

# Technical description

## ClimeEvent C/1500/70a/3



Illustration similar, contains additional equipment

ClimeEvent C/1500/70a/3 01.1E/10 2019

# Test whatever you like.

## Standards for Climate Test Chambers

<b>Low-temperature tests</b>	<b>Constant climates</b>
IEC 60068-2-1, Test A	IEC 60068-2-67
ISO 16750-4, Low-temperature test	IEC 60068-2-78
ETSI EN 300019-2-4, Test Ab/Ad	ISO 16750-4, Damp heat steady
MIL-STD-810 G, Meth. 502.5	ETSI EN 300019-2-4, Test Cab
JESD22-A119	MIL-STD-202 G, Meth. 103B
<b>High-temperature tests</b>	JESD22-A101C
IEC 60068-2-2, Test B	<b>Alternating climates</b>
ISO 16750-4, High-temperature test	IEC 60068-2-30, Test Db, Var. 1
ETSI EN 300019-2-4, Test Bb/Bd	IEC 60068-2-30, Test Db, Var. 2
MIL-STD-202 G, Meth. 108A	IEC 60068-2-38
MIL-STD-810 G, Meth. 501.5	ISO 16750-4, Damp heat cyclic
MIL-STD-883 J, Meth. 1008.2	ISO 16750-4, Temp/Humid, cyclic
JESD22-A103D	ETSI EN 300019-2-4, Test Db
<b>Alternating temperature tests</b>	VG 95210, Blatt 7, Meth. 106C
IEC 60068-2-14, Test Nb	MIL-STD-202 G, Meth. 106D
ISO 16750-4, Temp. steps	MIL-STD-331 C, Test C1
ISO 16750-4, Temp. cycling	MIL-STD-750-1, Change 3
ETSI EN 300019-2-4, Test Nb	MIL-STD-810 G, Meth. 507.5
MIL-STD-331 C, Test C6	MIL-STD-883 J, Meth. 1004.7
	JESD22-A100D

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!**

# Sophisticated technology. Perfectly crafted.

## The new era of environmental simulation.

The new era continues: With ClimeEvent, the latest generation of Climate Test Chambers, you can now also test in extended temperature ranges in an environmentally friendly way - with even better performance down to  $-55\text{ }^{\circ}\text{C}$ , a range required by all current standards. We achieve this by using the new, environmentally friendly refrigerants R449A and WT69 and thus guarantee maximum future safety for your device.

The new refrigerant WT69 developed by **weisstechnik** replaces refrigerant R23, which was previously used in cascaded environmental simulation systems. This makes **weisstechnik** the first manufacturer in the world to offer an environmentally friendly and future-proof refrigerant alternative for high-performance tests at very low temperatures from  $-40\text{ }^{\circ}\text{C}$  to  $-70\text{ }^{\circ}\text{C}$ , without having to compromise on reliability, safety and performance.



Illustration is similar, contains additional equipment

## A secure future – thanks to refrigerant WT69.

- **Secure investment:** With a GWP value of 1357, refrigerant WT69 guarantees the trouble-free use of test chambers beyond 2030.
- **Powerful:** Test chambers operated with WT69 improve the performance in the most important part of the temperature range and thus ensure constant and comparable test conditions.
- **Economical:** With a filling quantity of up to 3.6 kg, the annual leakage test prescribed by the EU F-gas regulation is not required.
- **Non-hazardous:** Refrigerant WT69 was developed and tested in close cooperation with experienced partners. It is non-toxic and non-flammable.

## Proven basis - refrigerant R449A.

For the temperature range down to  $-40\text{ }^{\circ}\text{C}$ , the proven and environmentally friendly refrigerant R449A is still used, as in all Climate Test Chambers of series ClimeEvent. With a GWP value of 1397, it also meets the requirements of the EU F-Gas Regulation and enables safe, environmentally friendly operation of the test chambers - even beyond the year 2030!

# Sophisticated technology. Perfectly crafted.

## Less is more.

ClimeEvent comes equipped with **greenmode®**. With the use of **greenmode®**, you can reduce your running costs and save up to 40% on electrical energy and, thus, many tons of CO<sub>2</sub>. We are able to achieve these savings through intelligent control of system components under specific operating conditions.



### Precise control.

**SIMPAC®**, the measuring and control system for operation, monitoring and documentation, is a basic feature of Climate Test Chambers ClimeEvent.

