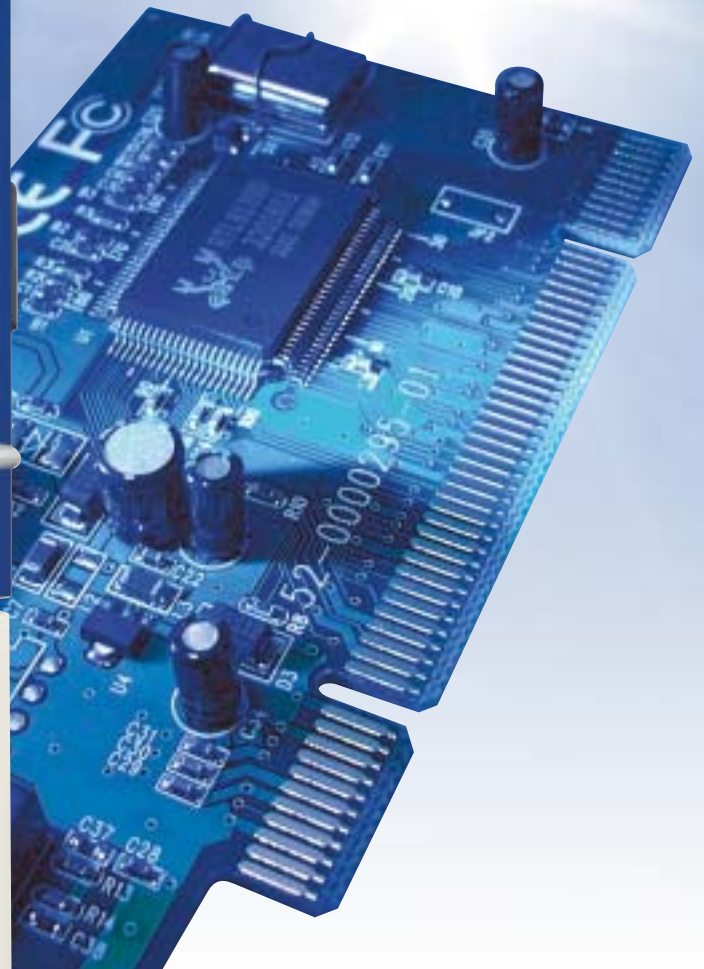




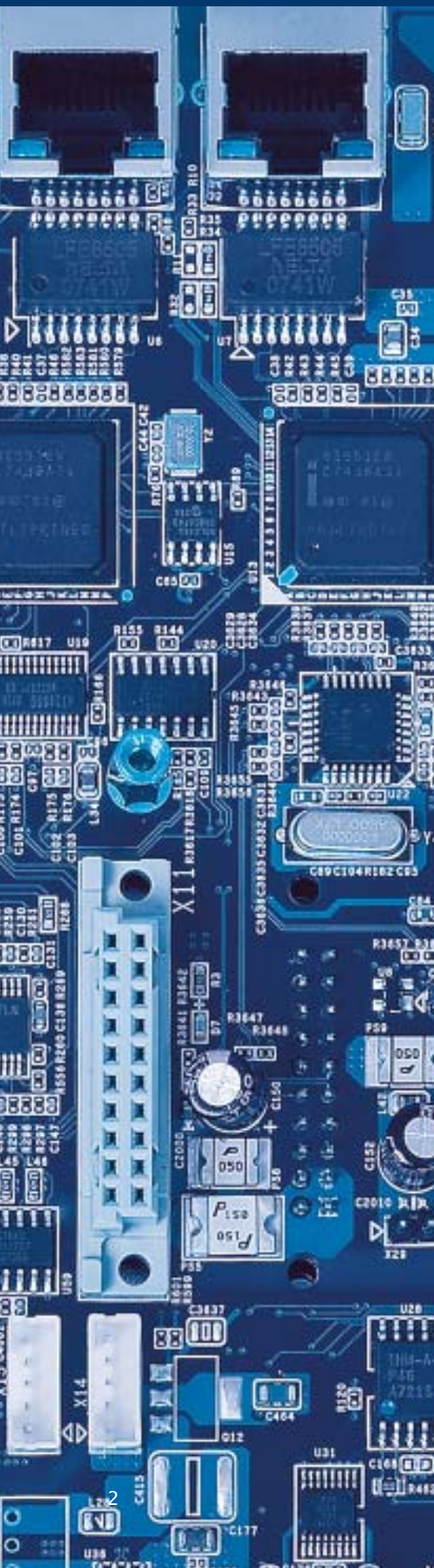
# Perfection in performance, equipment and design

