memmert

Experts in Thermostatics

Humidity Chambers **HCP**

100°

90°

80°

70°

60°

50°

40°

30°

20°

10°

AtmoSAFE

Optimal security through triple temperature monitor

3-level security

Up to 40 time ramps for combined temperature and humidity setpoints, programmable directly on the chamber

Wide-ranging convenience

Active humidification system for control range between 20% and 95% relative humidity

Humidity without condensation

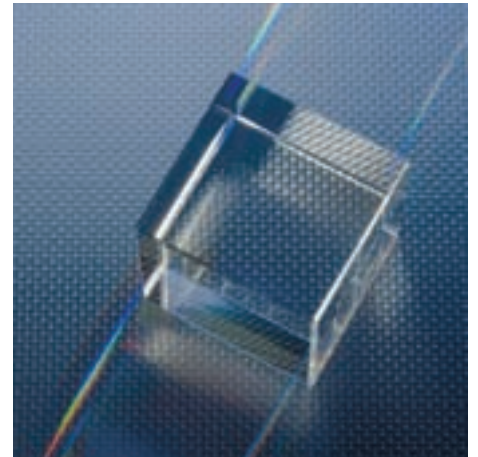>>>> **www.memmert.com**

Humid atmosphere without condensation

With up to 40 ramps for temperature and humidity, active humidity control from 20% to 95% rh, and accurate temperature control up to 90°C, the humidity chamber HCP creates inside it a controlled, physiologically ideal environment for simulating real conditions. Without addition of moisture the temperature inside the HCP can be regulated up to 160°C.

3 sizes:
108 – 153 – 246 litre chamber volume
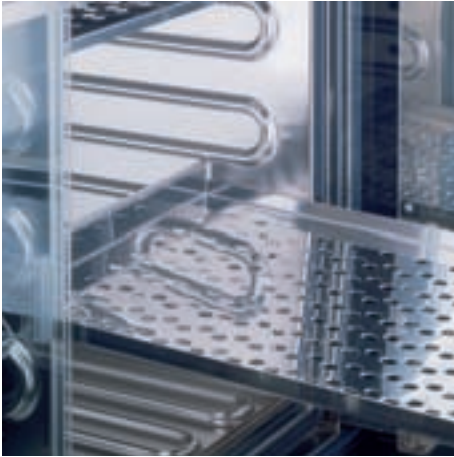
Active humidity control

In addition to the precisely controlled temperature, a stable and accurately adjustable humidity plays a decisive role in creating ideal environments for the chamber load. The active humidification system of the HCP controls the humidity through a steam generator with controlled evaporation of water and sterile dry steam mixed into the air flow. As a result the HCP has a working range of 20 – 95% relative humidity. Your advantage: many different applications, low contamination risk and short recovery time after opening the door.

Uniformity inside the chamber

Chamber heating from all six sides is an essential factor for avoiding the formation of condensate inside the chamber. An aluminium heat-conducting jacket helps to ensure optimal temperature distribution and in addition serves as heat store in case of a temporary supply outage.

The turbulence-free chamber ventilation provides a uniformly homogeneous atmosphere.

Stainless steel – the noble material

The Memmert humidity chamber – this is fine-tuning to perfection: for absolutely reliable experimental procedures with a maximum of security and operating convenience.

The inner chamber of the HCP consists exclusively of high-grade and fully recyclable stainless steel. The additional electropolishing of the chamber ensures particularly smooth and hygienic surfaces and therefore the greatest possible reduction in contamination risk. The outer casing is made mainly from sturdy textured stainless steel (except rear of zinc-plated steel) and is in accord with Memmert's holistic quality philosophy.

A Memmert special: the chamber is made to 100% of high-grade stainless steel mat. 1.4301 (ASTM 304) and is additionally electropolished for maximum protection against contamination.

The all-round heating is located below deep-drawn ribs which carry the anti-tipping stainless steel shelves and at the same time ensure optimal and particularly gentle heat transfer to the chamber load.

Bacteria-free through sterilisation function – desinfection is not sufficient!

Hygiene is fundamental, especially in high-sensitivity applications with organic materials. For that reason the entire chamber, including the ventilation system and all sensors, can be sterilised at 160°C in a 4-hour programme. For safety reasons this function can only be operated by means of the Memmert STERICard in order to prevent unintentional activation.

