



From hot to ice cold in less than 10 seconds

Temperature Shock Test Chamber Model TS⁶⁰

Application

Shock test

Environmental conditions have a considerable effect on the function and the reliability of electronic components, devices and systems. International standards and test specifications define the test performances for standard applications.

The main purpose of temperature shock tests is to determine,

- if sudden temperature changes have an influence on the specimen's long term function,
- if safe operation of the specimen is still guaranteed after sudden temperature changes.

In addition, early failures defects can be provoked without reaching the mechanical and thermal stress limits of the construction.

The life expectancy of the test specimens can be forecast after a test carried out with a few hundred, or thousand, temperature cycles.

The test chamber consists of two independently controlled chambers, one hot and one cold chamber. These are positioned on top of each other. A temperature shock between hot and cold is achieved by rapid transferring the specimens placed in a lift. The specimens are exposed to a shock wise temperature change.

The temperature levels and the number of cycles determine the severity level.



CONTROLPAD*

A variety of standards specify the details of the test:

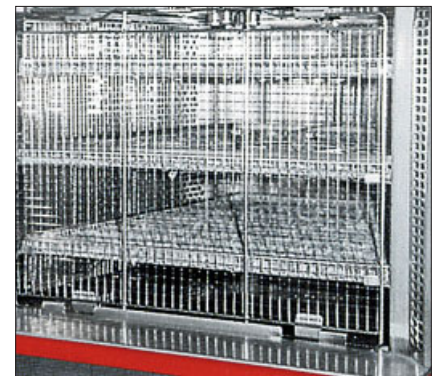
- Temperature of the hot chamber
- Temperature of the cold chamber
- Dwell time in the hot chamber
- Dwell time in the cold chamber
- Duration of transport process
- Number of cycles

The following test specifications are fulfilled:

- DIN 40 046, page 14, test Na, transport time <10 sec.
- IEC-60068-2-14, test Na, transport time <10 sec.
- BS 2011
- MIL-STD 810 E, method 503
- MIL-STD 202 F, method 107 G
- MIL-STD 883 E, method 1010.7 severity level A, B, C, D, F
- JESD22-A101-A



Test space with specimens



Protecting grill (removable)

The special features ...

- Test space 60 l
- Vertical order of the chamber for safe and quick test performance
- Regular temperature distribution in test space via a high recirculating rate with optimum air flow
- Hot chamber temperatures of +50 °C to +220 °C
- Cold chamber temperatures of -80 °C to +70 °C
- Alternating time between the chambers <10 sec.
- More than 1,000 cycles are possible without defrosting via a standard integrated volume compensation system for continuously operation
- Low sound-pressure level, only 58 dB(A)
- Ready to plug-in design
- Maintenance friendly positioning of the machine components
- Entry port Ø 80 mm
- Loading capacity of the lift 20 kg
- 12" TFT-colour touch screen display and software SIMCONTROL* for easy and comfortable operation



Standard equipment

- Window in hot zone
- Ultra-lightweight shelf incl. rails
- Lift in loading position locked
- Entry port Ø 80 mm
- Volume compensation system for long-term operation
- Air-cooled refrigeration unit
- Hermetically sealed CFC-free refrigeration circuits
- 12" TFT-colour touch screen display
- CONTROLPAD* for indication of actual values
- 32 bit control and monitoring system SIMPAC*
- Software SIMCONTROL* for comfortable operation
- Interfaces RS 232/USB/Ethernet
- Digital I/O, potential-free, 24 V, 4 freely available inputs/ outputs
- Independent adjustable temperature limiter t_{min}/t_{max} for hot and cold zone
- Potential-free contact for switching-off of test specimens
- Adjustable software temperature limiter min/max
- Signal lamp
- Cycle counter, total no. of cycles/ remaining run time display
- Operating hour counter
- Temperature control via sensor in cradle or in hot or cold zone
- Defrosting cycles automatic and programmable
- Dwell time start programmable
- Standards already programmed and recallable: MIL-STD 883 E, method 1010.7 severity level A, B, C, D, F
- Mobile version
- Calibration of two temperature values
- Powder-coated housing made of galvanised steel sheet
- Test space, lift and insert shelves (insert baskets) made of corrosion resistant stainless steel