**WT3 and WK3 Temperature and Climate Test Chambers**



**Weiss Umwelttechnik GmbH**  
Simulationsanlagen • Messtechnik





## Reliable test results by means of reproducible environmental conditions

Characteristics, function and service life of systems or components are influenced by varying thermal and climatic conditions during transport, storage and use.

For this reason, tests have to be carried out in order to safeguard and optimise the quality of the product.

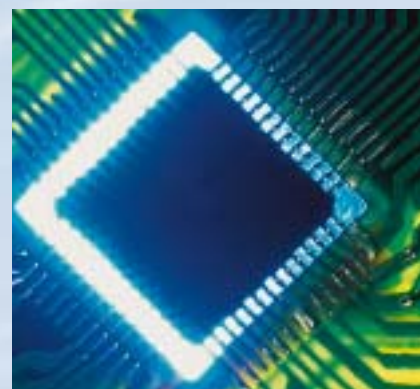
The temperature and climate test chambers produced by Weiss Umwelttechnik set standards with regard to ease of operation, performance and equipment.

Weiss Umwelttechnik GmbH is one of the leading manufacturers of test devices and systems for environmental simulation worldwide.

The product range comprises test systems of all test chamber volumes for temperature and climatic testing, simulation of exposure to weather, temperature shock, corrosion and long-time testing – in research, development, quality control and production.

Walk-in systems and in-line plants are designed, produced and installed in accordance with customer specifications.

An excellent after-sales service ensures optimum support for our customers and a high degree of operational safety of our systems.







## Perfection in performance, equipment and design ...

- Operation, monitoring and documentation of the test system with the control and monitoring system SIMPAC\*
- 8" TFT-colour touch screen display with simple, menu-guided user interfaces as a convenient interface with the operator (no programming knowledge necessary)
- Lighted CONTROLPAD\* for displaying the operating mode and the actual values in the front of the test chamber (if the system is equipped with 8" and 12" TFT-colour touch screen display)
- USB and Ethernet interface
- Printer connection via USB interface
- Networking with other test systems possible
- Remote control and remote monitoring possible via intranet or internet
- Integrated recording of measurement data for a complete documentation of the test procedure
- High-precision temperature and climate conditions due to auto-adaptive control
- Integrated service information system

- Performance optimised climate and temperature conditioning system creates power reserves for your tests
- a separately activatable condensation protection prevents condensation formation on the specimen
- Stainless steel ports (approx. Ø 50 and 125 mm) for inserting the supply lines – even in the standard version of the equipment
- Self-cleaning humidity sensor with considerable increase of the service life
- Optimised guidance of the air and temperature distribution – better than  $\pm 1.5$  K spatially guaranteed
- For very safe operation the test chambers are designed for extreme environmental conditions
- Compliance with demanding state-of-the-art test standards by means of increased humidification output
- Large water container easily accessible
- Low noise level
- Standard humidity bath flushing to prevent contamination of humidification water
- Long-time testing 85 °C/85% r. h. – our WK3 climate test chambers are the solution
- Factory calibration of temperature and humidity values is part of our standard
- Supply connections located in a central and protected position in the rear part of the device

**For further equipment details please see page 8.**

## The functional principle ...

### Patented temperature conditioning and climate technology

An airstream that is temperature conditioned and/or air conditioned precisely continuously flows through the test space of the unit and ensures an optimum spatial distribution of air and temperature.

Generously dimensioned axial fans with an external drive motor draw the air out of the test chambers in temperature and air-conditioned process. The circulating air then flows through a fin-type heat exchanger in which it is cooled if required. For heating of the circulating air an electrical heater is installed behind the heat exchanger.

### Reliable conditions

Due to special circuits any undesired formation of condensate is prevented to ensure the best possible constancies in terms of temperature and humidity.

