



memmert
Experts in Thermostatics

Climate chambers

ALWAYS AN EYE ON LONG-TERM STABILITY.

CONSTANT CLIMATE CHAMBER HPP

HUMIDITY CHAMBER HCP

CLIMATE CHAMBER ICHeco/ICH

ENVIRONMENTAL TEST CHAMBER CTC/TTC

100% ATMOSAFE. MADE IN GERMANY.

www.memmert.com | www.atmosafe.net



Reliable. Precise. 100% AtmoSAFE.

Perfect simulation of reality.
Reproducible, standard compliant, economic.

Each climate chamber creates a climate of temperature and humidity. For Memmert climate chambers, however, that is not enough. Each individual climate chamber is perfectly designed for the high requirements of stability and climate tests, conditioning or ageing. In each individual appliance, there is a homogenous and stable temperature and humidity distribution over the entire chamber. Operation, programming and documentation options feature top-notch convenience. Each individual Memmert climate chamber complies with the strict requirements of DIN 12880:2007-05 and is equipped with a maximum of safety functions. Each individual Memmert climate chamber is 100% AtmoSAFE.



CONSTANT CLIMATE CHAMBERS HPP

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Stability testing (according to ICH Q1A) in the pharmaceutical industry, long-term storage, growing plants, conditioning and climate testing of plastic material/metal/composite material, storage of electronic components/lacquers/coatings in controlled environment

HUMIDITY CHAMBERS HCP

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Conditioning and climate testing of plastic material/metal/composite material, stability testings in the pharmaceutical industry, storage of electronic components/lacquers/coatings in controlled environment

CLIMATE CHAMBERS ICHeco

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Stability testing (according to ICH Q1A) and photostability testing (according to ICH Q1B) in the pharmaceutical industry, long-term storage, conditioning and climate testing of plastic material/metal/composite material, storage of electronic components/lacquers/coatings in controlled environment

CLIMATE CHAMBERS ICH

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Stability testing (according to ICH Q1A) and photostability testing (according to ICH Q1B) in the pharmaceutical industry, long-term storage, conditioning and climate testing of plastic material/metal/composite material, storage of electronic components/lacquers/coatings in controlled environment

CLIMATIC TEST CHAMBERS CTC - TEMPERATURE TEST CHAMBERS TTC

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Accelerated and intermediate tests, alternate stability testing, conditioning and climate-/temperature testing of plastic material/metal/composite material, storage of electronic components/lacquers/coatings in controlled environment with/without humidity

ADDITIONAL INFORMATION

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Constant climate chamber HPP
with TwinDISPLAY
AtmoCONTROL software

Model sizes: 110 / 260 / 400 / 750 / 1060
0 °C to +70 °C (without humidity)
+5 °C to +70 °C (with humidity)
Humidity 10 to 90 % rh
optional with LED light module
(sizes 110, 260, 400, 750)

Model size 1400
+15 °C to +60 °C (with and without humidity)
Humidity 10 to 80 % rh

CONSTANT CLIMATE CHAMBER HPP They are simply unbeatable in energy efficiency. Furthermore, as constant climate chambers HPP have a very long, almost maintenance free service life, they are perfectly suited for stability tests, storage in controlled environment and conditioning. The high precision temperature control as well as the active humidification and dehumidification were particularly adapted to the ICH guidelines, option Q1A, for stability tests.





The best climate for samples, environment and budget

Almost without vibrations and extremely quiet, the specially adapted Peltier technology heats up and cools down seamlessly in one system. In this respect, the innovative constant climate chamber HPP not only contributes to climate protection, but it also achieves an additional decrease in operating costs of up to 90 % compared to compressor technology.

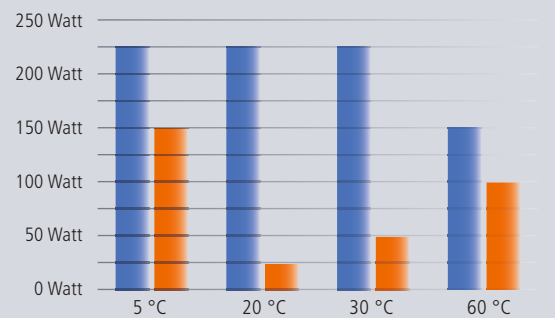
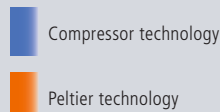


Cost effective climate protection

The main part of stability testing is performed at temperatures between +20 °C and +30 °C – close to the ambient temperature. The impressive cost effectiveness of Peltier technology can be seen here, since only small amounts of energy are required to raise or lower the temperature slightly, in comparison with compressor technology. Due to its environmentally friendly Peltier elements, the HPP has no need for coolants and requires no regular maintenance.

Comparison between compressor and Peltier technology

Reduction in energy consumption of up to 90 %



Top level optimisation

The outstanding precision of the constant climate chambers was optimised with the introduction of our new appliances. If required, the Peltier elements can be controlled individually to ensure even more homogenous temperature and humidity distribution inside the chamber.

