



MODEL K2002E01

MINIATURE INERTIAL SHAKER SYSTEM

- Compact size allows easy set-up for difficult-to-access locations
- 2 lbf (9 N) sine force excitation, stack them up (or add cooling) for doubling force
- Direct mounting requires no special fixturing support or manual alignment
- In-line fuse for overcurrent protection
- Wide frequency range from 20 Hz to 3000 Hz
- Compatible with piezoelectric force transducers and shaker amplifiers

TYPICAL APPLICATIONS

- General vibration testing and structural excitation
- Impedance measurements
- Experimental modal analysis
- Educational laboratory research
- Active vibration control

COMPACT SHAKER SYSTEM

The Miniature Electrodynamic Inertial Shaker System Model K2002E01 consists of a compact and lightweight 2002E Inertial Force Generator, along with a compact 2000E Mini Amplifier. The shaker system is well-suited for structural testing as well as a variety of general vibration testing applications particularly in small, confined locations.

The generator has a single 0.141 in (3.6 mm) diameter mounting through-hole and a rugged internal suspension system that eliminates test fixture requirements for most testing applications. Miscellaneous mounting screws are supplied to facilitate installation of the unit, either directly to the test structure or through a force sensor. The 2002E can be operated in any orientation and is therefore easily positioned for modal or general excitation applications offering optimal force performance over a wide 20 Hz to 3000 Hz frequency range.

A unique inverted armature coil design and the latest composite materials combine to offer excellent axial compliance and high lateral stiffness, ensuring reliability and robustness. When the K2002E01 is combined with a piezoelectric force sensor (or impedance head) from PCB Piezotronics, the system becomes an ideal, compact force generator for driving point modal excitation or general purpose vibration excitation with unmatched reliability, performance and cost.

SHAKER SPECIFICATIONS

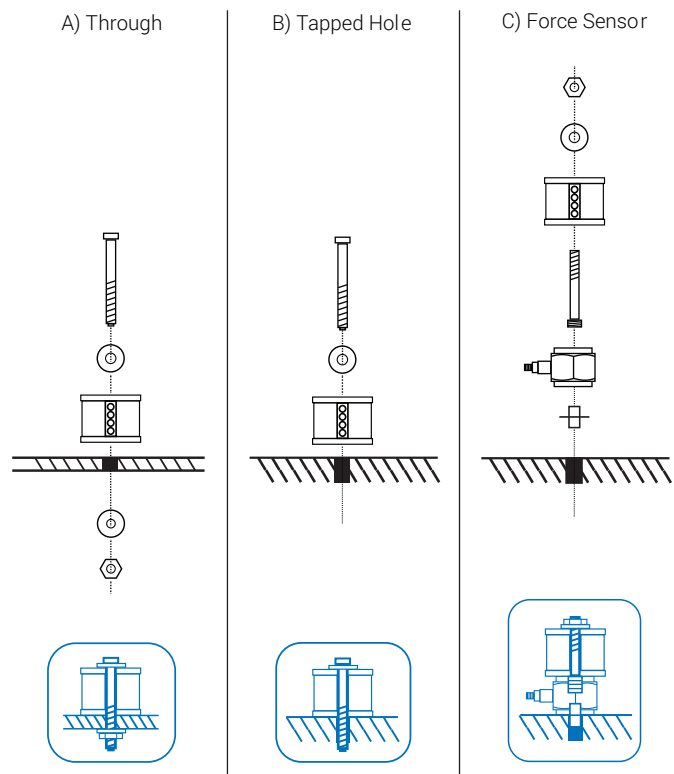
| Performance | | |
|--|---------------------------------|----------------------|
| Sine Force ^[1] | | |
| Natural Air Cooling | 2 lbf pk | 9 N pk |
| Forced Air Cooling | 4 lbf pk | 18 N pk |
| Random Force ^[1] | | |
| Natural Air Cooling | 1.4 lbf RMS | 6.2 N RMS |
| Forced Air Cooling | 2.8 lbf RMS | 12.5 N RMS |
| Shock Force (20 ms) | 4.5 lbf pk | 20 N pk |
| Low Frequency Force | 0.012 f ² (0.35 – d) | |
| Maximum Displacement | 0.35 in (pk-pk) | 8.9 mm (pk-pk) |
| Maximum Velocity | 20 in/s pk | 508 mm/s pk |
| Frequency Range | 20 Hz – 3000 Hz | |
| Reaction Mass Resonance (Nominal) | 10 Hz | |
| Structural Resonance | 3500 Hz – 4500 Hz | |
| Physical | | |
| Dynamic Element Weight | 0.33 lb | 0.15 kg |
| Shaker Total Weight | 0.56 lb | 0.25 kg |
| Maximum Rated Armature Current | | |
| Natural Air Cooling | 1.1 A RMS | |
| Forced Air Cooling | 2.2 A RMS | |
| Temperature Operating Range | 40 °F–100 °F | 4 °C–38 °C |
| Stray Magnetic Field Measured at 1.0 in (2.54 cm) Distance | <10 gauss | |
| Cooling (> 2.0 lbf or > 9 N force) | 3.5 CFM at 5 psi | 99 L/min at 0.34 bar |
| Dimensions (diameter x length) | 2.0 in x 1.5 in | 50.8 mm x 38.1 mm |
| Mounting Hole | 0.141 in x 1.5 in | 3.6 mm x 38.1 mm |

AMPLIFIER SPECIFICATIONS

| Performance | | |
|--|-----------------------------------|-----------------|
| Efficiency | 92% | |
| Input Voltage, RMS | 0-1 VAC ^[3] | |
| Input Voltage (absolute maximum), RMS | 1.9 VAC | |
| Input Power ^[4] | 12-21 VDC | |
| Output Power ^[5] | 55 W | |
| Distortion, typical ^[6] | <0.02% | |
| Cooling | Convection | |
| Discrete Gain Stages, nominal ^[7] | Muted, 10 dB, 18 dB, 25 dB | |
| Warning Indication ^[7] | Clipping and over temperature | |
| Shutdown Protection ^[7] | Over temperature and over current | |
| Weight | 1.13 lb | 0.51 kg |
| Dimensions (H x W x D), nominal | 1.65 x 3.13 x 3.82 in | 42 x 80 x 97 mm |

| Supplied Accessories | |
|--|---|
| 10 ft (3 m) Cable with In-line Fuse | |
| Spare Fuses: 1 A and 2 A | |
| Miscellaneous Mounting Screws and Washer | |
| Heavy Duty Case | |
| Related Products | |
| 208C01 | Multi-purpose, ICP [®] force sensor, 10 lbf (45 N) compression and tension, 500 mV/lbf (112.41 mV/N) |
| 288D01 | ICP [®] impedance head, force/accel: Force: 100 mV/lbf (22.4 mV/N) ; Accel: 100 mV/g (10.2 mV/(m/s ²)) |

- [1] Load dependent
- [2] f=freq [Hz], d=disp. [in] pk-pk
- [3] Typical, full output, gain dependant
- [4] Supplied with universal power supply, 60 W (19 V DC - 3.15 A output)
- [5] Based upon supplied universal power supply, 92 % efficiency
- [6] THD + noise at 1 kHz, 1 W
- [7] Indicated via LEDs



Mounting Options