To ensure a high relative humidity even with a heat load the air passes over a water bath. Integrated heat elements ensure quick and precise heating of the water.

For exact control of humidity in the test space the humidity is measured psychrometrically.

Here, the humidity sensor is wetted automatically and cleaned in the process.

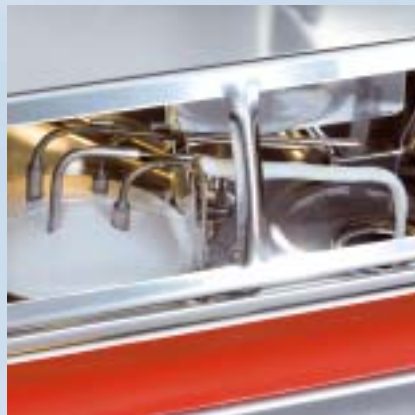
Due to this technology the service life of the test chamber considerably increases.

The specially developed 32-bit control and monitoring system of SIMPAC\* ensures controlling of temperature and humidity.

The units are compatible with the SIMPATI\* software package and can be integrated into their networking environment (data logging operation in SIMPATI\*).



Stainless steel test space

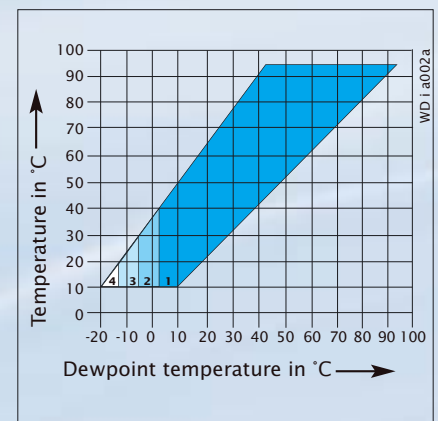
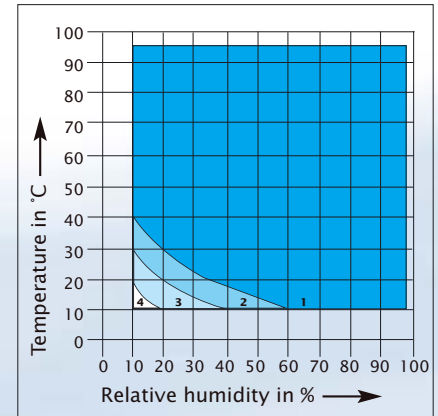


Humidity sensor



Access to water tank

## Humidity diagrams:



- 1 = Standard working range
- 2 = Dewpoint range +4 °C ... -3 °C discontinuously
- 3 = Dewpoint extension from -3 °C ... -12 °C controlled (option: compressed air dryer)
- 4 = Dewpoint extension to -20 °C controlled (option compressed air dryer and capacitive sensor)

## Design features ...

### Perfectly manufactured

The external housing is made of corrosion-resistant, galvanised steel sheet and solvent-free powder coated. The stainless steel test space is welded vapour-tight. Its environmentally friendly insulation guarantees the best possible insulation values and, hence, the lowest possible operating costs.

Even in the standard version of the equipment all sizes are equipped with two standard stainless steel ports (approx. Ø 50 and 125 mm). They can be used for inserting measurement and control cables, other supply connections or additional equipment.

### Safe design

The test chambers are equipped with an adjustable safety cut-out against high and low temperatures (test specimen protection with separate sensor) according to EN 60159-2 (1993). Any safety alarm is issued visually as well as acoustically.

The door latch ensures an optimum closing pressure while ensuring protection against excess pressure at the same time. The large observation window which is available as an option allows an optimum view of the test space and it is equipped with multiple glazing and heated in order to prevent the formation of condensate.

A potential-free contact is available on the test chamber. Every electrical functional circuit is equipped with its own safety facility which shuts down the functional circuit affected or the entire test chamber in case of a malfunction. The electrical system complies with the approved state of the art in the field, the safety regulation "Electrical Systems and Facilities" (BGV A3) as well as with the relevant VDE regulations. All test chambers fulfil the EMC, low-voltage and machinery directive. The hermetic refrigeration circuits operate with environmentally friendly refrigerants (CFC-free).