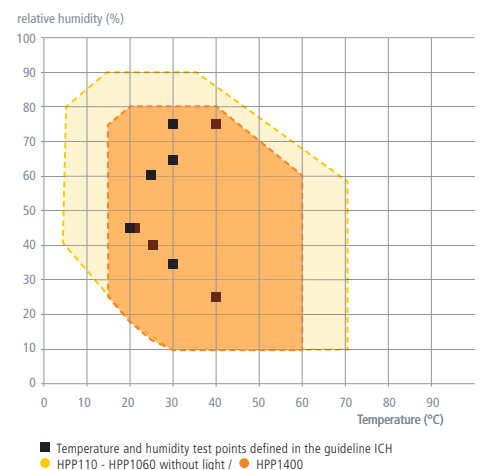
For supporting IQ/OQ/PQ validation, temperature and humidity control can be adjusted directly on the ControlCOCKPIT with three free-selectable measuring points.

LED light modules

Dimmable LED light protects the environment, reduces energy consumption and ensures ideal conditions of growth. Available alternatives: Cold-white light (6,500 K), warm-white light (2,700 K) or cold-white plus warm-white light, dimmable in 1 % steps, for HPP110 – HPP750.

Note: Within the respective temperature-humidity range, condensation-free permanent operation is possible. To which extent condensation may occur in the threshold range depends on the humidity content of the chamber load and the ambient conditions.

Temperature-humidity working range HPP



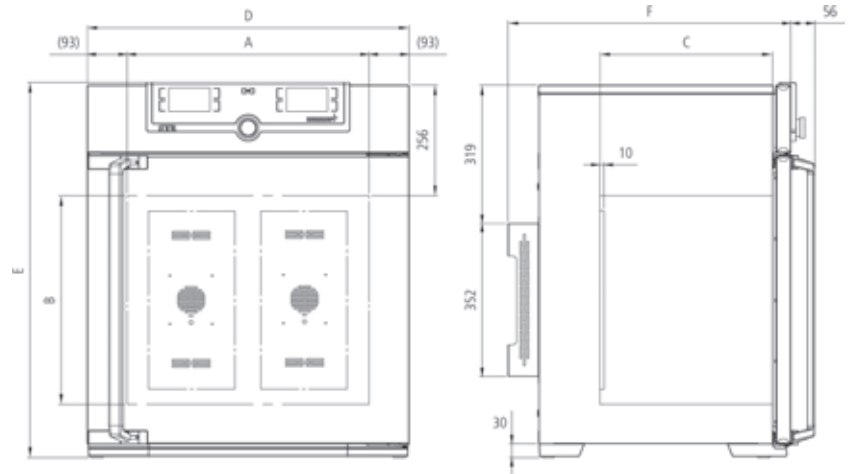
CONSTANT CLIMATE CHAMBERS HPP

according to DIN 12880:2007-05, EN 61010-1 (IEC 61010-1), EN 61010-2-010

Standard units are safety-approved and bear the test marks:
(EAC not valid for HPP400/1060/1400)



- Interior:** Stainless steel, mat. 1.4301 (ASTM 304), deep-drawn
- Housing:** Textured stainless steel, rear zinc-plated steel, intuitively operated TwinDISPLAY (TFT colour display) with touchscreen
- Double doors:** Outside stainless steel, fully insulated, inside glass (size 1060/1400 stainless steel doors with glass sector, fully heated inner glass panes integrated in the full-sight glass door with 2-point locking – compression door lock). Sizes 750, 1060 and 1400 two leaves
- Connection:** Mains cable with plug (German type)
- Installation:** 4 feet; sizes 400, 750, 1060 and 1400 mounted on lockable castors
- Interfaces:**



Model sizes/Description			110	260	400	750	1060	1400	
Stainless steel interior	Volume	approx. l	108	256	384	749	1060	1360	
	Width	(A) mm	560	640	1040	1250			
	Height	(B) mm	480	800	1200	1450			
	Depth (less 10 mm for fan – Peltier)	(C) mm	400	500	600	850	750		
	Max. number of grids/shelves	number	5	9	14	28			
	Max. loading per grid/shelf	kg		20	30	20	30		
	Max. loading of chamber	kg	150	200	250				
	Max. loading per slide-in drip tray	kg	3	4	8	-			
Max. loading per bottom drip tray	kg	3	4	8	-				
Textured stainless steel exterior	Width	(D) mm	745	824	1224	1435			
	Height (sizes 400, 750, 1060 and 1400 with castors)	(E) mm	864	1183	1720	1726	1661	1913	
	Depth (without door handle), door handle + 56 mm	(F) mm	656	756	856	1107	1007		
Standard equipment	Stainless steel grids, electropolished	number	2				4		
	Standard works calibration certificate (measuring point chamber center)	°C	+10 °C, 37 °C and 30 °C/60 % rh				+25 °C/40 % rh and +40 °C/75 % rh		
	Water tank including connection hose		●						
Temperature	Working temperature range without light, without humidity	°C	0 (at least 20 below ambient temperature) to +70						+15 (at least 10 below ambient) to +60
	Working temperature range without light, with humidity	°C	+5 (at least 20 below ambient temperature) to +70						+15 (at least 10 below ambient) to +60
	Working temperature range with light, without or with humidity	°C	+15 to +40				-		
	Setting temperature range without light, with humidity	°C	+5 to +70				+15 to +60		
	Setting temperature range with light, with humidity	°C	+5 to +70				-		
	Setting temperature range with light, without humidity	°C	0 to +70				-		
	Setting temperature range without light, without humidity	°C	0 to +70				+15 to +60		
	Setting accuracy	°C	0.1						
Humidity	Setting range humidity with light	% rh	10 to 85				-		
	Setting range humidity without light	% rh	10 to 90				10 to 80		
	Setting accuracy	% rh	0.5						
Further data	Electrical load at 230/115 V, 50/60 Hz	approx. W	650	920	1200	1400	1500	3100	
	Peltier elements in the rear	number	2	3	5	6	10		
Packing data	Net weight	approx. kg	77	122	160	208	260	450	
	Gross weight (packed in carton)	approx. kg	102	173	213	279	424	639	
	Width	approx. mm	830	930	1330	1370	1560		
	Height	approx. mm	1050	1380	1930	1910	1970	2200	
	Depth	approx. mm	800	930	1050	1300	1190		
Order No. Constant Climate Chambers			HPP110	HPP260	HPP400	HPP750	HPP1060	HPP1400	