### Entering the age of connectivity – with WEBSeason®.

You can program, control and monitor your test at any time and anywhere with the innovative **WEBSeason®** user interface. **WEBSeason®** provides a new dimension of flexibility and efficiency.

- Modern and dynamic design with swipe control for intuitive operation
- Multi-user concept for simultaneous access by multiple users, user rights are assigned individually
- Easy programming of test sequences and loops
- Program preview in chart format
- Worldwide access, even via tablet PC and smartphone

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# Advanced technology. Reliable results.

PERFORMANCE DATA FOR TEMPERATURE TESTS		
Maximum temperature	°C	+180
Minimum temperature <sup>1</sup>	°C	-70
Rate of temperature change <sup>2</sup> , cooling	K/min	3.5
Rate of temperature change <sup>2</sup> , heating	K/min	3.5
Temperature deviation <sup>3</sup> , in time	K	±0.1 to ±0.5
Temperature homogeneity <sup>4</sup> , in space	K	±0.5 to ±1.0
Temperature gradient <sup>5</sup>	K	≤2
Heat compensation <sup>6</sup> , max.	W	4000
Factory calibration values <sup>7</sup>	°C	-40 and +80
PERFORMANCE DATA FOR CLIMATE TESTS		
Maximum temperature	°C	+95
Minimum temperature	°C	+10
Temperature deviation <sup>3</sup> , in time	K	±0.1 to ±0.3
Temperature homogeneity <sup>4</sup> , in space	K	±0.5 to ±1.0
Dew point temperature range <sup>8</sup>	°C	-3 to +94
Humidity range	% RH	10 to 98
Humidity deviation <sup>9</sup> , in time	% RH	±1 to ±3
Humidification water consumption <sup>10</sup> , for every 24 h	l	2
Heat compensation <sup>6</sup> , max.	W	500
Factory calibration values <sup>7</sup>		+ 23 °C / 50% RH + 55 °C / 93% RH + 90 °C / 90% RH

<sup>1</sup> Temperatures >+5 °C are permitted in continuous operation; temperatures <+5 °C are permitted discontinuously or with the additional equipment "compressed air dryer".

<sup>2</sup> According to IEC 60068-3-5; average, measured in the supply air.

<sup>3</sup> In the middle of the test space when it is empty and at steady state, without specimen, without heat radiation and without additional equipment, depending on temperature.

<sup>4</sup> Relative to the selected set point in the temperature range from the minimum temperature up to +150 °C and/or at humidity >20% RH.

<sup>5</sup> Up to +150 °C according to IEC 60068-3-5:2001 and/or JF 1101-2003.

<sup>6</sup> At +20 °C for temperature tests / in the range from +25 °C to +95 °C at a relative humidity up to 90% RH for climate tests.

<sup>7</sup> The factory calibration of the temperature and humidity values is carried out with DAkkS-calibrated measuring equipment in the middle of the test space and documented with a certificate. A DAkkS calibration, as well as a spatial factory or a spatial DAkkS calibration, can be provided on request. DAkkS calibration is carried out by Vötsch Industrietechnik GmbH.

<sup>8</sup> Discontinuous operation (+4 °C to -3 °C).

<sup>9</sup> In the middle of the test space when it is empty and at steady state, without specimen, without heat radiation and without additional equipment, depending on climate value.

<sup>10</sup> At 40 °C and 92% RH.