### Ready for use

A quality inspection of every test unit is effected before delivery. They are designed ready for plug-in and are directly ready for use. There is no need for an assembly on site.



Stainless steel port





## Control and program control with the digital measurement and control system

### Comfortable operation

The units WT3 and WK3 are equipped with an 8" TFT-colour touch screen display. In addition, an easily readable CONTROLPAD\* is integrated into the door, started and stopped through test cycles, and actual values for temperature and humidity can be easily read. Simple, menu-guided user interfaces are the convenient interface with the operator. There is no need for programming knowledge.

With the integrated process visualisation, the device function is explained in a way that is easy to understand.



8" TFT-colour touch screen display and CONTROLPAD\* (standard)



### Numerous ways of networking

Control is governed by the 32-bit-I/O system with integrated soft-PLC. A webserver can place test and diagnostic information into the intranet via Ethernet, if desired.

The devices can be reached and operated from almost any place in the world. All it takes is network access to the device's webserver in the intranet or in the internet, if activated accordingly.

Standard interfaces are Ethernet 100 /10 megabit and USB for external storage of measurement data on a USB stick. Four potential-free outputs and four inputs (24 V-DC) are available for test specimen control.

### Fully developed software

With the optionally available SIMPATI\* software, you have the optimal system for operation and control of the test system. The software not only permits evaluation and documentation of the test sequences, but also allows problem-free integration of the system into a PC network. Archiving of the data and parameters is always ensured with the SIMPATI\* software.

### Alternatively equipped with 12" or 3.5" TFT-colour touch screen display

As an alternative, the test chamber can be equipped with a 12" TFT-colour touch screen display. The 12" display contains an industrial PC including the Windows software package SIMCONTROL\*, which makes the test chamber into a pure communication marvel. Simulation programs and test results are stored on the integrated hard disk and can be easily exchanged via USB interface.

All test information can be called up by touch. Tests can be programmed without complication using a graphic editor.

In an additional option, the device can be equipped with a 3.5" TFT-colour touch screen display (320 x 240 px). The display is integrated in the door in place of the CONTROLPAD\* and is delivered with the SIMPATI\* program tool for simple control of the test chamber. The 3.5" display thus ensures optimal operation of the system at a favourable price.



12" TFT-colour touch screen display and CONTROLPAD\* (option)



3,5" TFT-colour touch screen display (option)



## Standard version

- Digital measuring and control system SIMPAC\*
- 8" TFT-colour touch screen display
- CONTROLPAD\* for displaying of temperature values, lighting, start/stop, etc. on the front panel of the device
- Auto-adaptive control system
- Ethernet and USB interface
- Psychrometric humidity measurement with automatically wetted, self-cleaning sensor
- Protection against condensation on test specimen
- Refrigeration unit, air-cooled
- Stainless steel ports approx. Ø 50 mm and 125 mm in the left and right side panel
- Safety cut-out against high and low temperatures (protection of test specimen as per EN 60519-2 (1993) adjustable, with separate sensor
- Insertion rack (stainless steel)
- Adjustable and vibration absorbing feet
- 4 digital outputs (24 V-DC), 4 digital inputs (24 V-DC)
- Potential-free contact for specimen disconnection
- 2 temperature values are calibrated (+23 °C and +80 °C)

### Additional equipment for WK3 series

- Integrated limit value monitoring system for humidity
- Large water tank, easily accessible
- Automatic feeding in of additional water without interruption of operation
- Display of the humidity values at the CONTROLPAD\*
- Humidity bath flushing for cleaning of the humidifier water
- 2 climate values are calibrated (23 °C/50% r.h. and 95 °C/50% r.h.)