Options	110	260	400	750	1060	1400
Voltage 115 V, 50/60 Hz			X2			-
Chamber modification for the application of reinforced perforated stainless steel shelves or stainless steel grids (bearing rails mounted in the working chamber) – includes replacement of 2 standard grids by 2 reinforced grids		-		K1		-
Light module cold white 6,500 K: LED light strips arranged on the side walls of the interior, 10 for model 110, 14 for model 260/400/750, programme controlled dimming from 0 to 100 % (in 1 % steps), ramp programming in combination with temperature and humidity			T7			-
Light module cold white 6,500 K + warm white 2,700 K: LED light strips – 10 strips for model 110, 14 for model 260/400/750 – (5 resp. 7 alternating cold white light strips and 5 resp. 7 warm white light strips) on the side walls of the interior, programme-controlled dimming from 0 to 100 % (in 1 % steps), ramp programming in combination with temperature and humidity			T8			-
Light module warm white 2,700 K: light strips arranged on the side walls of the interior, 10 strips for model 110, 14 for model 260/400/750, programme-controlled dimming from 0 to 100 % (in 1 % steps), ramp programming in combination with temperature and humidity			T9			-
Interior socket, ampacity 230 V/2.2 A, can be switched off with the On/Off switch, cannot be switched individually, moisture tight IP68			R3			-
Entry port, 23 mm clear diameter, for introducing connections at the side, moisture tight, can be closed by flap and silicone stopper, standard positions (F0 and F2 not for model sizes 110 and 260 with light module; F0 – F3 not for model size 110 with light module)	left centre/centre left centre/top right centre/centre right centre/top		F0 F1 F2 F3			- - - -
Entry port, 23 mm clear diameter, moisture tight, can be closed by flap and silicone stopper, in special positions (please, state location)	left right rear		F4 F5 F6			- - -
Entry port (silicone), 40 mm clear diameter, moisture tight, can be closed by silicone stopper, at the back (please, state location)			F7			-
4 – 20 mA current loop interface	Temperature controller actual value (-10 to +80 °C = 4 - 20 mA) Temperature of a Pt100 sensor positioned flexibly in chamber for external temperature monitoring (max. 3) – price per sensor (-10 to +80 °C = 4 – 20 mA) Humidity controller, actual value (0 to 100 % rh = 4 – 20 mA)		V3 V6 V7			
Works calibration certificate for one (freely selectable) temperature and humidity value			D00105			
Compressed air dehumidification (efficient dehumidification of the interior by means of compressed air). Standard works calibration certificate (measuring point chamber centre) at +10 °C with 10 % rh			C9			-
Door with lock (safety lock)			B6			-
Door hinged on the left		B8			-	
Potential-free contact (24 V/2 A) with socket, according to NAMUR NE 28 for external monitoring (indicates when setpoint is reached)			H5			
Potential-free contact for combination error message (e.g. supply failure, sensor fault, fuse)			H6			
Potential-free contact (24 V/2 A) with socket to NAMUR NE 28, for signal generation, controlled by programme segment, for free-selectable functions to be activated (e.g. activation of audible and visual signals, exhaust motors, fans, stirrers, etc.)	2 contacts		H72			
Process-dependent programmable door lock			D4			-
Door-open-recognition, incl. alarm, shuts down humidity control			V5			-
Flexible Pt100 for positioning in chamber or in load with socket, 4-pin, according to NAMUR NE 28, for external temperature recording (load temperature) max. 3 sensors			H4			
Flexible 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 display, recorded in the integral data store, and can be documented via the AtmoCONTROL software			H8			
MobileALERT, notification by SMS in case of any error or alarm of the device. Requires option H6			C3			
Castor frame (2-part), height 140 mm		R9				-