Every wish satisfied!

The HCP is a model of reliability and accuracy. Innovations in control engineering ensure maximum security; up to 40 ramps for temperature and humidity settings provide flexibility in application.

## Convenience: made for you

The HCP is easy to use:

- Clear, easy-to-clean underglass function display
- Memmert's unique feature: the patented push-turn control for intuitive selection from the entire menu
- Feet with height adjustment as standard
- Quick-release connector for water supply
- Fully insulated stainless steel door and additional glass door

Documentation: for controlled quality

The basic outfit for professional quality assurance:

- Standard "Celsius" software for remote control and documentation, also optional FDA-conforming software (extra charge)
- Internal ring memory for uninterrupted, long-term documentation fully protected against manipulation (approx. 3 months)
- Parallel printer interface for printouts of thermostating processes (USB printer via converter possible)
- USB interface for programming and storage (Ethernet at extra charge)

| Printer interface	USB	Ethernet
		LAN
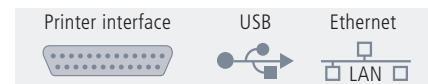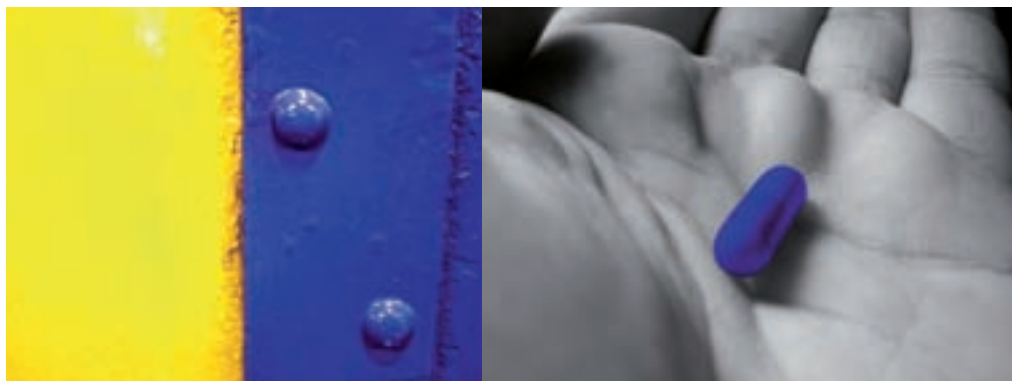
Perfect simulation
of reality!

Accuracy:
for regulated procedures

Technical features for faultless processes:

- Internal ventilation for turbulence-free and uniform temperature distribution

- Multi-functional fuzzy-supported control for exact setting and maintenance of setpoint temperature and humidity

- Calibration facility for temperature and humidity on the actual controller

- Option (extra charge): up to three additional and freely positionable Pt100 sensors for indication on the display and recording in the document store

Flexibility: 40 ramps, program-
mable on the actual chamber

Essential for accurate simulation of environmental conditions in research: the user-friendly ramp programming facility. Different temperature and humidity setpoints can be combined on up to 40 time ramps.
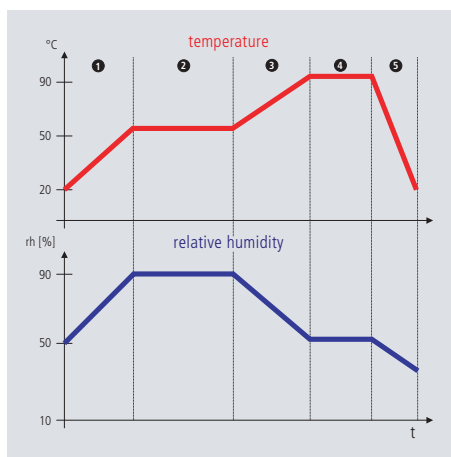
Security:
of course!

Still more functions with no error:

- Integral auto-diagnostic system with visual and audible error indication

- Triple temperature monitor with mechanical temperature limiter (TB), electronic adjustable temperature monitor (TWW), as well as the Memmert ASF (Auto-Safety Function)

- Two high-grade platinum sensors communicate with each other like a climbing team on a rope and secure uninterrupted faultless temperature control. The high-grade 4-wire circuit ensures precise transmission of the measurements.