## Options

- 12" TFT-colour touch screen display with integrated industrial computer
- Uninterruptible power supply (UPS) for integrated PC for protection against data loss in case of short-term interruptions of power supply (only with 12" TFT-colour touch screen display)
- 3.5" TFT-colour touch screen display (without CONTROLPAD\*)
- SIMPATI\* software package for Windows, as off XP
- Test space door with observation window including optimised test space lighting
- Door with hand-hole port
- Door hinged on right side
- Water-cooled version for cooling tower, chilled water or mains water
- Mobile installation by means of moveable version
- Speed-controllable fan in order to vary the circulating air volume flow
- Fresh air purge facility in order to keep the air in the test chamber clean
- Shelves for optimum use of the test space
- Stainless steel ports approx. Ø 50, 80 and 125 mm for connection of the test specimens
- Temperature measurement on the test specimen
- Interface RS 232 C and further interfaces upon request
- Other voltages and frequencies
- Digital I/O, 4 inputs and 4 outputs
- Calibration in deviation to the standard
- Additional calibration (WKD – Factory Calibration and DKD – German Calibration Service)
- Reinforced test chamber floor up to 150 kg (200 kg from 600 l)
- Floor for heavy loads up to 500 kg (only available as of 600 l)
- Flat notches or notches for the fixed placement of connected test specimens
- Ports in the area of the roof
- Upgradeable for special test regulations (automotive, photo-voltaic, etc.)

### Additional equipment for WK3 series of models

- Dewpoint extension in climate working range up to -12 °C controlled
- Independent capacitive humidity sensor (temperature and humidity measurement)
- Pressure-resistant demineralisation cartridge
- Dewpoint extension up to -20 °C controlled
- **Further options / special accessories, tailor-made for your special requirements, upon request.**