Accessories	110	260	400	750	1060	1400
Stainless steel grid, electropolished	E20165	E28891	E20182	B41251	B38955	
Additional reinforced stainless steel grid, electropolished, max. loading 60 kg; size 750 with guide bars and fixing screws (only in connection with option K1). Please consider max. loading of chamber	E29767	E29766	B32190		-	
Perforated stainless steel shelf	B00325	B29725	B00328	B32549		-
Additional reinforced stainless steel shelf, max. loading 60 kg; with guide bars and fixing screws (only in connection with option K1). Please consider max. loading of chamber		-	B32191		-	
Stainless steel slide-in drip tray, 15 mm rim (may affect the temperature distribution) – cannot be used in connection with option K1	E02073	E29726	E02075	B32599		-
Stainless steel slide-in drip tray, 15 mm rim, with guide bars and fixing screws (can be used only in connection with option K1)		-	B32763		-	
Stainless steel bottom drip tray, 15 mm rim (may affect the temperature distribution) – cannot be used in connection with option K1	B04359	B29722	B04362	B29769		-
Stainless steel bottom drip tray, 15 mm rim (can be used only in connection with option K1)		-	B34055		-	
Holder for water tank (sizes 110 - 750: 2.5 litres, sizes 1060/1400: 10 litres) for mounting on the rear of the appliance. Standard equipment for sizes 750, 1060 and 1400		E32172			-	
Central water supply with filter cartridges for connection to the domestic water supply. Product information on demand			ZWVR6			
Central water supply without filter cartridges for connection to the domestic water supply (only for demineralised water in accordance with VDE 0510/DIN EN 50272). Product information on demand			ZWVR7			
Guarantee extension by 1 year	GA2Q5		GA3Q5		GA4Q5	

Accessories	110	260	400	750	1060	1400	
USB-Ethernet adapter						E06192	
Ethernet connection cable 5 m for computer interface						E06189	
USB User-ID stick (with User-ID licence): Oven-linked authorisation licence (User-ID-programme) on Memory-stick, prevents undesired manipulation by unauthorised third parties. When reordering please specify serial number						B33170	
Set of height adjustable feet (4 pcs)	B29768						-
Stacking set (4 pcs) for stacking of appliances of same size	B29744						-
Flush-fit unit (stainless steel frame covering gap between oven and wall opening), with air slots	B29734	B29738	B42116	B29742			-
Flush-fit unit (stainless steel frame covering gap between oven and wall opening), without air slots	B29735	B29739	B42117	B29743			-
Subframe, adjustable in height (height 500 mm)	B29749	B29751					-
Subframe, on castors (height 560 mm)	B29750						-
Subframe, adjustable in height, height 130 mm, for example for units with fresh air filter	B33661	B33664					-
Software conforming to FDA AtmoCONTROL. 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). Base licence for the control of one unit. Respective IQ/OQ documents available in German and English language (without surcharge)						FDAQ1	
Integration of additional units (up to max. 15 units) into an already existent FDA-software licence						FDAQ2	
IQ document with device-specific works test data, OQ/PQ check list as support for validation by customer						D00124	
IQ/OQ document with device-specific works test data for one free-selectable temperature value, incl. temperature distribution survey at Memmert for 27 measuring points to DIN 12880:2007-05. PQ check list as support for validation by customer. Price for further temperature values and validation at customer site on demand					D00127		-
IQ/OQ document with device-specific works test data for one free-selectable temperature and humidity value, incl. temperature distribution survey at Memmert for 27 measuring points (26 measuring points on mod. HPP1400) to DIN 12880:2007-05, PQ check list as support for validation by customer. Price for validation at customer site on demand					D00136		
IQ/OQ document with device-specific works test data for one free-selectable temperature, humidity and light value, incl. temperature distribution survey at Memmert for 27 measuring points to DIN 12880:2007-05, PQ check list as support for validation by customer. Price for validation at customer site on demand					D00137		
External measuring instrument with sensors for daylight and UV-light. Product information on demand					B04713	-	B04713
External measuring instrument with additional measuring head for temperature and humidity measurement. Product information on demand					B04714	-	B04714



Humidity chamber HCP
with TwinDISPLAY
AtmoCONTROL software

Model sizes: 50 | 105 | 150 | 240
+18 °C to +90 °C
Humidity 20 to 95% rh

HUMIDITY CHAMBER HCP with active humidity control from 20 % to 95 % rh and unsurpassed real temperature-humidity homogeneity over the entire interior, this nearly condensation-free climate chamber offers the full range of comfort, reliability and safety. It is ideally suited for environmental tests, accelerated life tests, stress tests of drug substance according to ICH Q1A and 85/85 tests to IEC 60068-2-67 and IEC 60068-2-78. It is also used in building physics and biological research.





Optimum homogeneity of humidity and temperature

Active humidity control guarantees ideal homogeneity of temperature and humidity as well as short recovery times after opening the door. In addition, in combination with heating on all six sides, including the heated inner glass door, it minimises vaporisation in the interior and thus the risk of condensed water dripping onto the test object. An aluminium thermal conduction layer supports the optimal temperature distribution and serves as a heat accumulator if there is a temporary power failure.