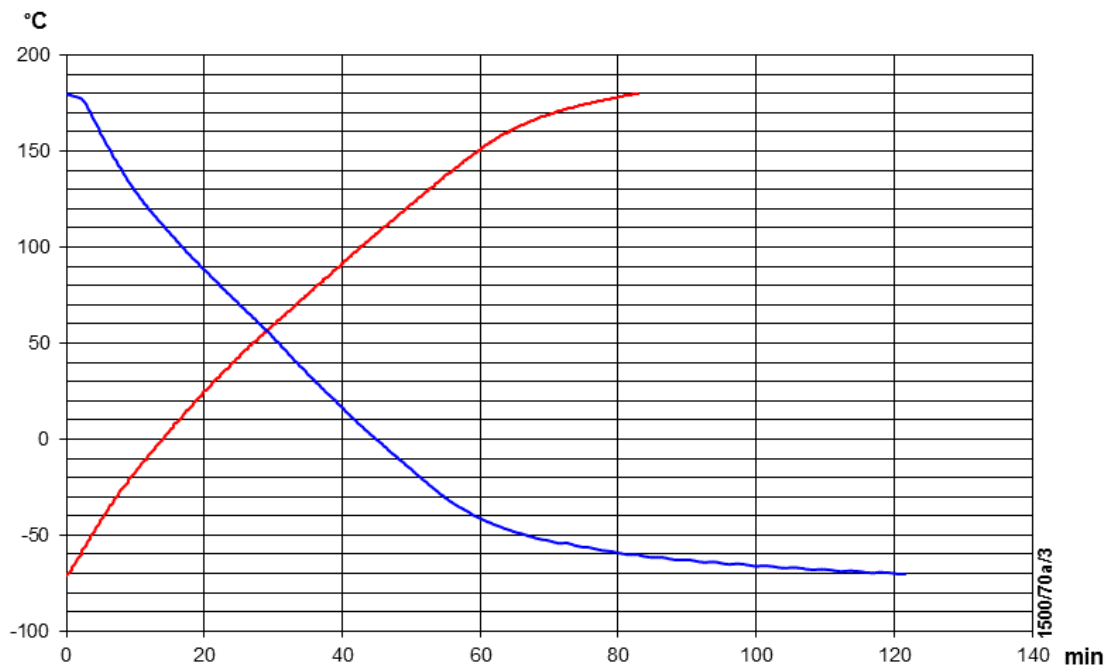
The performance data refers to +25 °C ambient temperature and +18 °C cooling water temperature, 400 V/50 Hz nominal voltage, without specimen, without additional equipment and without heat compensation.

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.

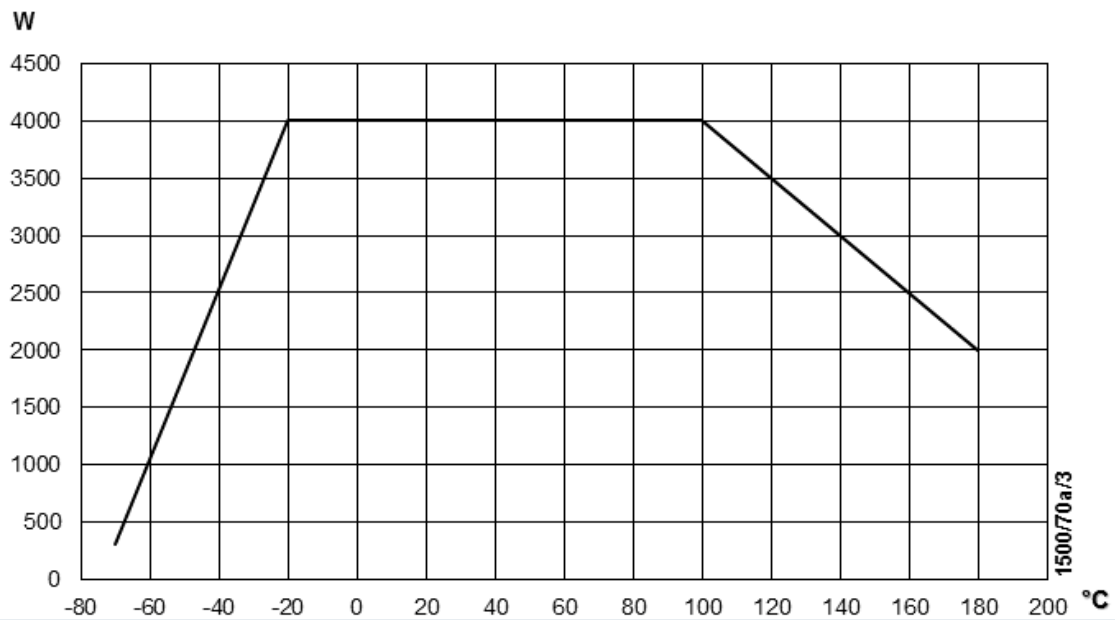
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# Advanced technology. Reliable results.

