



A GENTHERM COMPANY

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## HALT & HASS SYSTEMS





# TIME COMPRESSOR® HALT & HASS CHAMBERS

## Quickly Discover Design Weaknesses

CSZ HALT/HASS chambers provide extreme temperature change rates and multi-axis vibration conditions used during the product design and manufacturing cycles to reduce the time normally required to identify design and process weaknesses.

HALT (Highly Accelerated Life Testing) and HASS (Highly Accelerated Stress Screening) testing is currently in use by most major manufacturing organizations to improve product reliability in a variety of industries, including electronics, computer, defense, automotive, medical and others.



## HALT/HASS Testing Benefits:

- Reduce product development & design time
- Ensure product quality & reliability
- Increase customer confidence
- Reduce warranty costs
- Increase profitability



CSZ's HALT & HASS Time Compressor® chambers incorporate the highest level of technology and quality for the optimum in reliability testing.

The chamber design of CSZ and the vibration table design by Dr. Gregg Hobbs, inventor of HALT & HASS technology, combine to provide the broadest range of temperature and vibration capabilities in the industry which are key to both precipitation and detection of product defects.

CSZ Time Compressor Chambers are state-of-the-art HALT and HASS systems for simultaneously subjecting products to all-axis broadband vibration and rapid thermal cycling. CSZ HALT & HASS chambers offer industry-leading performance levels, including ramp rates up to  $\pm 100^{\circ}\text{C}/\text{min}$  and broad range vibration levels of 1 to 90 GRMS.

Four standard chamber sizes for HALT & HASS testing are available with front and back access doors; larger units have double doors for easy access.

- Superior reliability and thermal performance
- Door includes heated window and safety interlock switch to prevent the system from running with the door open.
- Multiple ducts for targeted cooling
- Cable ports located in the front & side for easy cable routing
- Significantly better high and low vibration limits (required for detection)
- Quiet operation
- Low LN2 and utility usage for greater ROI



# Features and Options

## Vibration

- Large dynamic range shaker with 4 to 13 actuators and 1 GRMS to 90 GRMS with a bare table. High GRMS levels are used to enhance precipitation while low GRMS levels, with Modulated Excitation™, help to increase detection.
- A diaphragm is included to protect mechanical vibration table components.

## Instrumentation

- EZT-570i Controller comes preloaded with test profiles for faster program implementation.
- Factory preset mechanical over temperature limit. Separate user-adjustable electronic limits are also included for over and under temperature and vibration, providing fully redundant safety limits.
- Safety relay connection is provided to protect the device being tested by removing power supply when the chamber is not running.



## Communications

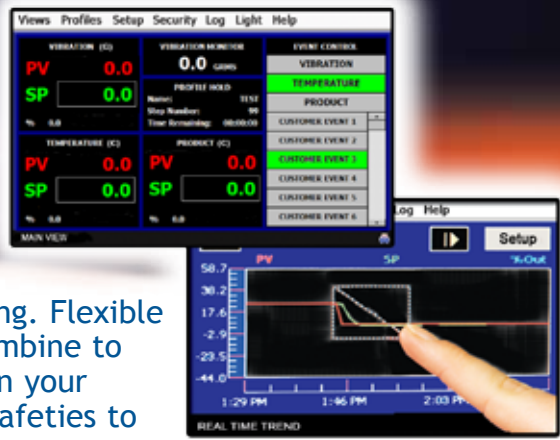
- RS-232/485 serial communications and Ethernet control/monitoring offer a selection of communications options.
- EZ-View software for programming control, monitoring and data logging of multiple chambers from remote computer.

Size	TC-2.0	TC-2.5	TC-3.0	TC-4.0
Temperature Range	-100°C to +200°C			
Temperature Ramp Rates	70°C to 100°C per minute <sup>1</sup>			
Vibration Levels	1 - 90 GRMS			1 - 80 GRMS
Table Size (cm)	24" x 24" (61cm x 61 cm)	30" x 30" (76cm x 76cm)	36" x 36" (91cm x 91cm)	48" x 48" (122cm x 122cm)
Workspace Dimensions W X D X H in (cm)	30" x 30" x 30" (76 x 76 x 76)	34" x 34" x 34" (86 x 86 x 86)	40" x 40" x 40" (102 x 102 x 102)	58" x 58" x 54" (147 x 147 x 137)
External Dimensions W X D X H in (cm)	62" x 41" x 80" (157 x 104 x 203)	65" x 48" x 84" (165 x 122 x 213)	75" x 54" x 90" (191 x 138 x 229)	86" x 71" x 102" (218 x 180 x 260)
Sound Levels <sup>2</sup>	70 dBA	72 dBA	72 dBA	76 dBA

<sup>1</sup>Measured at -65°C to 85°C 6" above table center with hoses attached. Rate will vary depending on model and dwell time.

