



Multi Range Modal Shakers

October, 2009

The Modal Shop, a PCB Group Company, provides smart sensing solutions that help in improving the performance of products and processes. Products include calibration systems, test & measurement systems, NDT systems and industrial monitoring systems.

Structural Solutions Pvt. Ltd exclusively represents **Ms. The Modal Shop., Cincinnati USA** in India. Structural Solutions Private Limited is an ISO 9001 certified professional engineering company engaged in offering high end technology-intensive products and system solutions to Indian Automotive, Space, Aerospace & Institutional R&D Market segments.



The Modal Shop has expanded its line of electrodynamic exciters and thrusters. In addition to the new industry standard 100 lbf modal shaker and the state-of-the-art precision air-bearing shakers for accelerometer calibration, the product line now includes minishakers, dual-purpose platform exciters, additional through-hole modal shakers and an

Application	Shaker Model	Amplifier Model	Force Rating N ^{pk} shaker/amp pair	Stroke(mm _{pk-pk})	Weight (Kg)	Max Freq (Hz)
Modal Analysis, General Vibe, small structures	2004E	2100E21-100	20	5	2.72	11,000
Modal Analysis, General Vibe, small structures	2007E	2100E21-100	31	12.7	2.72	9,000
Modal Analysis, small to medium structure	2025E	2100E21-100	58	18	5	9,000
		2100E21-400	111			
Modal Analysis, medium to large structure	2060E	2100E21-400	133	36	12.7	6,000
		2100E21-600	267			
Modal Analysis, medium to large structure	2100E11	2100E21-400	50	25.4	15	5,400
		2100E18	440			
Dual Purpose Design, Modal and General Vibe	2075E	2100E21-400	178	25.4	12.7	6,500
		2050E09	334			
Dual Purpose Design, Modal and General Vibe	2110E	2050E09-FS	498	25.4	25	6,500
Accelerometer Calibration, low to medium frequency, payload > 300 gm	2025E-CAL	2100E21-400	111	12.7	5	20,000
Accelerometer Calibration, low to high frequency, payloads < 300gm	394A30	2100E21-C	67	10	10	50,000

Mini-Shakers - Models 2004E & 2007E:

Benefits:

- Compact design, very versatile, portable permanent magnet shakers.
- Isolated linear bearings provide low distortion and eliminate the need for reaction wrenches when mounting loads to the armature.
- Up to 7 pounds (31 N) pk sine force
- Up to 0.5 inch (1.27 cm) stroke
- Payloads up to 2 lbs (0.91 kg)
- 10-32 threaded mounting insert
- Wide frequency band operation up to 11kHz
- Trunnion mounting base w/EasyTurn™ handles for convenient mounting and positioning
- Extremely rugged suspension systems using carbon fiber composite leaf armature flexures

Applications:

- General vibration testing
 - Small components
 - Sub-assemblies
 - Biomedical
 - Electronic assemblies,
 - Integrated Circuits
 - Printed Circuit Boards
- Experimental modal analysis
- Educational laboratory research



Modal Exciters – Models 2100E11, 2060E & 2025E:

Benefits:

- Through-hole armature with chuck and collet attachment Provides simple setup with modal stingers.
- Lightweight and portable
 - Model 2100E11: 33 lbs (15 kg).
 - Model 2060E: 28 lbs (12.7 kg)
 - Model 2025E: 11 lbs (5 kg)
- Trunnion base provides flexibility when choosing best exciter location(s).
- Stroke length, pk - pk:
 - Model 2100E11 – 1.0 in (25.4 mm)
 - Model 2060E – 1.4 in (35.56 mm)
 - Model 2025E – 0.7 in (17.78 mm)
- Forced air cooling sufficient to meet full shaker performance (100 lbf pk, 60 lbf pk, and 25 lbf pk) specifications.
- provide excellent force-to-mass ratio with nearly half the weight and twice the force as other common modal shakers

Applications:

- Structural testing
- Experimental modal analysis applications, including single and multiple inputs (SIMO and MIMO) using random, burst random, sine dwell or chirp excitation signals.
- experimental modal analysis applications, ranging from small electrical components to power train assemblies to large aircraft



Multi Range Modal Shakers

Dual Purpose Electrodynamic Exciters – Models 2075E & 2110E:

Benefits:

- Innovative dual-purpose design integrates platform table for traditional vibration testing with a through-hole armature for modal studies.
- 3.25 inch diameter platform table supports payloads up to 7 lbs (3.2 kg) by Model 2075E & 10 lbs (4.5 kg) by Model 2110E.
- Through-hole armature with chuck and collet attachment provides simple setup with modal stingers.
- Armature suspension design provides excellent axial compliance with high lateral stiffness.
- There are no rolling or sliding components to wear out or produce unwanted noise and distortion.
- Trunnion base with EasyTurn™ handles provides flexibility and full rotation when positioning and aligning the shaker.

Applications:

- Traditional vibration control testing of components and subassemblies.
- Modal analysis



Smart Shakers™ w/Integrated Power Amplifier:

Benefits:

- Small, portable permanent magnet shaker with a new generation of ultra compact precision power amplifier integrated in its base.
- Integrated power amplifier eliminates the need for a separate, cumbersome power amplifier.
- Small overall size (3.6 x 3.5 x 5.3 in (9.1 x 8.9 x 13.5 cm)), weighing just 7 lbs, makes it a new class of portable solution for university test laboratories and bench top vibration studies.
- 10-32 threaded mounting insert supports payloads up to 2 lbs (0,91 kg).
- Trunnion mounting base with EasyTurn™ handles.

Applications:

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



Air Bearing Shakers – Model 394A30:

Benefits:

- Drastically reduces uncertainty to provide accurate calibration conforming to ISO 16063 Part 21 transverse recommendations by effectively eliminating transverse motion.
- High calibration throughput by simplifying mounting and setup.
- Fully test sensors using the shaker's extended frequency range for calibration and mounted resonance tests.
- Calibrate at low frequencies without distortion using the shaker's full 10 mm stroke length.
- Excellent signal integrity by electrically isolating the reference accelerometer and mounting surface.

Applications:

- Accelerometer calibration
- **2025E-CAL**: Accelerometer calibration, low to medium frequency, payloads > 300gm
- **394A30**: Accelerometer calibration, low to high frequency, payloads < 300gm



Experimental Modal Analysis
Application Chart

➡ For further product & application details please contact:

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