace most 3rd party amplifiers running 3rd party shakers. These amplifiers can be used with the Software Remote Control option.

### SPA-24K

Vibrator	Force-Sine	Force-Random	Power Output	Blower Size
V706 L	1000	974	16 K	0.37 kW (0.5 HP)
V710 L	720	567	8 K	0.75 kW (1.0 HP)
V712	700	517	8 K	0.55 kW (0.75 HP)
V714	700	517	8 K	0.55 kW (0.75 HP)
V716	650	410	8 K	0.55 kW (0.75 HP)
V721	922	495	8 K	0.37 kW (0.5 HP)
V724 MK1	1500	1623	16 K	0.75 kW (1.0 HP)
V724 MK2	1500	1623	16 K	0.75 kW (1.0 HP)
V725	1500	1263	16 K	0.75 kW (1.0 HP)
V726	1500	835	8 K	0.75 kW (1.0 HP)
V730-185	2000	1300	16 K	2.2 kW (3.0 HP)
V730-335	2000	2000	16 K	2.2 kW (3.0 HP)
V804	3000	2700	16 K	1.5 kW (2.0 HP)
V804 LS	3000	2700	16 K	1.5 kW (2.0 HP)
V805 HZ (Series)	2500	1149	8 K	1.5 kW (2.0 HP)
V805 LZ (Parallel)	3000	1549	16 K	1.5 kW (2.0 HP)
V806	3000	1900	8 K	1.5 kW (2.0 HP)
V810-240	4000	3000	24 K	3.0 kW (4.0 HP)
V810-440	4000	4000	24 K	3.0 kW (4.0 HP)

### SPA-56K

Vibrator	Force-Sine	Force-Random	Power Output	Blower Size
V824 MK1	6000	5400	32 K	4 kW (5.5 HP)
V824 MK2	6000	5400	32 K	4 kW (5.5 HP)
V824 LS MK2	6000	5656	32 K	4 kW (5.5 HP)
V825 L	6000	3685	32 K	4 kW (5.5 HP)
V826 LS	5400	3640	16 K	4 kW (5.5 HP)
V826	6000	3331	16 K	4 kW (5.5 HP)
V860 Low Z Series	3300	2774	8 K	4 kW (5.5 HP)
V860 High Z Parallel	4500	3610	8 K	4 kW (5.5 HP)
V860 Low Z Parallel	6300	5389	16 K	4 kW (5.5 HP)
V860 HD Low Z Parallel	7500	5790	24 K	4 kW (5.5 HP)
V890	12000	12500	48 K	5.5 kW (7.5 HP)
V894	12000	12500	48 K	5.5 kW (7.5 HP)



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