<sup>2</sup> Measured 3' (1m) from chamber @ 30 GRMS

Time-Saving Features to Test Faster  
 EZ→Programming EZ→Datalogging  
 EZ→To be Connected to Your Test World



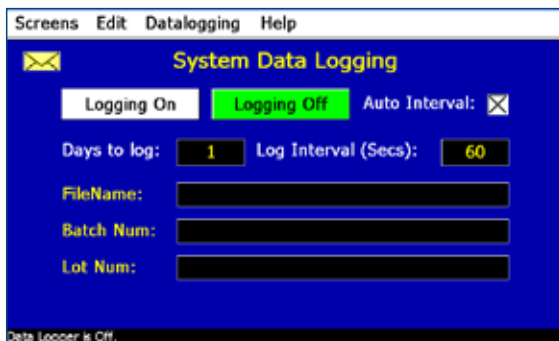
## CSZ EZT-570i Controller

CSZ's EZT-570i controller offers latest in test chamber programming. Flexible configurations along with a full range of user-friendly features combine to simplify programming and save valuable time for greater return on your investment. Intuitive controller includes built-in data security & safeties to protect your chamber and product under test.

- Ethernet capability to remotely monitor and control multiple test chambers.
- Alarm notification system sends email and/or text messages.
- Data logging with custom file names.
- Automated "Ethernet" back-up of data files.
- Easily download profiles, alarm files, audit trail files and data files to USB memory stick in a compatible .CSV file format. Also import profiles to other chambers saving valuable profile entry time.
- Real time & historical trend graphs. Print graphs directly to a printer.
- Profile autostart allows profiles to begin at a date, day and time.
- Help menu provides text and voice assistance in multiple languages (English, Spanish, French or Chinese).
- Product high/low limit protects product.
- Selectable power failure/recovery options.
- Full system security allows up to 30 different users with three different levels of security.



Remote control from smart phone or tablet



# Features and Options

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## HALT & HASS Chamber Options

### Spectrum Analyzer Data Acquisition

- Option provides monitoring of the vibration levels and spectrum for the product under test. Also shows power spectrum vs. frequency profile. Includes signal input module and Signal Analysis software along with cabling to connect to the customer supplied computer.



### EZT Temperature & Vibration Monitor Package

- (6) temperature thermocouples and (2) additional GRMS vibration accelerometers for monitoring in addition to the standard "z-axis" monitor. Option includes readout with individual alarms, displays, and data logging for each input that can be monitored by the EZT-570i and the EZ-View software.

### Customer Event Option

- Includes 15 event outputs with connection panel & removable plug connectors Designed to turn customer's electronic DUTs (devices under test) ON or OFF at various stages of the customer programmed test profile. Each output may also be configured to perform other operations including alarm or profile status indicators.

### Digital Input Option

- Includes connection panel and 8 inputs that can be configured to perform various controller functions (i.e. start, hold, resume or terminate a profile, advance steps, control customer event outputs)

### Oxygen Concentration Monitor & Alarm

- Stand alone unit can be connected to the chamber to shut off LN2 Flow on alarm. Wall mount NEMA 4x enclosure with battery backup. Requires 115V/220V, <10 watt power connection.



### Fresh Air Purge Option

- Flushes nitrogen from the chamber workspace utilizing compressed air. Air purge can be programmed to run as an event at the end of a profile or initiated by pressing a button. Included on TC-4.

### Spare Parts Maintenance Kit

- Includes accelerometer, accelerometer cable, spare thermocouples and spare vibrators.

### Attached Tool Box

- An integrated tool box attached to the chamber provides quick access for tools needed for use with the chamber or fixturing. The toolbox provides handy storage without requiring additional floor or table space.