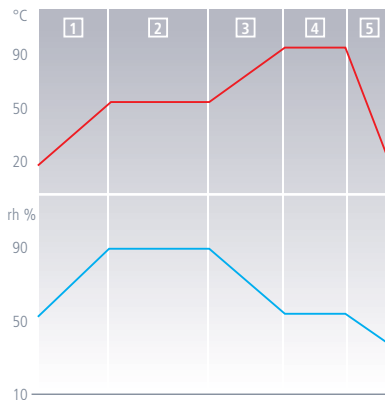
Comfortable equipment for accelerated service life tests

Service life tests such as 85/85 tests run over 1,000 hours and more. The humidity chamber HCP offers a wide range of comfort functions: Standard entry ports at the back, battery-buffered ControlCOCKPIT (option), with SetpointWAIT function process time does not start until the set temperature is reached, alarm messages can be sent via e-mail or SMS (option) and much more.

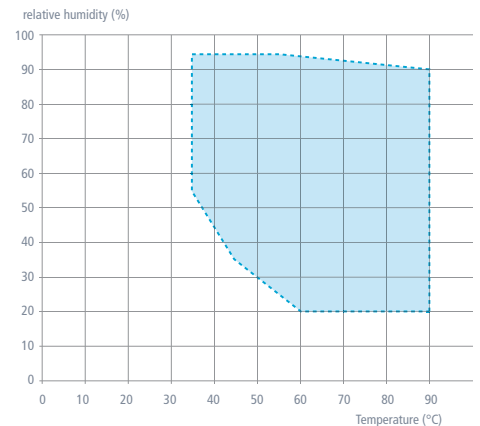
Ramp programming

Essential for the exact simulation of environmental conditions in research: intuitive and fast ramp programming. Thanks to the AtmoCONTROL software, different set values of temperature and humidity can be combined on time ramps.

Ramp programming




Temperature-humidity working range



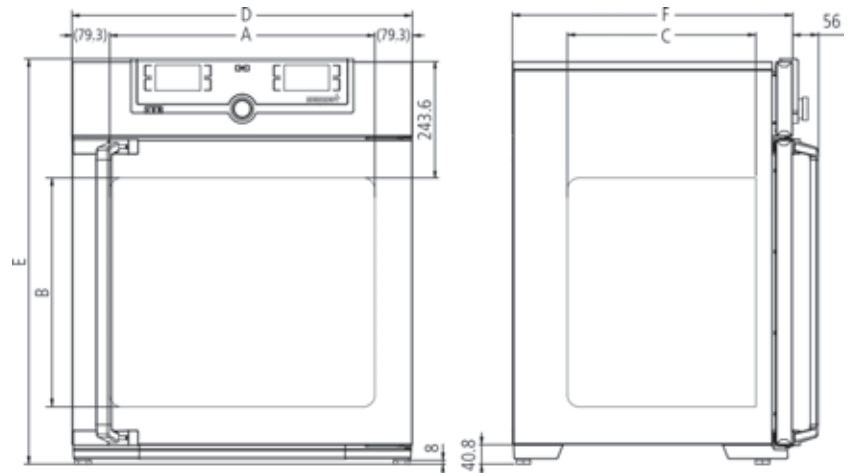
Note: Within the respective temperature-humidity range, permanent operation is possible (at an ambient temperature of 22 °C ± 3 K; relative humidity < 50 %). Condensation may occur in the threshold range. To which extent depends on the humidity content of the chamber load and the ambient conditions.

HUMIDITY CHAMBERS HCP

according to DIN 12880:2007-05, EN 61010-1 (IEC 61010-1), EN 61010-2-010

Standard units are safety-approved and bear the test marks: 

- Interior: Stainless steel, material 1.4301 (ASTM 304), deep-drawn, seamlessly welded
- Housing: Textured stainless steel, rear zinc-plated steel, intuitively operated TwinDISPLAY (TFT colour display) with touchscreen; fully insulated stainless steel door and heated inner glass door
- Connection: Mains cable with plug (German type)
- Installation: 4 adjustable feet
- Interfaces:



Model sizes/Description			50	105	150	240
Stainless steel interior	Volume	approx. l	56	107	156	241
	Width	(A) mm	400	560		600
	Height	(B) mm	425	480	700	810
	Depth (less 35 mm for fan)	(C) mm	330	400		500
	Max. number of grids/shelves	number	5	6	10	12
	Max. loading per grid/shelf	kg	15			
	Max. loading of chamber	kg	75	90	120	140
Textured stainless steel exterior	Width	(D) mm	559	719	759	
	Height (variable through adjustable feet)	(E) mm	795	850	1070	1180
	Depth (without door handle), door handle +56 mm	(F) mm	521	591	691	
	Fully insulated heated stainless steel door		●			
	Additional heated inner glass door		●			
Standard equipment	Stainless steel shelves, perforated	number	1	2		
	Entry port (silicone), 40 mm clear diameter, moisture tight, can be closed by silicone stopper, at the back, centre left		●			
	Works calibration certificate (measuring point chamber centre)	°C	+60 °C with 75 % rh			
	Door-open-recognition, incl. alarm, shuts down fan		●			
Temperature	Working temperature range	°C	+6 above ambient temperature up to +90			
	Setting temperature range	°C	+18 to +90			
	Setting accuracy	°C	0.1			
Humidity	Capacitive humidity sensor for measuring and displaying the relative humidity		●			
	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. Humidity supply with distilled water (from an external tank) by a self-priming pump; integral bacteria block by generating hotsteam, dehumidifying via sterile filter		●			
	Setting range active humidity control	% rh	20 to 95 and rh-Off			
	Setting accuracy	% rh	0.5			
Further data	Electrical load at 230/115 V, 50/60 Hz	approx. W	1520	1720	1800	1840
Packing data	Net weight	approx. kg	55	75	90	110
	Gross weight (packed in carton)	approx. kg	74	100	116	145
	Width	approx. mm	730	800		840
	Height	approx. mm	950	1030	1250	1360
	Depth	approx. mm	640	800		900
Order No. Humidity Chambers			HCP50	HCP105	HCP150	HCP240

