

## MINI SMARTSHAKER™ WITH INTEGRATED POWER AMPLIFIER



This electrodynamic exciter is a small, portable permanent magnet shaker with a new generation of ultra compact precision power amplifier integrated in its base. The revolutionary SmartShaker™ design eliminates the need for a separate, cumbersome power amplifier - just plug the excitation signal from a dynamic signal analyzer or function generator directly into the BNC on the base of the shaker. The unit is supplied with a DC power supply but can be run directly from any 12-21 VDC supply.

The smart shaker features an extremely rugged suspension systems using carbon fiber composite leaf armature flexures, avoiding the suspension damage common with some other small shakers. Isolated linear bearings provide low distortion and eliminate

the need for reaction wrenches when mounting loads to the armature. A trunnion base with EasyTurn™ handle allows for convenient mounting and positioning. The exciter is delivered with a variety of 10-32 nylon stingers which provide electrical isolation from and flexible attachments to test articles.

### BENEFITS:

- *Integrated power amplifier eliminates the need for a separate, cumbersome power amplifier*
- SmartShaker™ provides up to 7 pounds pk sine force with a 1/2 inch stroke
- 10-32 threaded mounting insert supports payloads up to 2 lbs
- Trunnion mounting base w/ EasyTurn™ handles

### APPLICATIONS:

- General vibration testing
  - Small components
  - Sub-assemblies
  - Biomedical
- Experimental modal analysis
- Educational laboratory research
- Mechanical impedance measurements



**SPECIFICATIONS:**

**K2004E01**

**K2007E01**

**SHAKER PERFORMANCE**

Output Force, sine pk		
Natural Air Cooling	4.5 lbf (20 N)	7 lbf (31 N)
Output Force, random RMS		
Natural Air Cooling	3 lbf (13.3 N)	5 lbf (22 N)
Output Force, shock pk	9 lbf (40 N)	15 lbf (67 N)
Stroke Length		
Continuous pk-pk	0.2 in (5 mm)	0.5 in (13 mm)
Between Stops	0.35 in (9 mm)	0.55 in (14 mm)
Frequency Range <sup>[1]</sup>	DC-11 kHz	DC-9 kHz
Acceleration <sup>[1,2]</sup>		
No load	64 g <sub>pk</sub>	70 g <sub>pk</sub>
0.1 lb load	26 g <sub>pk</sub>	35 g <sub>pk</sub>
1 lb load	4.2 g <sub>pk</sub>	6.4 g <sub>pk</sub>
2 lb load [max payload]	2.2 g <sub>pk</sub>	3.3 g <sub>pk</sub>
Maximum Current	5 A	8 A
DC Resistance, armature, nominal	1.5 Ω	0.37 Ω

**AMPLIFIER PERFORMANCE**

Efficiency	92%
Input Voltage, RMS	0-1 VAC <sup>[3]</sup>
Input Voltage (absolute maximum), RMS	1.9 VAC
Input Power <sup>[4]</sup>	12-21 VDC
Output Power <sup>[5]</sup>	55 W
Distortion, typical <sup>[6]</sup>	<0.02%
Cooling	Convection
Discrete Gain Stages, nominal <sup>[7]</sup>	Muted, 10 dB, 18 dB, 24 dB
Warning Indication <sup>[7]</sup>	Clipping and over temperature
Shutdown Protection <sup>[7]</sup>	Over temperature and over current

**PHYSICAL**

Armature Mass, nominal	0.07 lb (0.032 kg)	0.1 lb (0.045 kg)
Suspension Stiffness, nominal	15 lbf/in (2.63 N/mm)	
Dimensions (HxWxD), nominal	5.3 x 6.75 x 3.5 in (135 x 171 x 89 mm)	
Weight	7 lbs (3.10 kg)	
Input Connector	BNC jack	
Output Connector	Mini binding post	
Table Mounting	10-32 thread	

[1] Load dependent

[2] Please see systems ratings for additional specifications

[3] Typical, full output, gain dependant

[4] Supplied with universal power supply, 60W (19 VDC - 3.15A output)

[5] Based upon supplied universal power supply, 92% efficiency

[6] THD + noise at 1 kHz, 1W

[7] Indicated via LEDs

**SUPPLIED ACCESSORIES**

Power supply, 60W, 19 VDC output, 100-240 VAC input
Trunnion base with EasyTurn™ handles and mounting holes
2110G06 Nylon Stinger kit, 10-32 thread, pack of three

**RELATED PRODUCTS**

PCB 288D01 ICP® impedance head driving point sensor, PCB 208 series ICP® force sensors
2025E Modal Shaker, 25 lbf <sub>pk</sub> sine force, 0.75" stroke, through-hole armature design
2060E Modal Shaker, 60 lbf <sub>pk</sub> sine force, 1.4" stroke, with through-hole armature design
2100E11 Modal Shaker, 100 lbf <sub>pk</sub> sine force, 1" stroke, through-hole armature design
2075E Shaker, 75 lbf <sub>pk</sub> sine force, 1" stroke; 3.25" mounting platform with through-hole armature for stinger attachment

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