

PRODUCT DATA

LDS V964 Shaker Imperial

Performance Parameters*

Armature Diameter	17 in
Sine Force (peak)	20000 lbf
Random Force (rms)†	20000 lbf
Maximum ½-sine Shock Force‡	42022 lbf
Armature Resonance (f _n)	2.25 kHz
Usable Frequency Range	5 Hz – 2.5 kHz
Mass of Moving Element (flush inserts)	130.1 lb
Velocity (sine peak) – full-field	78.7 in/s
Acceleration (sine peak)	100 g
Acceleration (random rms)	70 g
Displacement (pk–pk) – continuous	1.5 in
LDS Amplifier	DPA-K range

Characteristics

Suspension Axial Stiffness	350 lbf/in
Suspension Rotational Stiffness	5 × 10 ⁶ lbf in/rad
Suspension Cross-axial Stiffness	120000 lbf/in
Internal Load Support Capacity	2000 lb
Shaker Body Mass (M _b)	6217 lb
Stray Magnetic Field‡	<9 gauss
Low Gauss Option	<6 gauss
Compressed Air Supply	100 lbf/in ²
Max. Required Input, Amplifier	244.59 kVA
Max. Required Input, FPS and CU	70.26 kVA

Used where large payloads need high performance vibration or shock testing, the V900 series gives engineers the confidence they need to develop highly reliable products. These systems have been used in single and multi-shaker configurations, and have been used to test products such as satellites and missiles.

Features

- Combination of high performance armature design and water-cooled coils deliver excellent acceleration and velocity performance
- Automatic armature and body position load compensation system ensures larger loads can be comfortably accommodated
- Trunnions feature Lin-E-Air suspension system as standard. Solid trunnions available upon request

Industry Applications

- 3-axis testing of complete satellite systems
- Avionics and military hardware testing
- Structural dynamics testing
- Clean room environments
- Multi-shaker, multi-axis applications

System Performance

	with DPA 40/70 K -TC	with DPA 50/70 K -TC	with DPA 70 K -DC	with DPA 70 K -TC	with DPA 90/140 K -TC	with DPA 100/140 K -TC	with DPA 110/140 K -DC	with DPA 130/140 K -DC
Sine Force (peak)	13500 lbf	14500 lbf	11000 lbf	17000 lbf	18000 lbf	20000 lbf	18000 lbf	20000 lbf
Max. Acceleration (sine peak)	80 g	90 g	88 g	100 g	100 g	100 g	100 g	100 g
Random Force (rms)	11000 lbf	12000 lbf	12250 lbf	14500 lbf	15500 lbf	18000 lbf	18000 lbf	20000 lbf
Max. Acceleration (random rms)	70 g	70 g	70 g	70 g	70 g	70 g	70 g	70 g
Velocity (sine peak)	47.2 in/s	55.1 in/s	78.7 in/s	66.9 in/s	78.7 in/s	78.7 in/s	78.7 in/s	78.7 in/s
Health and Safety	Complies with the following EU directives: Machinery 2006/42/EC, Low Voltage 2006/95/EC, EMC 2004/108/EC Designed in accordance with EN 61010–1:2001							



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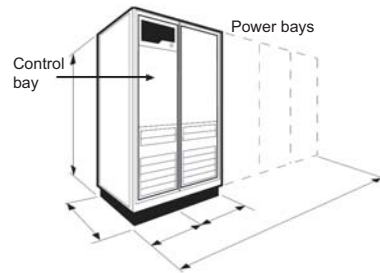
* Force and velocity ratings depend on the amplifier driving the shaker. The sine force, random force and velocity parameters detailed here are based on the shaker when driven by the DPA 140 K amplifier.

† Random and shock ratings assume a payload approximately twice the mass of the armature; shock pulse 2 ms. For advice on specific test requirements, contact Brüel & Kjær.

‡ Theoretical maximum, measured 5.9 in above table, full-field, at normal operating temperature.

Some of the features listed are available as standard, others as options. Please contact Brüel & Kjær for advice on the optimum specification to meet your system needs

DPA-K Series Amplifier Characteristics



see table for dimensions

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Power Range	40 – 140 kVA in 8 kVA increments
Signal-to-noise Ratio	>65 dB, relative to 100 V rms output, 10 kΩ input termination and rated resistive load connected (100 kHz BW)
Input Impedance	10 kΩ nominal
Total Harmonic Distortion	0.5 – 0.8% at rated output into resistive load
Input Sensitivity (400 Hz, Master Gain fully CW)	1.1 V (±0.1 V rms input) for 100 V rms output at rated sinusoidal Volt Amp output
Switching Frequency	150 kHz
Module Efficiency	90.9%
Nominal Sine Output Voltage	100 V rms at rated power output
Frequency Range	20 Hz – 3 kHz
Frequency Response	20 Hz – 3 kHz: ±1.5 dB
Common Mode Rejection	100 dB (d.c. – 5 kHz)
Protection	Integral protection to prevent output devices from working outside their specification limits

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Environmental Data*

	V964 Shaker	DPA-K Amplifier						FPS and Cooling Unit
		40/70K	50/70K	70K	90/140K	100/140K	130/140K	
Working Ambient Temp. (°F)	40 to 86	41 to 104						41 to 104
Heat Dissipation (Rejected to Air)	4 kW	4.31 kW	5.35 kW	7.52 kW	9.41 kW	10.45 kW	13.79 kW	2.76 kW
Acoustic Noise at 6.6 ft	105 dBA	82 dBA			85 dBA			68 dBA
Cooling Air Flow	–	3495 ft ³ /min			6990 ft ³ /min			1400 ft ³ /min
Raw Water Flow Rate	–	20.6 gal/min [†]		20.9 gal/min [†]	21.4 gal/min [†]		23.2 gal/min [‡]	
Raw Water Pressure Drop	–	5.1 lbf/in ^{2†}		5.2 lbf/in ^{2†}	5.5 lbf/in ^{2†}		6.38 lbf/in ^{2‡}	
Raw Water Max. Inlet Temp. (°F)	–	90 [†]						90 [‡]
Raw Water Max. Outlet Temp. (°F)	–	115 [†]		115 [†]	117 [†]		118 [‡]	
Height (in)	54.6	75				75		
Width (in)	67.4	41.25			61.4			59
Depth (in)	40.6	32.5						32.5
Mass (lb)	9259	1706	1748	1832	3097	3139	3265	1583

* Values for air trunnion mounted shaker and an amplifier configuration of one control bay and one power bay

[†] Actual values when used with V964 shaker

[‡] Values for cooling unit alone when running at maximum capacity

Make Our Experience Your Advantage

From application engineering, installation and training through to maintenance, spares and repairs, Brüel & Kjær offers a total service approach to keep your system operating efficiently and reliably. All LDS systems (standards and specials) are designed and manufactured to ISO 9001 standard. Brüel & Kjær offers a comprehensive range of vibration, measurement and analysis equipment. Please consult our website for details.

V 964 Shaker Options

Armature Insert Selection:

- M 8 ◆
- 3/8" UNC ◆
- 3/8" UNF ◆
- M 10 ◆

Mounting Selection:

- Trunnion mounted with Lin-E-Air isolation and body rotation gearbox ◆

- Solid trunnion ●

Other Options:

- Combination shaker/slip table base ●
- Thermal barrier ●
- Chamber support kit ●

Key:

- ◆ Standard – Available on shortest delivery
- Option – Stocked item, available on short delivery

Brüel & Kjær reserves the right to change specifications and accessories without notice. BP 2411 – 12 2012-08