- Audible signal on over- and under-temperature, over- and underhumidity, empty water tank and open door

- Option (extra charge): volt-free contacts on "combination error" and "setpoint reached"

- MEMoryCard XL for programming up to 40 ramps for temperature and humidity setpoints as well as for documenting the temperature

- Option (extra charge): protection against unauthorised operation through chamber-linked personal User-ID-Card

Timer module

1 Time indication (real-time)

2 Text messages

Temperature module

22 Heating

23 Sterilisation operation

24 Setpoint/actual temperature

- Temperature adjustment without humidity: 20°C to 160°C (control range from 8°C above ambient temperature up to 160°C)

- Temperature adjustment with humidity: 20°C to 90°C (control range from 8°C above ambient temperature up to 90°C)

- Variation (time): ±0.1°C max. Uniformity (spatial) ±0.3°C max. at 50°C

Monitor module

25 Visual alarm

26 Alarm limit (temperature for heating cut-off)

27 Sounder

28 LOW alarm limit

29 Automatic alarm limit (ASF)

30 Temperature limiter

31 HIGH alarm limit

Audible and visual alarm on temperature and humidity out of limit, on door open longer than 2 minutes, and on other errors
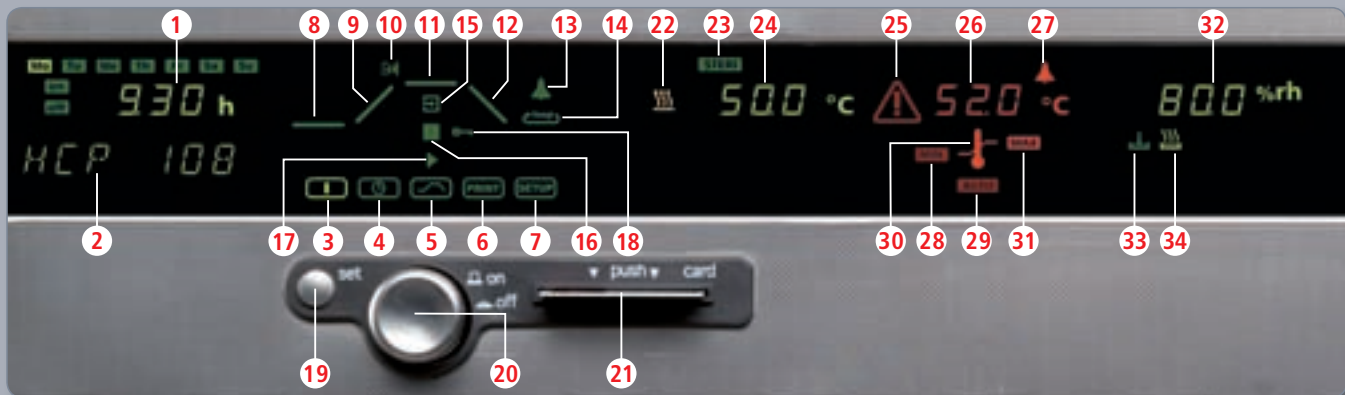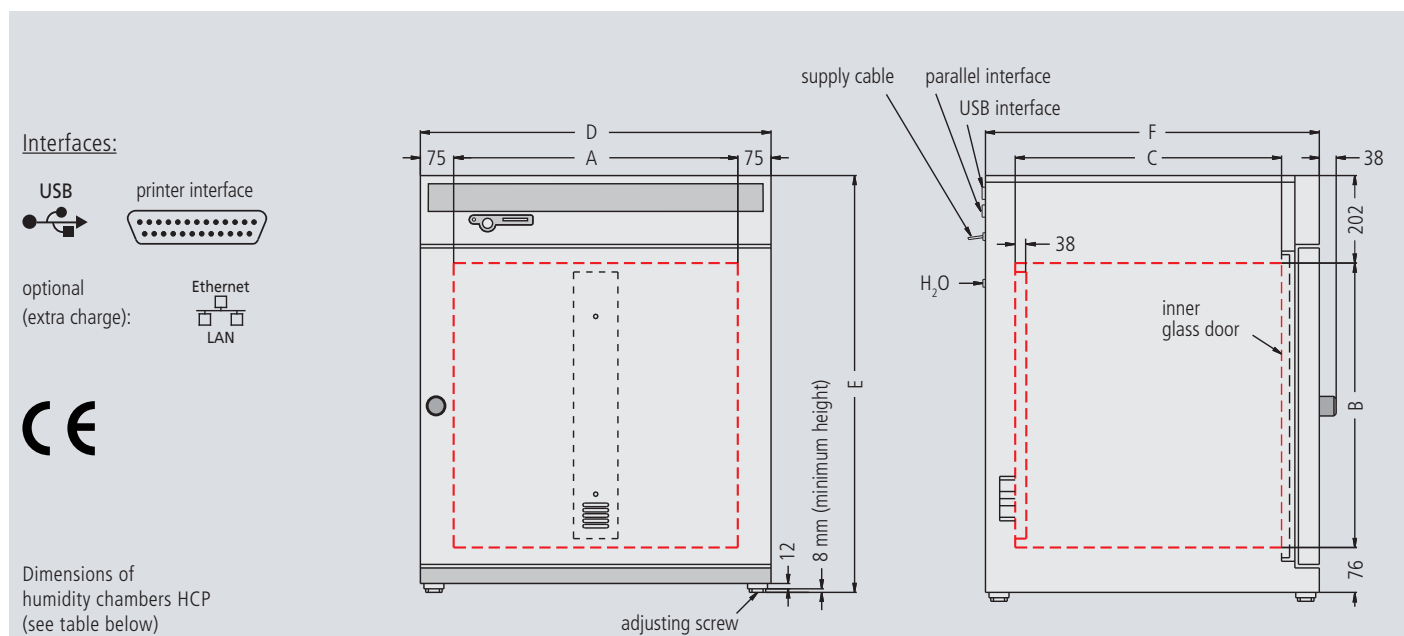

