

Technical description ShockEvent T/120/V2



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Notes

The performance data refers to +25 °C ambient temperature and +18 °C cooling water temperature, at given nominal voltage, without test specimen, without optional accessories and without heat compensation. These are average values of the basic equipment.

The test chamber is designed for installation inside dry and ventilated spaces with max. degree of contamination "2" according to EN 50178:1997. The permissible ambient temperature during operation is between +10 °C and +35 °C. The max. permissible humidity must not exceed 75% RH and the max. dew point must not exceed +20 °C.

Protect the system from sunlight and avoid proximity to heat sources.

Standards

Low-temperature tests

ETSI EN 300019-2-4, Test Ab/Ad

MIL-STD 810H, Meth. 502.5

JEDEC JESD22-A119

IEC 60068-2-1, Test A (LV 124 K-03)

Shock tests

MIL-STD 883L Meth. 1010.9, severity level A,B,C,D,F

MIL-STD 810H Meth. 503.7

IEC 60068-2-14 Na

The standards for low-temperature tests are only valid in single chamber operation in the cold chamber within the limited temperature range and with limited temperature change rates.

By selecting increased / reduced temperatures in the hot / cold chamber, the adjustment times can be shortened.

The temperature values specified in the standards (severity levels) are limited by the highest and lowest test space temperature. The choice of the appropriate test system depends on the temperature change rates during alternating tests. The requirements are met if the test system capacity is large enough to compensate for the influence of the specimen and its heat dissipation in the relevant capacity range. Please contact us to test the feasibility with your test specimen.

The reference point for test values and tolerance specifications is the middle of the test space. Verifying documentation for individual test values is optionally available at additional cost.

Your standard is not listed? Contact us!

Performance data

Temperature tests

Hot or cold chamber may also be utilized as single temperature chamber.

Hot chamber

Maximum temperature	+220 °C
Minimum temperature	+50 °C
Heating rate ¹	14 K/min
Temperature deviation ²	±0.3 K to ±1 K
Temperature homogeneity, in space relative to the set value ³	±0.5 K to ±2 K
Temperature calibration value ⁴	+125 °C

Cold chamber

Maximum temperature	+100 °C
Minimum temperature ⁵	-80 °C
Heating rate ¹	2 K/min
Cooling rate ¹	6.3 K/min
Temperature deviation ²	±0.3 K to ±1 K
Temperature homogeneity, in space relative to the set value ³	±0.5 K to ±2 K
Temperature calibration value ⁴	-40 °C

Thermal shock tests

MIL-STD 883L Meth. 1010.9, severity level D with 12 kg Adjustment time <15 min
of IC (integrated circuits) distributed over 3 insert
baskets, measurement on test specimens

¹ According to IEC 60068-3-5; average, measured in the supply air.

² The temperature accuracy is measured in time in the middle of the test space, in steady state, without test specimens, without heat radiation and without additional equipment.

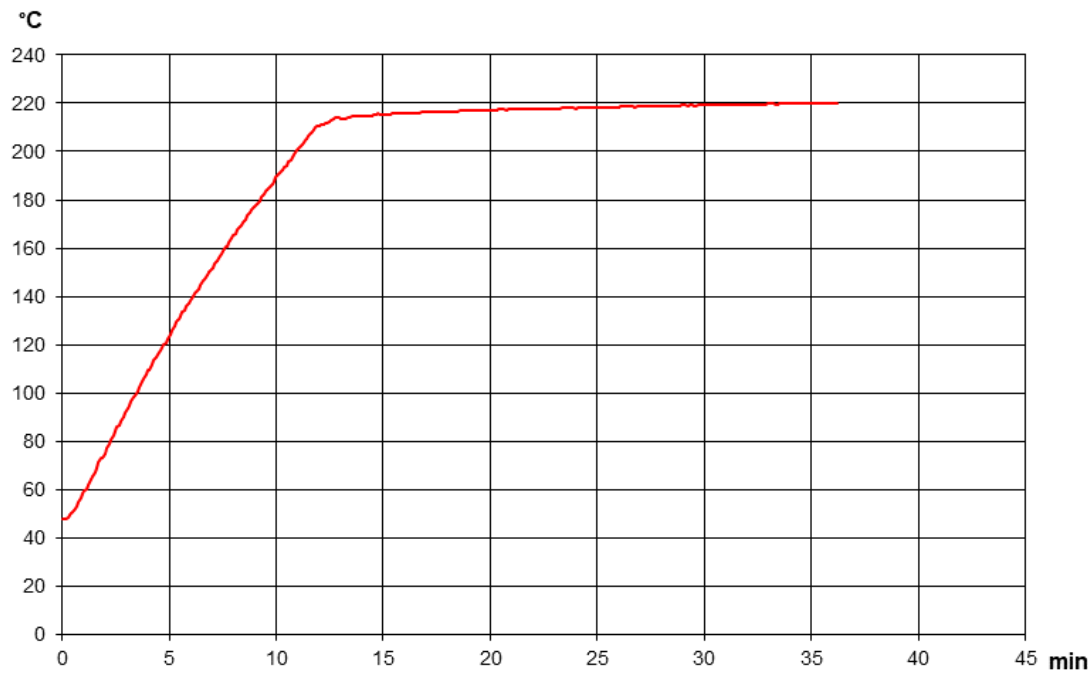
³ In the range of +50 °C to +200 °C for the hot chamber and in the range of -65 °C to +70 °C for the cold chamber.