## RATE OF TEMPERATURE CHANGE FOR COOLING AND HEATING<sup>1</sup>



## HEAT COMPENSATION<sup>2</sup>



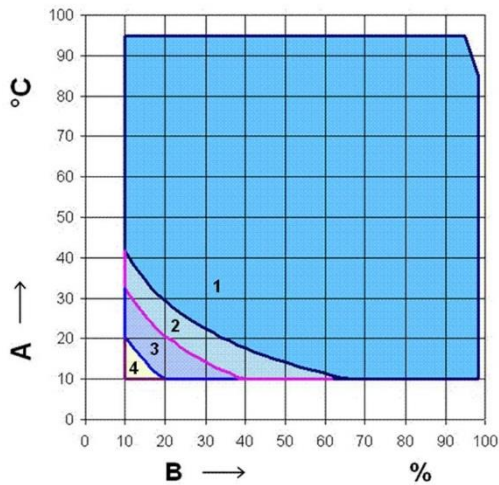
<sup>1</sup> Without test specimen, without heat radiation, measured at the control sensor in the supply air.

<sup>2</sup> Temperature measured at the control sensor in the supply air at steady state.

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# Advanced technology. Reliable results.

## CLIMATE CHART



A: Test space temperature

B: Relative humidity

1: Standard climate range for continuous operation

2: Standard climate range for discontinuous operation only (dew points ranging from +4 °C to -3 °C)

3: Extended climate range with dew point temperatures controlled up to -12 °C using dried compressed air<sup>1</sup>

4: Extended climate range with dew point temperatures controlled up to -20 °C using dried compressed air<sup>1</sup> and capacitive humidity measuring system<sup>2</sup>

<sup>1</sup> Compressed air dryer is available as additional equipment.

<sup>2</sup> Available as additional equipment.

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# Technical data.

TECHNICAL DATA		
Test space volume	l	1540
Test space dimensions, HxWxD	mm	950x1100x1475
Useable width	mm	1060
Total load of multiple insertion shelves and test space floor <sup>1</sup>	kg	250
Load of the test space floor <sup>1</sup>	kg	150
Load per insertion shelf <sup>1</sup>	kg	50
Total load for multiple insertion shelves <sup>1</sup>	kg	100
Exterior housing dimensions, HxWxD	mm	2000x1415x2555
Minimum exterior housing dimensions <sup>2</sup> , HxWxD	mm	1900x1320x2280
Total weight	kg	1070
Voltage rating <sup>3</sup>		3/N/PE AC 400 V ± 10% 50 Hz
Power rating <sup>4</sup>	kW	13
Current rating <sup>5</sup>	A	23
Connector		CEE- connector, 32 A
Connection cable	m	3.5
Fuse protection <sup>6</sup>	A, slow-blow	32
Protection class of switchgear cabinet and control unit <sup>7</sup>		IP 54
Sound pressure level <sup>8</sup>	dB(A)	63
Heat dissipation to the installation room, maximum	kW	15

<sup>1</sup> Max. load as surface load.

<sup>2</sup> For transport and move-in. Parts can be removed at additional expenses.

<sup>3</sup> 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%.

<sup>4</sup> The power rating quoted for **weisstechnik** and **vötschtechnik** products describes the maximum power consumption during operation at full load. As this state only occurs in rare cases, conclusions about energy consumption cannot be drawn from the power rating quoted.

<sup>5</sup> Neutral conductor under load.

<sup>6</sup> Provided by the customer.

<sup>7</sup> EMC tests and information about emitted interference according to EN 61000-6-3:2007 / EN 61000-6-4:2007. Interference immunity is in accordance with EN 61000-6-2:2005.