Operating mode

3 Normal operation (active)

4 Weekly timer*

5 Ramp timer (relative-time programme)

6 Printer

7 Configuration

8 Wait (at programme start) Hold (during programme)

9 Heating ramp

10 SP.WT – programme continues when setpoint is reached

11 Hold ramp

12 Cooling ramp

13 Sounder at ramp timer end

14 Repeat function

15 Edit (ramp timer)

16 Stop (ramp timer)

17 Start (ramp timer)

18 Data manipulation prevented through optional User-ID-Card (extra charge)

19 SET key

20 Push-turn control

21 Chip card reader for STERICard and optional User-ID-Card (extra charge)

* Weekly timer programmable with one ON and OFF time per weekday, additional group function (e. g. Mo – Fr)

Humidity module

32 Setpoint /actual humidity

33 Water level in storage tank

34 Steam generation

- Rh concentration selection: 20-95%

- Variation (time): ±1% max.

Technical data, models and accessories for Humidity Chamber HCP (Humidity Chamber Perfect)

Interfaces:

USB printer interface

optional
(extra charge): Ethernet
LAN

C E

Dimensions of
humidity chambers HCP
(see table below)

supply cable parallel interface USB interface

adjusting screw

inner glass door

H_2O

Model sizes		HCP	108	153	246
Stainless steel interior (deep-drawn, electropolished)	Volume	approx. l	108	153	246
	Width / Height / Depth (less 25 mm for air duct in the middle of the back wall) (A) / (B) / (C)	mm	560 / 480 / 400	480 / 640 / 500	640 / 640 / 600
	Provision for sliding stainless steel shelves or wire grid shelves	number	5	7	7
Stainless steel exterior (rear zinc-plated steel)	Width (D)	mm	710	630	790
	Height (variable through adjustable feet) (E)	mm	778	938	938
	Depth (without door handle, depth of handle 38 mm) (F)	mm	550	650	750
	Fully insulated, heated stainless steel door		☐	☐	☐
	Extra internal glass door		☐	☐	☐
Ventilation	Uniform atmosphere and temperature distribution through enclosed non-turbulent ventilation system, fully covered by the sterilisation process		☐	☐	☐
Temperature	Electronic microprocessor temperature controller with Pt100 and auto-diagnostic system		☐	☐	☐
	Temperature sensors Pt100 Class A in 4-wire circuit for uninterrupted operation on failure of one Pt100 with warning indication		double	double	double
	Temperature range with humidity control	° C	from 20[1)] up to 90	from 20[1)] up to 90	from 20[1)] up to 90
	Temperature range without humidity control (during sterilisation the temperature is fixed at 160 °C – set value)	° C	from 20[1)] up to 160	from 20[1)] up to 160	from 20[1)] up to 160
	Temperature variation in time (to DIN 12 880: 2007-05)	° C	≤ ± 0,1	≤ ± 0,1	≤ ± 0,1
	Temperature uniformity in chamber at 50 °C (to DIN 12 880:2007-05)	° C	≤ ± 0,3	≤ ± 0,3	≤ ± 0,3
Sterilisation	STERICard for automatic chamber sterilisation cycle 4 h at 160 °C (not for sterilising the load!)		☐	☐	☐
Humidity	Capacitive humidity sensor (sterilisable)		☐	☐	☐
	Active microprocessor control for humidifying and dehumidifying (20 – 95 % rh), incl. digital indication and auto-diagnostic system ensures even more rapid reaching of set humidity and very short recovery times while avoiding condensate formation; humidity supply with distilled water (from an external tank) by a self-priming pump; integral bacteria block by generating hotsteam, dehumidifying via sterile filter		☐	☐	☐
Monitor	Microprocessor temperature monitor acting as overtemperature protection, with Pt100 incorporating fault diagnostics with visual and acoustic alarm		☐	☐	☐
	Digital over- and undertemperature monitor		☐	☐	☐
	Temperature monitoring band automatically linked to the setpoint (ASF)		☐	☐	☐
	Relay for reliable heating cut-off in case of fault		☐	☐	☐
	Mechanical temperature limiter (TB)		☐	☐	☐
	Acoustic alarm: Over- and undertemperature; over-/underhumidity; open door and empty water tank		☐	☐	☐
Timer functions	Real-time/weekly programmer with group function (e.g. Monday-Friday)		☐	☐	☐
	Timer with residual running time: max. 40 ramps (each 1 min. up to 999 h) programmable through controller or MEMoryCard XL; programming via PC and free-of-charge software: unlimited number of ramps		☐	☐	☐