⁴ The factory calibration of the temperature values is carried out with DAkkS-calibrated measuring equipment in the test chamber centre and documented by means of a factory calibration certificate. Optionally, a DAkkS calibration and a spatial factory or DAkkS calibration can be performed.

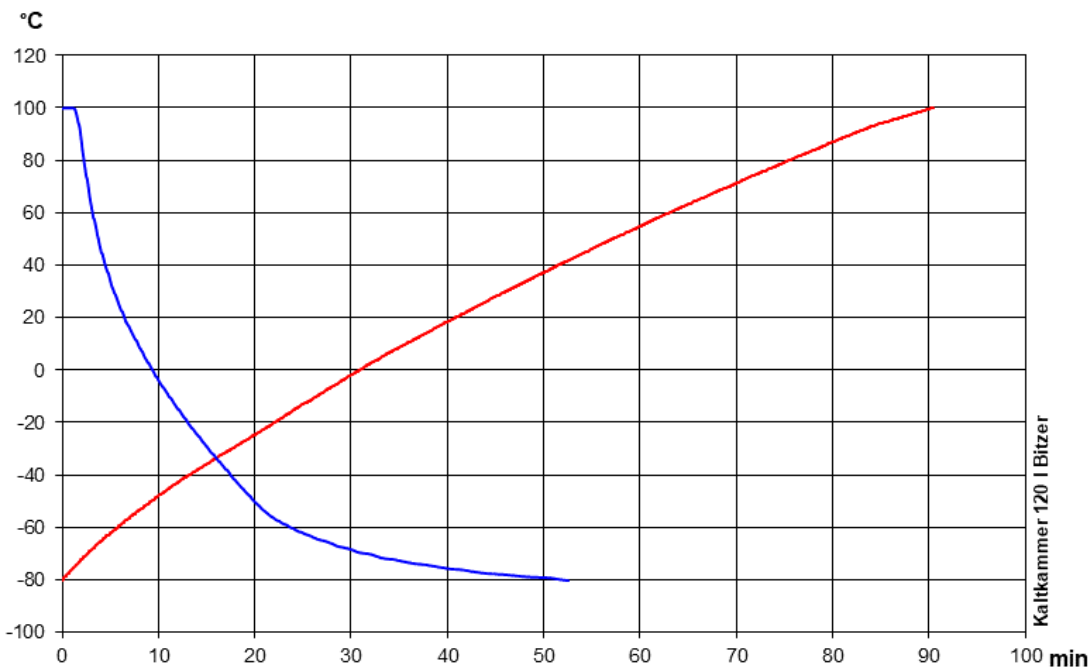
⁵ Temperatures > +5 °C are permitted in continuous operation; temperatures < +5 °C are permitted discontinuously or with the additional equipment "compressed air dryer".