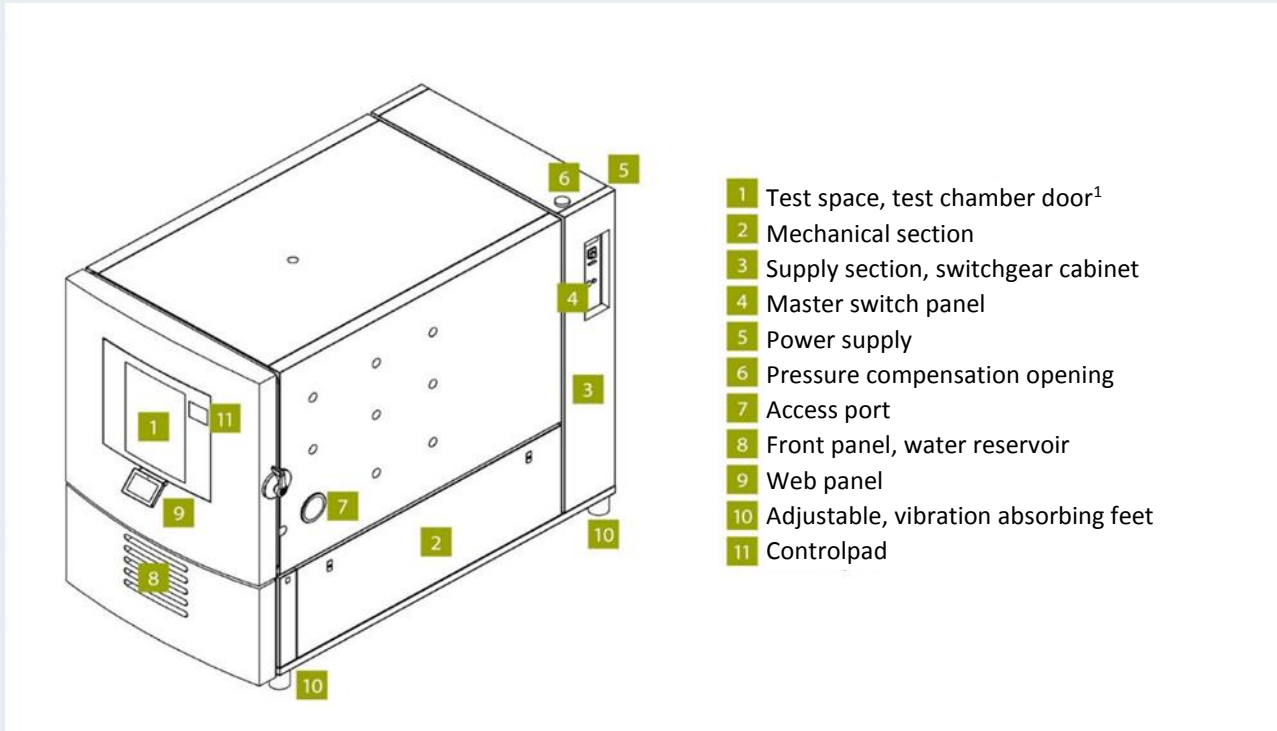
<sup>8</sup> Measured at a distance of 1 m from the front of the test chamber and a height of 1.6 m in free-field measurement according to EN ISO 11201:2010.

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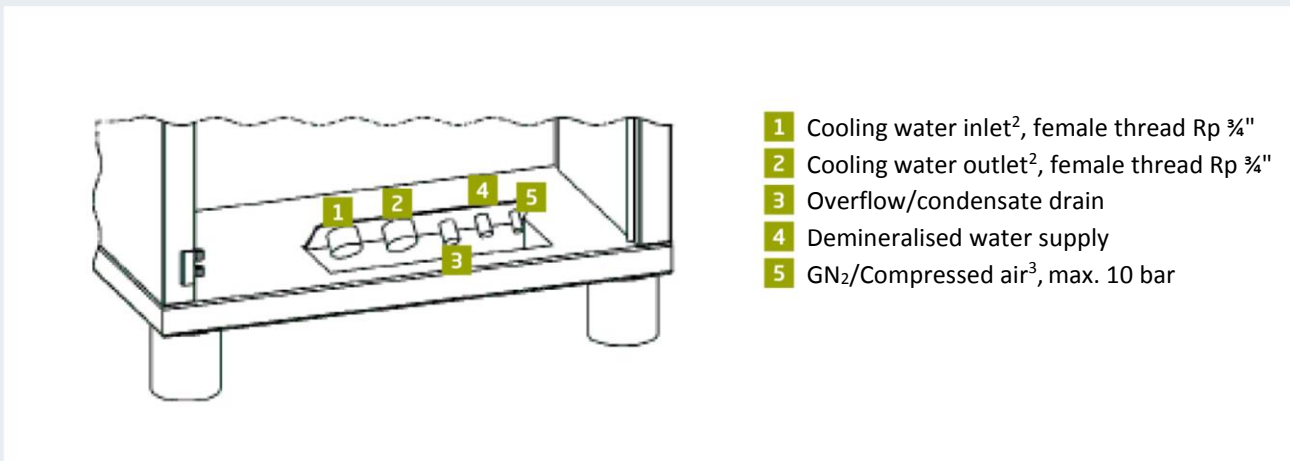
# Technical data.

The Climate Test Chamber is delivered ready for connection. The exterior housing is self-supporting.