Main switch, test specimen protection and interfaces



## WT3 series of models and WK3 series of models

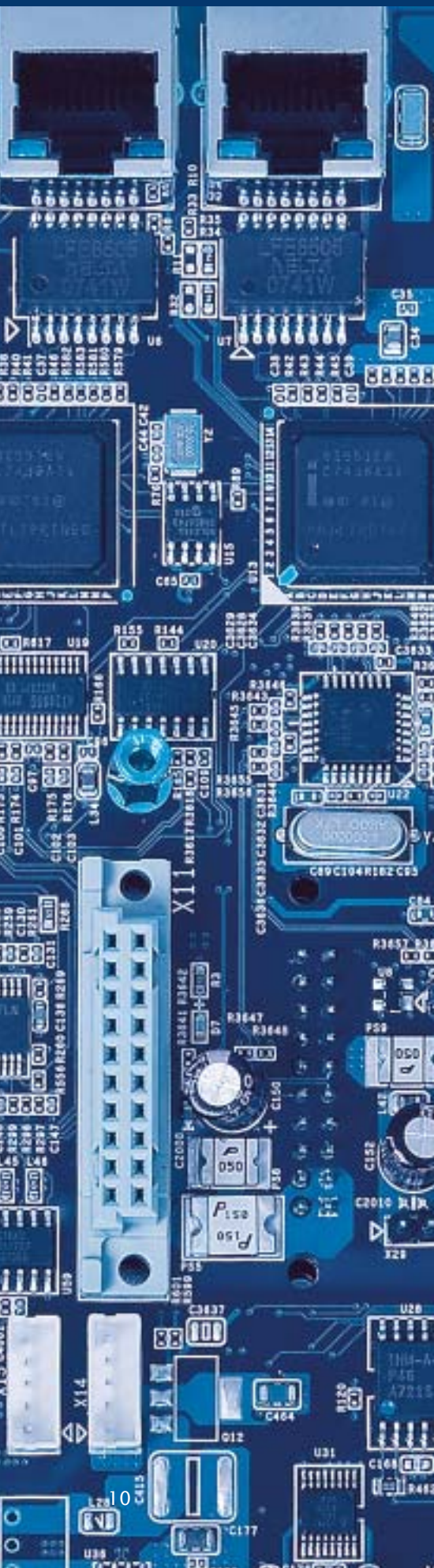
| Type                                       |                             | WT/WK                 | 180/<br>40                                                  | 180/<br>70                | 340/<br>40                | 340/<br>70                | 600/<br>40                | 600/<br>70                | 1000/<br>40                 | 1000/<br>70                 | 1500/<br>40                 | 1500/<br>70                 |
|--------------------------------------------|-----------------------------|-----------------------|-------------------------------------------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| Test space contents                        |                             | Litre                 | 190                                                         | 190                       | 335                       | 335                       | 600                       | 600                       | 990                         | 990                         | 1540                        | 1540                        |
| Test space dimensions                      | Height approx.              | mm                    | 750                                                         | 750                       | 750                       | 750                       | 950                       | 950                       | 950                         | 950                         | 950                         | 950                         |
|                                            | Width approx.               | mm                    | 580/<br>540 <sup>4)</sup>                                   | 580/<br>540 <sup>4)</sup> | 580/<br>540 <sup>4)</sup> | 580/<br>540 <sup>4)</sup> | 800/<br>760 <sup>4)</sup> | 800/<br>760 <sup>4)</sup> | 1100/<br>1060 <sup>4)</sup> | 1100/<br>1060 <sup>4)</sup> | 1100/<br>1060 <sup>4)</sup> | 1100/<br>1060 <sup>4)</sup> |
|                                            | Depth approx.               | mm                    | 450                                                         | 450                       | 765                       | 765                       | 800                       | 800                       | 950                         | 950                         | 1475                        | 1475                        |
| Outside dimensions                         | Height approx.              | mm                    | 1805                                                        | 1805                      | 1805                      | 1805                      | 2005                      | 2005                      | 2005                        | 2005                        | 2005                        | 2005                        |
|                                            | Width approx.               | mm                    | 780                                                         | 780                       | 780                       | 780                       | 1000                      | 1000                      | 1300                        | 1300                        | 1300                        | 1300                        |
|                                            | Width <sup>1)</sup> approx. | mm                    | 875                                                         | 875                       | 875                       | 875                       | 1095                      | 1095                      | 1395                        | 1395                        | 1395                        | 1395                        |
|                                            | Depth approx.               | mm                    | 1385                                                        | 1385                      | 1700                      | 1700                      | 1750                      | 1750                      | 1925                        | 1925                        | 2450                        | 2450                        |
|                                            | Depth <sup>1)</sup> approx. | mm                    | 1545                                                        | 1545                      | 1860                      | 1860                      | 1910                      | 1910                      | 2085                        | 2085                        | 2610                        | 2610                        |
| Performance for temperature tests          |                             |                       |                                                             |                           |                           |                           |                           |                           |                             |                             |                             |                             |
| Maximum temperature                        |                             | °C                    | +180                                                        | +180                      | +180                      | +180                      | +180                      | +180                      | +180                        | +180                        | +180                        | +180                        |
| Minimum temperature                        |                             | °C                    | -42                                                         | -72                       | -42                       | -72                       | -45                       | -75                       | -45                         | -75                         | -45                         | -75                         |
| Temperature changing rate cooling          |                             | K/min <sup>3+5)</sup> | 4.0                                                         | 3.0                       | 4.0                       | 3.0                       | 3.0                       | 2.5                       | 3.0                         | 2.5                         | 2.5                         | 2.3                         |
| Temperature changing rate heating          |                             | K/min <sup>3+5)</sup> | 4.0                                                         | 4.0                       | 3.2                       | 3.0                       | 4.0                       | 4.0                       | 4.0                         | 4.0                         | 3.5                         | 3.5                         |
| Temperature changing rate linear           |                             | K/min <sup>2+3)</sup> | 1.0                                                         | 1.0                       | 1.0                       | 1.0                       | 1.0                       | 1.0                       | 1.0                         | 1.0                         | 1.0                         | 1.0                         |
| Maximum heat compensation                  |                             | W <sup>3)</sup>       | 2300                                                        | 1500                      | 2300                      | 1500                      | 2500                      | 2500                      | 4500                        | 3000                        | 4200                        | 3000                        |
| Temperature constancy in time              |                             | K                     | ±0.1 to ±0.5                                                |                           |                           |                           |                           |                           |                             |                             |                             |                             |
| Temperature homogeneity in space           |                             | K <sup>6)</sup>       | ±0.5 to ±1.5                                                |                           |                           |                           |                           |                           |                             |                             |                             |                             |
| Calibration values                         |                             | °C                    | +23 and +80                                                 |                           |                           |                           |                           |                           |                             |                             |                             |                             |
| Performance for climate tests              |                             |                       |                                                             |                           |                           |                           |                           |                           |                             |                             |                             |                             |
|                                            |                             |                       | only WK3                                                    |                           |                           |                           |                           |                           |                             |                             |                             |                             |
| Temperature range                          |                             | °C                    | +10 to +95                                                  |                           |                           |                           |                           |                           |                             |                             |                             |                             |
| Dewpoint temperature range                 |                             | °C                    | +4 to 94 (up to -3) <sup>7)</sup> (up to -12) <sup>8)</sup> |                           |                           |                           |                           |                           |                             |                             |                             |                             |
| Humidity range                             |                             | % r.h.                | 10 to 98                                                    |                           |                           |                           |                           |                           |                             |                             |                             |                             |
| Humidity constancy in time                 |                             | % r.h.                | ±1 to ±3                                                    |                           |                           |                           |                           |                           |                             |                             |                             |                             |
| Temperature constancy in time              |                             | K                     | ±0.1 to ±0.3                                                |                           |                           |                           |                           |                           |                             |                             |                             |                             |
| Temperature homogeneity in space           |                             | K <sup>6)</sup>       | ±0.5 to ±1.0                                                |                           |                           |                           |                           |                           |                             |                             |                             |                             |
| Maximum heat compensation                  |                             | W <sup>3+10)</sup>    | 400                                                         | 400                       | 400                       | 400                       | 500                       | 500                       | 500                         | 500                         | 500                         | 500                         |
| Calibration values                         |                             |                       | +23 °C / 50 % r.h. and +95 °C / 50 % r.h.                   |                           |                           |                           |                           |                           |                             |                             |                             |                             |
| Electrical connection                      |                             |                       | 3/N/PE AC, 400 V ±10 %, 50 Hz <sup>9)</sup>                 |                           |                           |                           |                           |                           |                             |                             |                             |                             |
|                                            |                             |                       | CEE connector, 16 A                                         |                           |                           |                           |                           | CEE connector, 32 A       |                             |                             |                             |                             |
| Type of protection, electrical parts, max. |                             |                       | IP 54                                                       |                           |                           |                           |                           |                           |                             |                             |                             |                             |
| Electrical connection                      | approx.                     | kW                    | 4.1                                                         | 4.9                       | 4.1                       | 4.9                       | 7.8                       | 9.1                       | 11.5                        | 13.8                        | 11.5                        | 13.8                        |
| Max. current consumption                   | approx.                     | A                     | 12.5                                                        | 14                        | 12.5                      | 14                        | 15                        | 19                        | 22                          | 29                          | 22                          | 29                          |
| Sound pressure level <sup>11)</sup>        | approx.                     | dB(A)                 | 56                                                          | 57                        | 56                        | 57                        | 61                        | 62                        | 62                          | 63                          | 62                          | 63                          |
| Condenser                                  |                             |                       | optionally air-cooled / water-cooled                        |                           |                           |                           |                           |                           |                             |                             |                             |                             |
| Weight                                     |                             | kg                    | 425                                                         | 460                       | 490                       | 500                       | 620                       | 680                       | 840                         | 955                         | 1020                        | 1130                        |