Performance curve single chamber operation⁶

Hot chamber

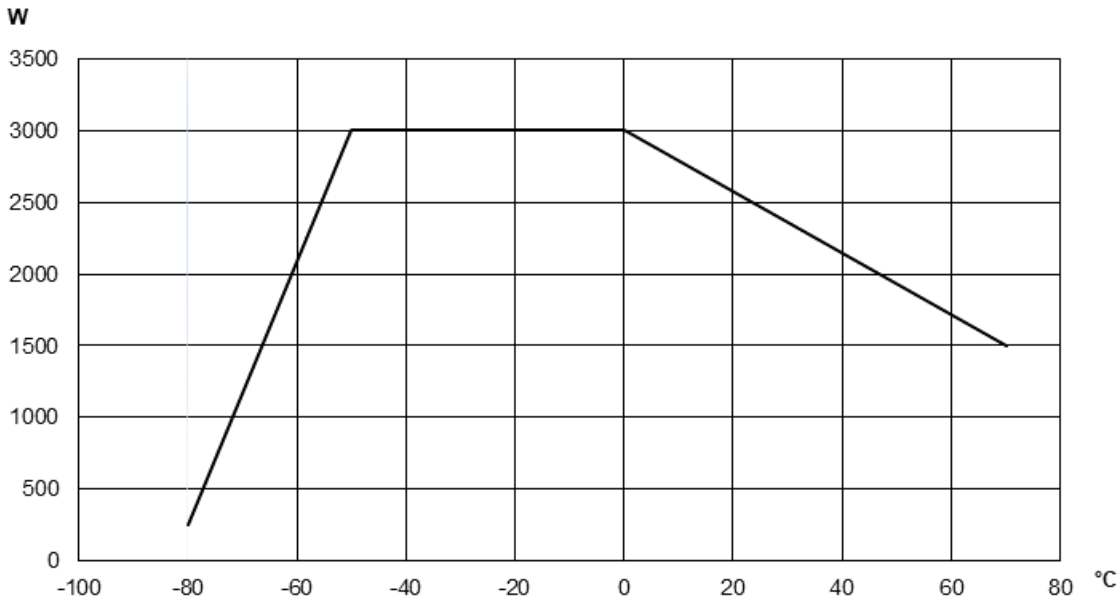


Cold chamber



⁶ Without test specimen, without heat radiation, measured at the control sensor in the supply air.

Heat compensation⁷



⁷ Temperature measured at the control sensor in the supply air at steady state.

Technical data

Dimensions

Test space volume	approx. 120 l
Test space dimensions (H x W x D)	410 mm x 470 mm x 650 mm
Exterior housing dimensions (H x W x D)	2450 mm x 1000 mm x 2530 mm
Minimum exterior housing dimensions ⁸ (H x W x D)	1985 mm x 1000 mm x 2400 mm (without protective tube and withdrawn spindle)
Loading, max.	50 kg
Total weight ⁹	1000 kg

Electrical data

Voltage rating ¹⁰	3/N/PE AC 400 V ±10 % 50 Hz
Power rating, max.	19 kW
Current rating ¹¹	33 A
Power supply	CEE-Connector, 63 A
Power supply cable	3.5 m
Fuse protection ¹²	63 A gG
Protection class of switchgear cabinet and control unit ¹³	IP 54
Sound pressure level	59 dB(A)
Sound pressure level determination method	determined at a distance of 1 m according to DIN EN ISO 11203 (enveloping surface method)
Power consumption in standard operation	approx. 5.24 kWh per cycle approx. 248 kWh / 24 hours For tests according to MIL-STD-883 L, method 1010.9, severity level D with 12 kg IC (integrated circuits) cycle time: 30 min.
Power consumption in power saving mode	approx. 4.5 kWh per cycle For tests according to MIL-STD-883 L, method 1010.9, severity level D with 12 kg IC (integrated circuits) cycle time: 30 min.

⁸ Additional expenses possibly caused by disassembly of corresponding parts.

⁹ Without loading and additional equipment.