- 1 Test space, test chamber door<sup>1</sup>
- 2 Mechanical section
- 3 Supply section, switchgear cabinet
- 4 Master switch panel
- 5 Power supply
- 6 Pressure compensation opening
- 7 Access port
- 8 Front panel, water reservoir
- 9 Web panel
- 10 Adjustable, vibration absorbing feet
- 11 Controlpad

The supply and disposal connections are located on the rear side at the bottom, approx. 170 mm above floor level. The height of the “mobile version”(available as additional equipment) varies depending on the model; detailed values are included in the description of the additional equipment.



- 1 Cooling water inlet<sup>2</sup>, female thread Rp ¾"
- 2 Cooling water outlet<sup>2</sup>, female thread Rp ¾"
- 3 Overflow/condensate drain
- 4 Demineralised water supply
- 5 GN<sub>2</sub>/Compressed air<sup>3</sup>, max. 10 bar

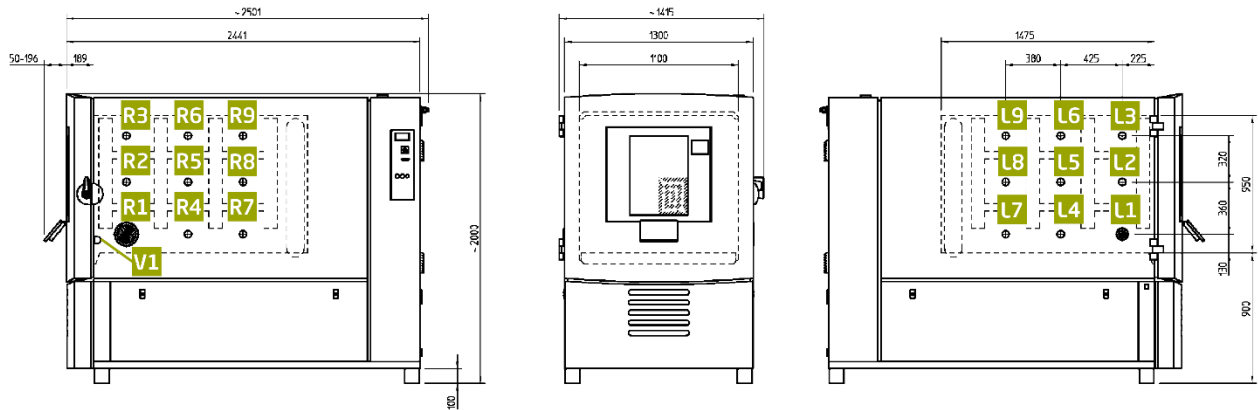
<sup>1</sup> Window is available as additional equipment.

<sup>2</sup> For water-cooled version (available as additional equipment).

<sup>3</sup> Available as additional equipment.

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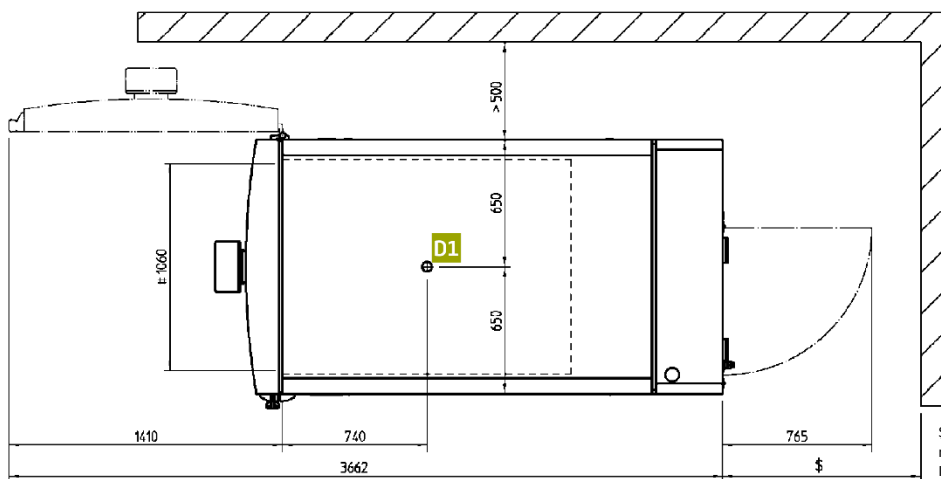
# Installation drawing.



Right side view

Front view

Left side view



View from above

§: Min 200 mm, a wall distance of min. 700 mm is required for service work; according to IEC 60364-729 (VDE 100 part 729).