Permissible ambient conditions from +10 to +35 °C and max. relative air humidity of 75 %.

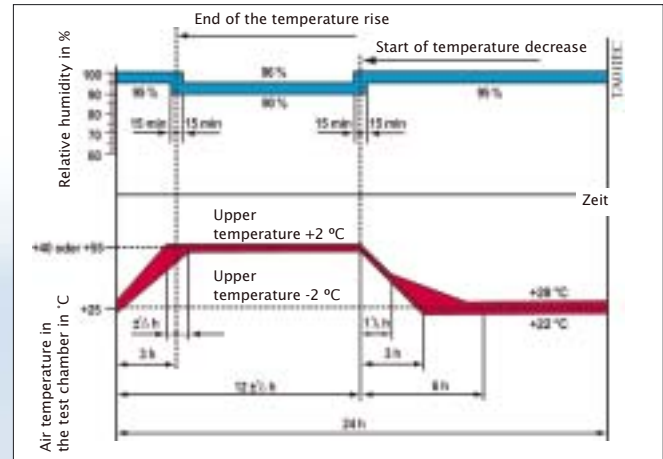
- 1) Overall dimensions – the external dimensions can be reduced by dismantling components
- 2) Between +125 °C and -25 °C for the models .../ 40 and +125 °C and -40 °C for the models .../ 70
- 3) The performance data refer to +25 °C ambient temperature, 400 V nominal voltage, without specimen, with additional equipment and heat compensation, with water cooling at a flow temperature of 28 °C
- 4) Width between the shelf supports
- 5) According to IEC 600 68-3-5, in temperature range from +180 to -40/-70 °C
- 6) Referring to the adjusted setpoint value in the temperature range of a minimum temperature to 150 °C
- 7) Intermittent operation
- 8) Dewpoint extension as an option
- 9) Other voltages and frequencies as an option
- 10) In the range from +25 °C to 95 °C and <90 % r.h.
- 11) Measured in 1.60 m height under free field conditions at 1 m distance from front of the system