Options	50	105	150	240
Voltage 115 V, 50/60 Hz		X2		
Battery-buffered ControlCOCKPIT: uninterrupted supply for the entire display unit (ControlCOCKPIT) and therefore complete documentation of all parameters even when there is a power failure		C2		
Peltier cooling unit: enables low working temperature even at higher ambient temperatures (available as of autumn 2018)	-		K5	
Entry port, 23 mm clear diameter, at the side	left centre/top		F1	
	right centre/top		F3	
4 – 20 mA current loop interface	Temperature controller, actual value (0 to +100 °C = 4 – 20 mA)		V3	
	Humidity controller, actual value (0 to 100 % rh = 4 – 20 mA)		V7	
Works calibration certificate for one (freely selectable) temperature and humidity value		D00143		
Start-up of HCP and brief training (D, A, CH only) through Memmert service, not subject to discount		K9		
Door hinged on the left		B8		
Potential-free contact (24 V/2 A) with socket to NAMUR NE 28 for external monitoring; indicates when set points of temperature and humidity are reached		H5		
Potential-free contact (24 V/2 A) with socket, according to NAMUR NE 28 for combination error message (e.g. supply failure, sensor fault, fuse)		H6		
MobileALERT, notification by SMS in case of any error or alarm of the device. Requires option H6		C3		
MobileALERT for 2 alarm notifications; temperature and humidity alarm		C4		

Accessories	50	105	150	240
Additional perforated stainless steel shelf	E35160	E37418	E35158	
Additional stainless steel grid, electropolished	E20164	E20165	E43118	
Subframe (622 mm high) adjustable in height (sizes 150/240: should not be used for 2 stacked units)	B33504	B33505	B33506	
Subframe (130 mm high); sizes 150/240: only in combination with the corresponding stacking sets for stacked appliances	B33507	B33508	B33509	
Central water supply with filter cartridges for connection to the domestic water supply. Product information on demand		ZWVR6		
Central water supply without filter cartridges for connection to the domestic water supply (only for demineralised water in accordance with VDE 0510/DIN EN 50272). Product information on demand		ZWVR7		
Guarantee extension by 1 year		GA3Q5		
USB-Ethernet adapter		E06192		
Ethernet connection cable 5 m for computer interface		E06189		
USB User-ID stick (with User-ID licence): Oven-linked authorisation licence (User-ID-programme) on Memory-stick, prevents undesired manipulation by unauthorised third parties. When reordering please specify serial number		B33170		
Stacking set (consisting of stacking corners, one connecting plate for the rear, two wall brackets) for stacking two units	-		B42114	B42115
Stacking set (4 pcs) for stacking of appliances of same size	B29744		-	
Software conforming to FDA AtmoCONTROL. 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). Base licence for the control of one unit. Respective IQ/OQ documents available in German and English language (without surcharge)		FDAQ1		
Integration of additional units (up to max. 15 units) into an already existent FDA-software licence		FDAQ2		
IQ document with device-specific works test data, OQ/PQ check list as support for validation by customer		D00124		
IQ/OQ document with device-specific works test data for one free-selectable temperature and humidity value, incl. temperature distribution survey at Memmert for 27 measuring points to DIN 12880:2007-05, PQ check list as support for validation by customer. Price for validation at customer site on demand		D00136		
External measuring instrument with additional measuring head for temperature and humidity measurement. Product information on demand		B04714		



CO₂-cooled climate chamber ICHeco
with TwinDISPLAY + AtmoCONTROL software

Model sizes ICHeco: 260 / 750

Model sizes ICH: 110 / 260 / 750

ICHeco / ICH with humidity control

ICHeco L / ICH L with humidity control and light

ICH C with humidity and CO₂ control

Temperature range with humidity

ICHeco / ICH +10 °C to +60 °C

ICHeco L / ICH L +10 °C to +60 °C

ICH C +10 °C to +50 °C

Humidity range 10 to 80 % rh

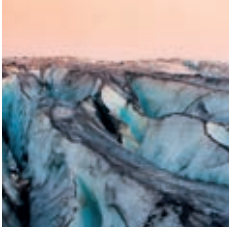
Temperature range without humidity

ICHeco / ICH -10 °C to +60 °C

ICHeco L / ICH L 0 °C to +60 °C

ICH C +10 °C to +50 °C

CLIMATE CHAMBER ICHeco These environmentally-friendly stability testing chambers operate with climate-neutral CO₂ (R744) as refrigerant. Powerful and climate-friendly at the same time, they are especially designed for testing pharmaceuticals according to ICH, Q1A and Q1B (option 2) as well as for testing the stability of cosmetics and foodstuffs. Guaranteed 100% AtmoSAFE: Temperature and humidity are distributed homogeneously and stable throughout the interior.