## ACCESS PORTS

R1

Access port on the right side,  $\varnothing$  125 mm

L1

Access port on the left side,  $\varnothing$  50 mm

R2 R3 R4 R5 R6 R7 R8 R9

Additional installation positions, right<sup>1</sup>

L2 L3 L4 L5 L6 L7 L8 L9

Additional installation positions, left<sup>1</sup>

D1

Additional installation position, in the ceiling<sup>1</sup>



V1

Notch port or flat notch port

<sup>1</sup> available as additional equipment

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# Our basic equipment.

EXTERIOR			
	Exterior housing	Material	Double-coated galvanized steel sheet
		Finish	RAL 9002 grey-white, solvent-free, powder-coated
	Door		Hinged on the left side, lockable, optimum contact pressure, one-handed operation
	Feet		Adjustable, vibration-absorbing
	Refrigeration unit <sup>1</sup>	Type	Air-cooled refrigeration system
		Refrigerant <sup>2</sup>	R449A, GWP: 1397, filling quantity: 4.6 kg, CO <sub>2</sub> equivalent: 6.4t WT69, GWP: 1357, filling quantity: 1.6 kg, CO <sub>2</sub> equivalent: 2.18 t
	Humidification system	Humidification water	Water reservoir (20 l), pre-installed equipment for automatic water supply with warning in the event of water shortage
		Humidification water quality	pH value 6-7, demineralised, conductivity 5-20 µs/cm
Purge device		The high quality of the humidification water is guaranteed by periodic water exchange	
Overflow / condensate drain		Backpressure-free, G ¾" male thread, hose connection Ø 12 mm	
INTERIOR			
	Test space <sup>3</sup>	Wall material	Stainless steel 1.4301, surface III D polished shelf layers stamped on the side, vertical spacing <sup>4</sup> 60 mm
		Floor material	Stainless steel 1.4404, surface II B matt
	Insertion shelf	Stainless steel	1 pc., max. number of insertion shelves: 11
	Access ports	Stainless steel	1 pc. on the right, internal dimensions <sup>5</sup> 125 mm Ø
			1 pc. on the left, internal dimensions <sup>5</sup> 50 mm Ø
	Silicone plugs	Closed	1 pc. for each stainless steel access port, right and left (Ø 125 mm and 50 mm)
		Slotted	1 pc. for each stainless steel access port, right and left (Ø 125 mm and 50 mm)
	Measurement sensors	Temperature	Pt 100 platinum temperature sensor
Climate		Psychrometric humidity measurement with automatically wetted wet bulb temperature sensor	
Condensation protection	Dehumidifier	Can be switched on to avoid condensation on test specimen. This is achieved via separate dehumidifying coil.	

<sup>1</sup> The product contains fluorinated greenhouse gases.

<sup>2</sup> (EU) directive no. 517/2014 specifies an obligation for stationary refrigeration and air conditioning units with a CO<sub>2</sub> equivalent of 5 to 50 t to be checked for leaks at least annually and an equipment logbook to be kept; units with a leak detection system must be checked every 24 months. 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.

<sup>3</sup> 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.

<sup>4</sup> Tests must be set up at least 20 mm away from walls.

<sup>5</sup> Production-related tolerances of up to ± 3 mm are possible.

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# Our basic equipment.

REGULATION AND CONTROL		
	<b>SIMPAC®</b>	Digital measuring and control system with I/O unit and <b>WEBSseason®</b> software  Door-integrated control pad for display of actual values for temperature and humidity, modification and monitoring of operating state  Operating/programming and monitoring unit with 25.4 cm (10") web panel, attached to the door
COMMUNICATION		
	Interfaces     Customer protocols	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  1 Ethernet interface (100/1000 megabits) for integration in a network  1 USB interface for recording of measuring data on a flash drive <sup>1</sup>  SimServ (to control the climate test chamber via the Ethernet interface)
SAFETY		
	Test specimen protection   Test chamber protection  Specimen switch-off	Overtemperature protection according to EN 60519-2:2006, with separate sensor, thermal safety class 2  Independent adjustable temperature limiter $t_{min}$ / $t_{max}$ , sensor installed in the test space, individually adjustable fixed value  Software temperature limiter $t_{min}$ / $t_{max}$ , individually adjustable fixed value  Safety temperature limiter for protection against overtemperature in the test chamber  Potential-free contact specifically for test specimens that emit heat, on female connector, max. load 24 V, 0.5 A

<sup>1</sup> Flash drive is not included in the scope of delivery. Before recording data, check that the flash drive is working.

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# Your additional equipment.