We reserve the right to make any technical alterations.  
Some equipment photos show chambers with optional accessories.

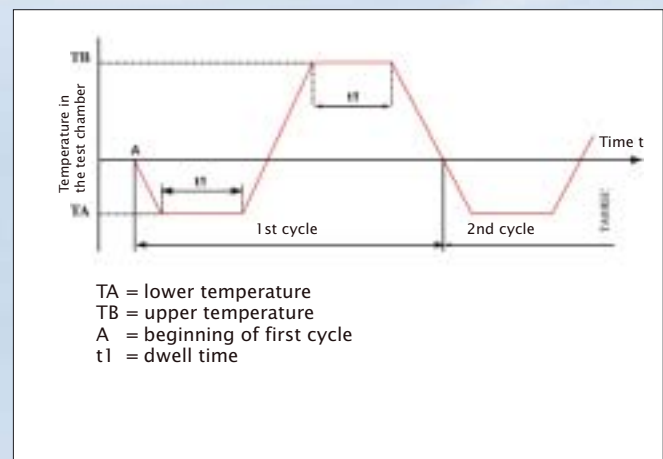




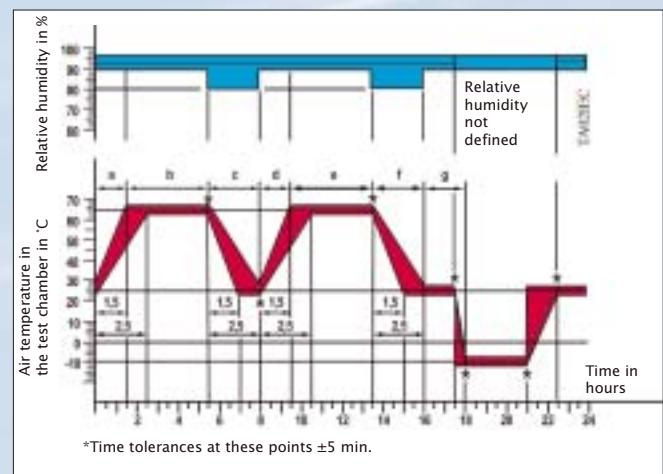
## The standards – we have the proven solution



**DIN IEC 68-2-30 Test Db, Version 1**  
(humid heat, cyclic)



**DIN IEC 68-2-14 Test Nb**  
(Temperature change with defined rate,  
one-chamber method)



**IEC 68-2-38 Test Z/AD, Fig. 2a**



## Walk-in temperature and climate test chambers of modular construction, series M.C.S.

The walk-in temperature and climate chambers of the WT/WK series were specially developed for large test objects.

The test chamber is available in 5 standardized sizes (8, 12, 17, 22, 27 m<sup>3</sup>). The machine unit comprises a fan, refrigeration unit, humidification and heating equipment, switch cabinet and system control.

It is completely pre-assembled and tested at the Weiss factory and connected to the installed cell on site.

Thus, the installation time on site is reduced considerably.

Depending on the customers requirements, we can configure the complete system. For configuration purposes, we simply require the following data:

- Desired mode of operation (temperature or climate tests)
- Desired cooling or heating rate
- Desired test chamber size

Special ranges and sizes are possible on request. Please contact us.





## Test systems for professionals. Test the best ...



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  $-75...+180^{\circ}\text{C}$  and 10 ... 98 % 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, offices in Germany, subsidiaries and representatives worldwide are available at

**[www.weiss.info](http://www.weiss.info)**



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