

AST-8 Accelerated Stress Test System



THERMOTRON

Accelerating the Reliability of Product Design

The goal of accelerated stress testing is to quickly force products to fail, understand the failure modes and mechanisms, and take appropriate corrective action to optimize the design. The results of accelerated stress testing can reduce product development time and lower costs associated with production, warranty, and field-related failures.

Accelerated Stress Testing on a Smaller Scale

The AST-8 is an ideal platform for performing Highly Accelerated Life Testing (HALT) on small products, sub-assemblies, or components in the early stages of product development. Thermotron's patented multi-axis vibration table and rapid thermal change rate system provide the ideal environment for optimizing product designs. The system's compact size and portability permit the

AST-8 to conveniently pass through a standard 36" door opening. The unit occupies very little floor space, making it perfect for test areas that are short on space.

Reduced Utility Consumption Lowers Operating Costs

The AST-8 uses significantly less liquid nitrogen, compressed air, and electrical power than larger HALT & HASS systems. The unit can operate from a permanent liquid nitrogen source or portable liquid nitrogen dewars. Operating from dewars eliminates liquid nitrogen bulk storage and piping installation costs and maintains portability, allowing the system to be used in multiple locations. The lightweight vibration table uses fewer pneumatic impactors and requires less compressed air for operation at high acceleration levels.

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High Performance – Aggressive Stress



Rapid Thermal Transitions

Extreme thermal stresses are imparted to products through high rates of temperature change in excess of 70°C/min. High volume, high velocity airflow is configured through slots and adjustable ducts to maximize thermal stress directly on the product, which effectively accelerates product failure rates.

Six Axis Vibration

The AST-8 multi-axis, repetitive shock vibration platform produces acceleration levels in excess of 50 grms. The patented vibration system provides consistent power spectral density energy over a broad range. Direct coupling of the product under test to the vibration table transmits maximum dynamic stress into the product.

Control System

The graphical user interface control system is intuitive to operate. The monitor displays power spectral density, temperature and acceleration data all on one easy-to-read screen. Ramp rates for temperature and vibration are also displayed and easily accessed. The AST Control System allows the user to define how multiple accelerometers and thermocouples are used to control and monitor stresses delivered to the product. The controller can be configured to monitor run time on wear items and alert the operator that periodic maintenance is required.

Functional Testing and Continuous Failure Monitoring – A Cornerstone Issue

It is important to functionally test and continuously monitor the product(s) as accelerated stresses are being applied. Thermotron can provide a turn-key test solution based on a user's unique set of test requirements. Thermotron's Product Test Solutions group is capable of meeting a variety of test equipment needs including system integration, custom electronic systems, or Thermotron's exclusive Product Test System. All solutions provide data relating product performance parameters to stress conditions at time of failure. This information is vital to performing a proper analysis of the failure mode.

Applications

- Portable electronics
- Communication devices
- Electrical components
- Compact automotive electronics
- Medical electronic devices
- Fiber optic or optical networking components
- Small switches and sensors
- Microelectromechanical devices

EXTREME TRANSITION RATE CHAMBER

Workspace Dimensions	24" W x 22" D x 24" H (61 cm x 56 cm x 61 cm)
Temperature Range	-100°C to +200°C (-148°F to +392°F)
Temperature Change Rate	Greater than 50°C/min (90°F/min) on products*
Liquid Nitrogen Cooling System	Minimum 30 psi (2.1 kg/sq cm) input
Exterior Dimensions	75" W x 34" D x 78" H (191 cm x 86 cm x 198 cm)
Blower HP	3/4 HP
Airflow	370 SCFM (175 liters/sec)
Heater Size	20 kW
Power	230v/3PH/60Hz 61 Amps Full Load, 75 Amp Minimum Service** 460v/3PH/60Hz 31 Amps Full Load, 35 Amp Minimum Service** 400v/3PH/50Hz 34 Amps Full Load, 40 Amp Minimum Service**
Door Interlock	Mechanical Lockout
Control System	PC- Based with Lab View Interface
Hi/Low Limit	Therm-Alarm
CE or CSA Option	Available

* Dependent on range and chamber loading

** Other input voltages and frequencies available

Specifications subject to change.

MULTI-AXIS REPETITIVE SHOCK VIBRATION SYSTEM

Frequency Range	0 to >10,000 Hz
Acceleration Levels	Greater Than 50 gs bare table
Number of Impactors	Dependent on Performance Option Selected
Impactor Air Requirement	90 PSI Compressed Air
Axes Excited	3 Linear, 3 Rotational
Maximum Payload Support Capability	300 lbs. (135 kg)*
Table Size	18" x 18" (46 cm x 46 cm)
Grid Pattern	4" x 4" Grid (10 cm x 10 cm)

* Can be increased for larger loads