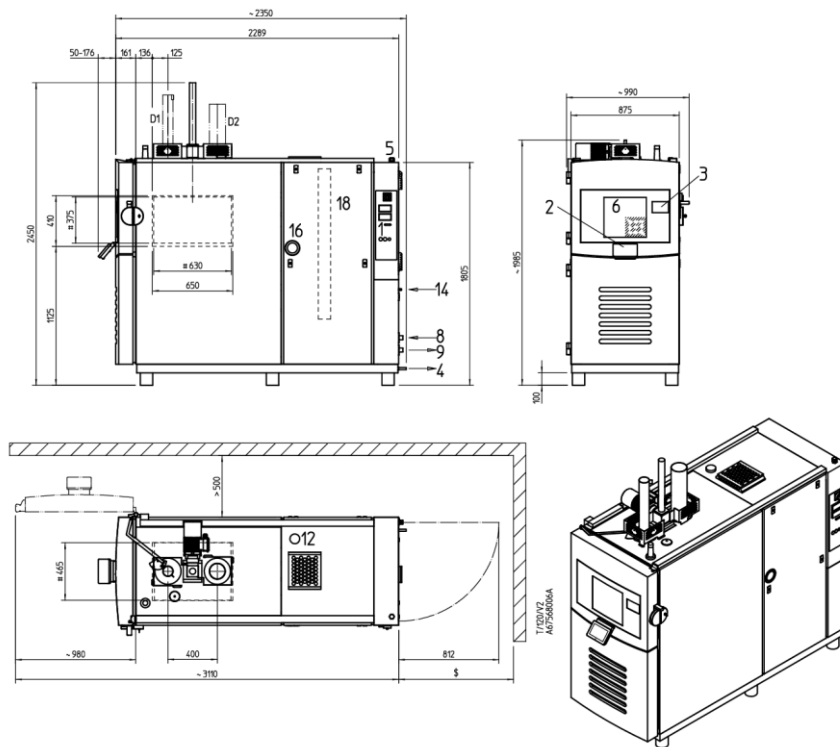
¹⁰ The test chamber can also be operated at 3/N/PE AC 380 V ± 10 % 50 Hz. In this case, the heating rate is reduced by approximately 10 %.

¹¹ Neutral conductor under load.

¹² Provided by the customer.

¹³ EMC tests and information about emitted interference according to EN 61000-6-3 / EN 61000-6-4. Interference immunity is in accordance with EN 61000-6-2.

Installation drawing



Access ports

- D1 Entry port 80 mm Ø in the ceiling (stainless steel ~ pipe)
- D2 Additional port 125 mm Ø in the ceiling (optional)

Additional information

Transport dimensions

\$ Escape route¹⁴

Equipment

- | | | | |
|---|---|----|---|
| 1 | Main switch | 8 | Connection for cooling water inlet Rp 3/4" ¹⁵ |
| 2 | Webpanel | 9 | Connection for cooling water outlet Rp 3/4" ¹⁵ |
| 3 | Controlpad | 12 | Pressure compensation opening LN ₂ (optional) |
| 4 | Overflow/condensate drain backpressure-free, G 3/4" male thread resp. hose connection Ø 12 mm | 14 | Connection for compressed air / nitrogen inerting GN ₂ (optional), DN 7.2, max. 10 bar |
| 5 | Electrical connection | 16 | Connection for LN ₂ (optional) |
| 6 | Door with window | 18 | Expansion bag |

¹⁴ According to IEC 60364-7-729 (VDE 100 part 729), min. 200 mm, a wall clearance of at least 700 mm is required for service work.

¹⁵ Optional for chambers with a test space volume of 60 l.

Refrigeration unit¹⁶

Standard design	water-cooled				
Refrigerant ¹⁷	Stage	Refrigerant	GWP	Fill quantity	CO ₂ -equivalent
	Main cooling	R449A	1397	1.7 kg	2.4 t
	Deep-cooling	R23	14800	1.4 kg	20.7 t

Water cooled design¹⁸

Connection data	water pressure 2.5 to 6 bar, differential pressure ≥ 2 bar, water temperature +12 °C to +28 °C
Cooling water consumption, max.	1.3 m ³ /h at Δt 10 K at $T_{in} + 18^\circ\text{C}$; 2.6 m ³ /h at Δt 5 K at $T_{in} + 28^\circ\text{C}$
Cooling water quality ¹⁹	no pollutants (max. particle size <100 μm , ph value 7.5 to 9)
Heat dissipation to the installation room, max.	0.8 kW
Heat dissipation to cooling water, max.	15 kW

Air-cooled design²⁰

Heat dissipation to the installation room, max.	15.8 kW
Heat dissipation to air-cooled condenser, max.	-

¹⁶ The product contains fluorinated greenhouse gases.