Model sizes HCP	108	153	246
Documentation	Internal log memory 1024 kB as ring memory for all setpoints and actual values of temperature and humidity, errors, settings with real-time and date; capacity approx. 3 months at 1 min intervals	☐	☐	☐
	Parallel printer interface for printing logging files, suitable for all PCL3-compatible ink jet printers (USB available via converter, see accessories)	☐	☐	☐
	„Celsius"[2] software for control and documentation of temperature and relative humidity	☐	☐	☐
Setup	Calibration (no separate PC required), temperature: 3-point calibration on controller, humidity: 2-point calibration at 20% and 90%	☐	☐	☐
	Setting of language for dialogue and display D / UK / E / F / I	☐	☐	☐
Further data	Electrical supply[3] V / Hz	230 / 50/60	230 / 50/60	230 / 50/60
	Electrical load approx. W	1000	1500	2000
	Net weight / Gross weight approx. kg	70 / 78	82 / 114	110 / 160
Standard accessories	Stainless steel sliding shelves number	2 ☐	2 ☐	2 ☐
	Shelf or wire grid shelf width (grids to order; extra charge) approx. mm	556	480	640
	Shelf or wire grid shelf depth approx. mm	361	400	500
	Works calibration certificate (test point chamber centre at 60 °C)	☐	☐	☐
Standard version	Humidity Chamber HCP	HCP 108	HCP 153	HCP 246
Options	Additional Pt100 temperature sensor, positioned flexibly in chamber or load, for local temperature measurement (up to 3 additional sensors are possible). The measured temperature can, if required, be indicated on the multifunction display, recorded in the integral ring store, and can be documented via the „Celsius"[2] software or on an attached printer	H8(x)	H8(x)	H8(x)
	Extra stainless steel shelf	E7(x)	E7(x)	E7(x)
	Extra wire grid shelf (for good air circulation)	E3(x)	E3(x)	E3(x)
	Moisture-tight entry port for introducing connections at the side, left centre/centre can be closed from inside by silicone stopper, left centre top (standard position centre/centre or centre top, right centre/centre 23 mm clear diameter) right centre top	F0 F1 F2 F3	F0 F1 F2 F3	F0 F1 F2 F3
	Stacking version for 2 units of equal size (bottom unit modification)	G3	G3	G3
	Subframe (622 mm high)[4]	G5	G5	G5
	Subframe (130 mm high for 2 stacked cabinets)[4]	G7	G7	G7
	Temperature profile write/read unit for programming via PC, for writing to and reading from the chip card, up to 40 ramps	V3	V3	V3
	Additional chip card, blank, formatted (32 kB MEMoryCard XL for a maximum of 40 ramps)	V4	V4	V4
	STERICard (additional or as replacement) for automatic chamber sterilisation cycle (not for sterilising the load!)	V9	V9	V9
	Oven-linked authorisation card (User-ID-Card) prevents undesired manipulation by unauthorised third parties	V1	V1	V1
	Computer interface RS485 (for networking a maximum of 16 ovens) instead of USB interface	V2	V2	V2
	RS232 interface instead of interface USB	W6	W6	W6
	Interface Ethernet instead of interface USB inclusive software "Celsius Ethernet-Edition"	W4	W4	W4
	Parallel/USB converter cable with integrated power supply unit to connect PCL-3 compatible HP printers with USB interface to MEMMERT units	W1	W1	W1