Model		TS60
Test basket volume		approx. 60 l
Test basket dimensions	Height	370 mm
	Width	380 mm
	Depth	430 mm
Test space dimensions	Height	1,895 mm (2,330 mm*)
	Width	875 mm
	Depth without colour touch display	1,970 mm
	Depth with colour touch display	2,210 mm
Temperature range (see working range)	Hot chamber	+50 ... +220 °C
	Cold chamber	-80 ... +70 °C
Temperature deviation in time		±0.3 ... ±1.0 K
	Temperature homogeneity**	±0.5 ... ±2.0 K
Calibrated values	cold chamber	-40 °C
	hot chamber	+125 °C
Alternating time between hot and cold chamber		<10 sec.
Max. specimen weight		20 kg
Refrigeration unit		air-cooled
Electrical connection		3/N/PE AC 400 V ±10 % 50 Hz
Rated power		approx. 8.5 kW
Sound-pressure level, measured in 1,60 m height under free field conditions at 1 m distance from front of the system		approx. <58 dB(A)
	Weight	approx. 800 kg

* height of installation room necessary for operation of chamber

** related on the adjusted set point value in the temperature range from -65 °C to +200 °C

We reserve the right to make any technical alterations.

Open loop control

The 12" TFT-colour touch screen display and the software package SIMCONTROL* stand for the highest level of operating convenience. Simulation programmes and test results are provided on the hard disc and can be replaced via Ethernet or an USB stick (option).

The control is carried out by 32-Bit-I/O-System SIMPAC*. Set point and actual values are shown graphical. The control offers the following operation methods:

- Single chamber operation
- Normal operation
- Time optimised operation
- Energy efficient operation

Thanks to the easy understanding shock editor the programming of test performances is easy to perform.

Options

- Analogue transducer I/O
- Temp. measuring on test specimen
- Temp. range extension to +250 °C
- Wire mesh and insert shelves
- Additional entry port Ø 80 mm
- Connection for GN₂-inertisation/ compressed air dryer or dried compressed air
- Shock cooling with LN₂
- Water-cooled refrigeration unit
- Special voltages
- WKD or DKD calibrations
- Interface RS 232 <-> IEEE 488
- Interface RS 422/485 (network card for test cabinet)
- Software SIMPATI* for network operation



Test systems for professionals. Test the best ...

Controlled environmental conditions with SIMPATI*

The evaluation and documenting of testing performances and also the integration of measuring data of the customer guarantee a high standard of quality.

SIMPATI* networks up to 99 testing systems with a PC. The archiving of all parameters of chamber configurations is thus ensured.

Thanks to user-friendly operation and self-explanatory menu guiding no menu training is necessary. On-line-help responds to any questions that you may have.

SIMPATI* integrates itself into your PC-network and enables the operation with your Internet Browser from



other PC's without needing special software.

In addition to the normal messages on the screen and the entry in the report file, e-mails can be generated which are sent to different addresses. Recipient of e-mails may be the PC in the office, an operation and control centre or a mobile telephone.

SIMPATI* uses an existing mail-server and supports SMTP.

A complete product range for temperature and climate testing is available, with test space volumes of approx. 34 litres to 2160 litres and working ranges of $-75 \dots +180 \text{ }^{\circ}\text{C}$ and $10 \dots 98 \text{ } \% \text{ r.h.}$

In addition, we also offer an extensive selection of proven test systems for simulating exposure to weather, temperature shock, corrosion and long-term testing for research, development, quality assurance and production.

As one of the leading manufacturers of simulation systems worldwide, Weiss Umwelttechnik offers the entire range of high-quality test

equipment: from economical series devices to walk-in systems process-integrated systems built to customer specification.

A high-performance after-sales service ensures the optimal support for our customers and high operational safety of the systems. Decades of experience in the various fields of application and an intensive exchange of information with our customers throughout the world all serve to guarantee good co-operation.

If you value know-how, service and all-round safety, ask Weiss Umwelttechnik.

Further information, technical field offices in Germany, subsidiaries and agencies worldwide can be found at

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