¹⁷ EU directive no. 517/2014 specifies an obligation for stationary refrigeration and air conditioning units with a CO₂- equivalent of 5 to 50 t to be checked for leaks at least annually and an equipment logbook to be kept; by installing an automatic leak detection system, the interval for the leak test can be doubled. We can carry out these tasks for you in our capacity as an expert partner. We would be glad to advise you on installing a leak detection system.

¹⁸ Optional for chambers with a test space volume of 60 l.

¹⁹ For operation with well, pond or river water special measures must be taken.

²⁰ Optional for chambers with a test space volume of 120 l.

Our basic equipment

Exterior housing

Material	Galvanized steel sheet
Finish	RAL 7035 light grey, solvent-free, powder coated
Door	One-handed operation, lockable, hinged on the left side, window: size 355 x 355 mm, colour: RAL 7035 light grey
Base	Adjustable feet, vibration-absorbing

Test space²¹

Test space illumination	halogen lamp 230 V / 40 W, located at the side in the hot chamber
Test space	basket made of high-polish, stainless steel, material class. 1.4301, max load 50 kg, status indication by clearly visible signal lamps, driven by electric motor and ball bearing spindle, total transposition time <10 sec
Insert basket	made of stainless steel; max. load 4 kg, mesh width 8 mm, embossed shelf guides at a distance of 20 mm in basket for additional insert baskets, max. 5 insert baskets possible
Access port	stainless steel pipe, Ø 80 mm
Air circulation conditioning	at rear wall, with radial flow fan
Air flow	supply air via air deflecting walls, exhaust air at the rear

Measurement sensor

Temperature	Pt 100 platinum temperature sensor
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Regulation and control

SIMPAC®	Digital measuring and control system with I/O unit and WEBSeason® -Software Door-integrated control pad for display of actual values for temperature, modification and monitoring of operating state Operating/programming and monitoring unit with 17.8 cm (7") Webpanel
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Communication

Digital inputs/outputs	4 digital outputs for control of customer-provided devices by means of potential-free contacts, max. load 24 V-DC, 0,5 A 4 digital inputs for feedback of customer provided devices, max. load 24 V-DC, 30 mA
Network	1 Ethernet interface (100/1000 megabits) for integration in a network
USB	1 USB interface for recording of measuring data on a flash drive ²²
Customer protocols	SimServ to control the test chamber via the Ethernet interface
Status display	two-colour signal lamp as status display

²¹ The use of tempered silicone parts means that the test space produces only low emissions. If the test space has to be emissions-free, this requires technical clarification; please contact us to request an offer.

²² Flash drive is not included in the scope of delivery.

Safety

Test specimen protection	Independent, adjustable temperature limiter $t_{\min}/t_{\max}$, separate sensor for hot and cold chamber Software temperature limiter $t_{\min}/t_{\max}$, individually adjustable fixed values in hot and cold chamber
Test chamber protection	Temperature limiter for protection against overtemperature for the hot and cold chamber
Specimen switch-off	Potential-free contact specifically for test specimens that emit heat, on female connector, max. load 24 V, 0.5 A
Safety devices	Mechanical and electrical locking of the basket when the door is open Removable guards around the basket to prevent the test specimens from getting wedged between basket and chamber walls The basket is stopped when the door is opened.

Operation modes

Control system	The SIMPAC® control system offers the possibility to reduce testing times significantly. Of course, dwell times at the desired temperature set values required by the testing standard will be obeyed. The SIMPAC® controller offers several operation modes:
Single chamber operation mode	Hot chamber or cold chamber can be used as a single temperature test chamber.
Shock operation	Normal operation mode The chamber in which the lifting basket is not located can be pre-tempered to a higher or lower setpoint. When the basket moves, the temperature is adjusted more quickly, resulting in an accelerated temperature change of the test material. Time optimized operation mode This operating mode serves to further optimize the cycle times. In addition to pretempering the hot or cold chamber, a freely definable temperature value can be added to the setpoint for a certain period of time. This setpoint offset is active until the actual temperature value is also within a freely definable tolerance band. Now the dwell time required in the test program also expires (wait function). Energy saving operation mode During extended dwell times (from 30 minutes) the empty temperature test zone is set to an energy saving mode whereby the zone temperature is maintained on "not active". Therefore, wasted energy consumption will be avoided during this time. The time at which pretempering resumes in the empty test zone is user definable. Depending on the test cycle, the type and quantity of the test specimens, the energy saving can be up to 37 %.

Your additional equipment