Refrigerant CO₂ is climate-neutral

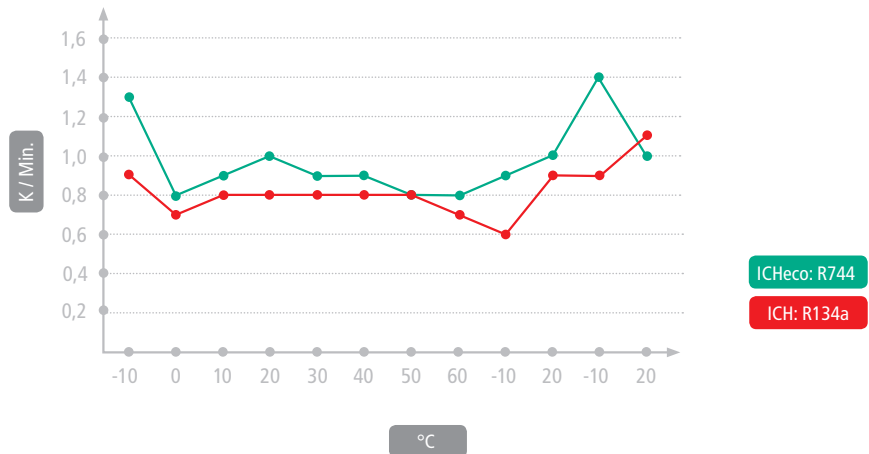
The decision for a CO₂-cooled climate chamber ICHeco makes sense. The refrigerant CO₂ (R744) is climate-neutral in contrast to refrigerants with fluorinated greenhouse gases (e.g. R134a). Legal restrictions for use are therefore completely excluded in the future. R744 is neither flammable nor toxic, does not cause ozone depletion in the atmosphere and does not require disposal or recycling.



Refrigerant CO₂ ensures better cooling performance

An ICHeco is virtually maintenance-free and extremely powerful. Compared to appliances with refrigerant R134a, it scores with faster cooling-down times. For a transition period, the Memmert climate chambers ICH with refrigerant R134a will be available in parallel.

Average time to change temperature ICHeco/ICH

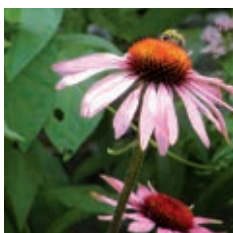


On average 20 % faster temperature change rates with a CO₂-cooled compressor (measurement ICH750eco at ambient temperature +22 °C according to IEC 60068-3-5)



All-round protection of samples

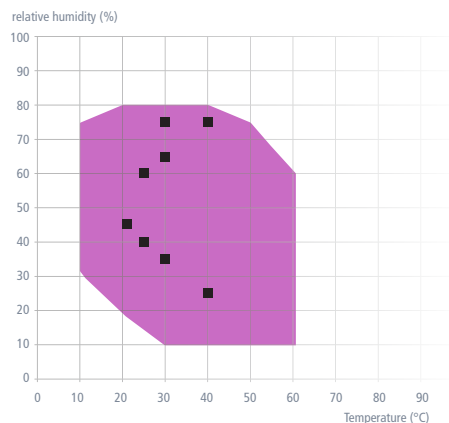
No icing, no drying out of samples, no dehumidification of the working chamber. Cooling aggregate and heating of the ICHeco/ICH are situated outside the working chamber in the air jacket surrounding the entire chamber thus ensuring quick and precise temperature control. Furthermore, the motor-driven forced air circulation, adjustable in 10 % steps, ensures particularly homogenous temperature distribution.



Optionally with illumination unit (ICHeco L / ICH L) or CO₂ control (ICH C)

For tests according to ICH Q1B, option 2, an illumination unit with standard light D65 is available if required. The light sources are fluorescent lamps with cold white light (daylight: light colour 865, 6,500 K) and UV lamps in the spectral range 320 - 400 nm. Especially for tests in the construction industry model ICH C is available with a digitised, electronic CO₂ control with automatic zero setting, NDIR measuring method, self-diagnosis system, acoustic error display and air pressure compensation.

Temperature-humidity working range



Note:
Within the respective temperature-humidity range, condensation-free permanent operation is possible. To which extent condensation may occur in the threshold range depends on the humidity content of the chamber load and the ambient conditions.