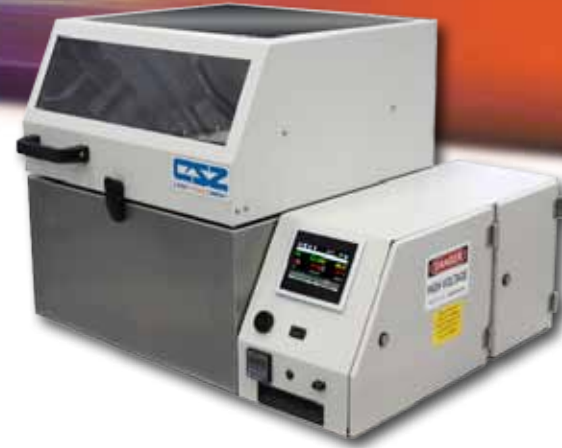


### Basic Fixturing Kit

- Includes four lengths of 80-20 bar with holes and an assortment of threaded rod, nuts and washers

### Other Custom Options Available

CSZ's benchtop vibration chamber is ideal for reliability testing of compact products and electronics.



## Benchtop Vibration Chamber

CSZ's benchtop vibration chamber is ideal for reliability testing of compact products and electronics. The benchtop vibration system may be used as a stand-alone vibration table for vibration testing or placed inside an environmental chamber for combined vibration & temperature testing offering flexibility and greater return on investment.

Equipped with an all-axis vibration system, the TCB-1.3 utilizes four pneumatically-actuated vibration hammers providing 6 dof, random vibration with x,y,z axis and roll, pitch and yaw rotation. The chamber comes standard with two accelerometers, one for control and one vibration monitor with a range of 1 to 60 GRMs.

### Benefits

- Dual-purpose design allows for use as benchtop vibration chamber or with a Temperature Chamber for combined temperature & vibration testing. Design includes a removable lid & easy-lift off control console to allow the table base to be placed inside a typical 16 cu. ft. (456L) or larger chamber.
- Utilizing random vibration technology combined with an environmental chamber, provides an economical method to perform combined temperature/vibration testing.
- Quiet operation
- Includes the EZT-570S touch-screen controller with state-of-the-art features including datalogging, trend charts, remote control and monitoring, automated alarm messages and more.



*Benchtop Vibration Table shown in ZP-16 chamber*

<b>Workspace</b>	16"W x 16"D x 10"H (41cm x 41cm x 25cm)
<b>Exterior Dimensions</b>	33"W x 31"D x 23"H (84cm x 79cm x 58cm)
<b>Table Base</b>	22"W x 23"D x 12"H (56cm x 58cm x 30cm)
<b>Vibration Level</b>	1 to 60 GRMS, 3 Hz to 10 kHz with unloaded table
<b>Temperature Range* (Base Only)</b>	-70 °C to +163 °C
<b>Voltage</b>	115V/1Ph/60Hz or 220V/1Ph/50 Hz
<b>Compressed Air</b>	<20 SCFM maximum @ 100 psi
<b>Overall Table Weight</b>	190 lbs (86 kg), Base Only: 120 lbs (54 kg)

\* When used in conjunction with an environmental chamber

## CSZ is committed to your satisfaction every step of the way.

We are dedicated to our customers from the initial point of contact, fully understanding your unique needs, developing the right solution and delivering outstanding products and post-sale support.



CSZ has two manufacturing facilities in Cincinnati, OH with world-wide sales and service.

## Your one stop solution for Environmental Chambers

- Temperature Cycling
- Humidity
- Stability Cabinets & Rooms
- Thermal Shock
- Stress-Screening
- Altitude
- AGREE Vibration
- HALT/HASS
- Freezers
- Liquid Chillers
- Wind & Rain
- Sand & Dust
- Other Temperature Management Solutions

*Sizes range from benchtop to full walk-in/drive-in chambers.*

## Services

- Refrigeration Retrofits
- Controller Upgrades
- Preventative Maintenance
- Calibration Services

## Testing Services

CSZ Testing Services is an A2LA Accredited Test Laboratory utilizing the latest test technology. We are your one stop source for all of your environmental simulation testing needs. Our testing laboratory is here to help with your product qualification testing, overflow testing and /or third party product validation. Testing capabilities include Temperature, Humidity, and/or Vibration, Thermal Shock, Burn-in, Radiator Testing, Altitude, Vibration, HALT/HASS, Shock, Salt Spray, and Cyclic Corrosion test. Serving you from two locations in Cincinnati, OH and Sterling Heights, MI.

**FOR MORE INFORMATION** please call CSZ Testing headquarters at 513-793-7774 or visit [www.csztesting.com](http://www.csztesting.com).



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