	Documentation package consisting of parallel USB converter cable including PLC3- compatible HP colour inkjet printer with USB interface (HP Deskjet 6940 or successor) for direct connection of printer to Memmert unit	W2	W2	W2
	USB connection cable for computer interface	W7	W7	W7
	Connection cable for computer interface RS232 according to DIN 12 900-1	V6	V6	V6
	Process-dependent electromagnetic door lock	D4	D4	D4
	Potential-free contact (24 V/2 A) with socket, according to NAMUR NE 28 for external monitoring (indicates when setpoint of temperature and rh is reached)	H5	H5	H5
	Potential-free contact (24 V/2 A) with socket, according to NAMUR NE 28 for combination error message of temperature and rh controller (e. g. supply failure, sensor fault or fuse)	H6	H6	H6
	Works calibration certificate for 80% rh (measured at 50 °C)	Z5	Z5	Z5
	IQ check list with works test data for humidity chamber as support for validation by customer	Q1	Q1	Q1
	OQ check list with works data for one freely selectable humidity and temperature value[5] incl. temperature distribution survey for 27 measuring points to DIN 12 880: 2007-05 as support for validation by customer	Q2	Q2	Q2
	Software „Celsius FDA Edition"[6] for up to 16 units. Meets the requirements for the use of electronically stored data sets and electronic signatures as laid down in Regulation 21 CFR Part 11 of the US Food and Drug Administration (FDA)	Q3	Q3	Q3
	Integration of additional units (up to max. 16 units) into an already existent FDA-software licence	Q4	Q4	Q4
	Start-up of HCP and brief training[7] (Germany only) through MEMMERT service. Requirement: humidity chamber is at its final location and all services have been provided by the purchaser. (Applies only in connection with orders and payments for new units)	K9	K9	K9

Subject to technical modifications
☐ Standard model, basic specification
– Not available
(x) Please specify quantity required after the order number

1) Operating range from 8 °C above ambient
2) MEMMERT "Celsius" software (from version 10.0) has been tested for Windows NT 4, 2000, XP and Vista
3) Other voltages upon request
4) Screws for adjusting height are taken out of the feet and mounted into the subframe

5) Additional temperature and humidity values at extra cost for each additional value
6) Requires Windows 2000 Professional or XP Professional
7) Service not subject to any discount

OUR PROGRAMME

memmert ®

Universal ovens
Incubators
Hot air sterilisers
Ovens

Vacuum ovens

Peltier-cooled incubators
Compressor-cooled incubators
Cooled incubators

CO$_2$ incubators

Humidity chambers

Constant climate chambers

Climatic test chambers

Water- and oilbaths

Your Memmert Partner

Upon your request we
are pleased to send you
detailed brochures

Memmert GmbH + Co. KG
P.O. Box 1720
D-91107 Schwabach
Germany
Tel. +49 (0) 9122 / 925 - 0
Fax +49 (0) 9122 / 145 85
E-Mail: sales@memmert.com

www.memmert.com

Some of the illustrations in this publication include
special accessories. We reserve the right of
technical modifications. Dimensions are subject to
confirmation.

Order No. D10211 · Printed in Germany · HCP 0906 e 5.0   © by Memmert GmbH + Co. KG