- Temperature and humidity test points defined in the ICH guideline



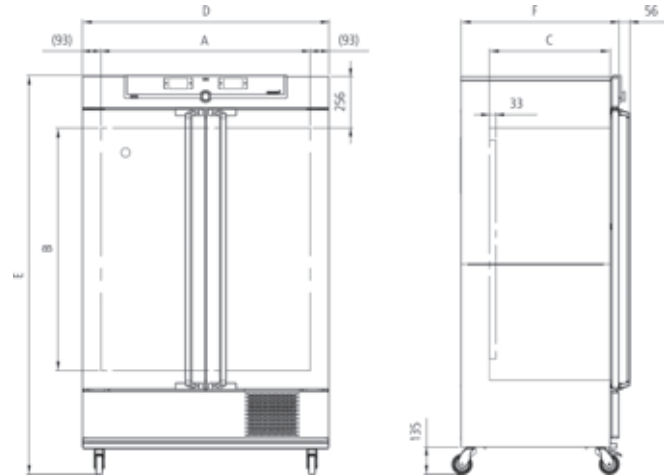
CLIMATE CHAMBERS ICHeco

according to DIN 12880:2007-05, EN 61010-1 (IEC 61010-1), EN 61010-2-010

Standard units are safety-approved and bear the test marks:



- Interior: Stainless steel, mat. 1.4301 (ASTM 304), deep-drawn
- Housing: Textured stainless steel, rear zinc-plated steel, intuitively operated TwinDISPLAY (TFT colour display) with touchscreen
- Double doors: Outside stainless steel, fully insulated, inside glass (size 750: two leaves)
- Connection: Mains cable with plug (German type)
- Installation: Mounted on lockable castors
- Interfaces:



Model sizes/Description			260	750
Stainless steel interior	Volume	approx. l	256	749
	Width	(A) mm	640	1040
	Height	(B) mm	800	1200
	Depth (less 33 mm for fan)	(C) mm	500	600
	Max. number of grids/shelves	number	9	14
	Max. loading per grid/shelf	kg	20	30
	Max. loading of chamber	kg	200	
	Max. loading per slide-in drip tray	kg	4	8
Max. loading per bottom drip tray	kg	4	8	
Textured stainless steel exterior	Width	(D) mm	824	1224
	Height (with castors)	(E) mm	1552	1950
	Depth (without door handle), door handle + 56 mm	(F) mm	685	785
Standard equipment	Stainless steel grids, electropolished	number	2	
	Entry port (silicone), 40 mm clear diameter, moisture tight, can be closed by a silicone stopper, standard position at the back		●	
	Standard works calibration certificate (measuring point chamber center)	°C	+10 °C, +37 °C and +30 °C with 60 % rh	
	Water tank including connection hose		●	
Temperature	Working temperature range without humidity ICHeco (not suitable for long-term storing at sub-zero temperatures. During permanent operation, the glass door may ice over)	°C	-10 to +60	
	Working temperature range ICHeco/ICHeco L with humidity and/or light	°C	+10 to +60	
	Working temperature range ICHeco L without humidity	°C	0 to +60	
	Setting temperature range ICHeco	°C	-10 to +60	
	Setting temperature range ICHeco L	°C	0 to +60	
Humidity	Setting range humidity	% rh	10 to 80	
	Setting accuracy	% rh	0.5	
Light	Illumination unit (only model ICHeco L) acc. ICH Q1B, option 2; separately switchable via controller, one box; number of fluorescent lights with cold white light (size 260/750: 4), number of fluorescent lights with UV lamps (all sizes: 2)		daylight: light colour 865 6,500 K; UV spectral range from 320 to 400 nm (daylight and UV light comply with standard illuminant D65)	
Further data	Electrical load at 230 V, 50 Hz ICHeco	approx. W	1350	
	Electrical load at 230 V, 50 Hz ICHeco L	approx. W	1450	1530
Packing data	Net weight	approx. kg	165	254
	Gross weight (packed in carton)	approx. kg	222	324
	Width	approx. mm	930	1330
	Height	approx. mm	1760	2150
	Depth	approx. mm	930	1050
Order No. Climate Chambers			ICH260eco	ICH750eco
ICHeco = Climate chamber			ICH260Leco	ICH750Leco
ICHeco L = Climate chamber with light				


Options	260	750
Chamber modification for the application of reinforced perforated stainless steel shelves or stainless steel grids (bearing rails mounted in the working chamber) – includes replacement of 2 standard grids by 2 reinforced grids (ICHeco/ICH and ICH C only)	-	K1
Illumination unit (has to be ordered together with the chamber) consisting of 4 fluorescent lights with cold white light (daylight: light colour 865, 6,500 K) and 2 UV lamps in the spectral range of 320 to 400 nm, acc. ICH Q1B, option 2 (daylight and UV light comply with standard illuminant D65) separately switchable via controller (only ICHeco L/ICH L)	second box	T72
Alternative light boxes (replace the standard lighting; have to be ordered together with the chamber); number of fluorescent lamps: size 110: 5, sizes 260/750: 6, with cold white light (daylight: light colour 865, 6.500 K; daylight complies with standard illuminant D65) (only ICHeco L/ICH L)	one box second box (cannot be switched on separately)	T81 T82
Alternative light boxes (replace the standard lighting; have to be ordered together with the chamber); number of fluorescent UV lamps: size 110: 5, sizes 260/750: 6, in the spectral range of 320 to 400 nm; UV light complies with standard illuminant D65 (only ICHeco L/ICH L)	one box second box (cannot be switched on separately)	T01 T02
Interior socket, ampacity 230 V/2.2 A, can be switched off with the On/Off switch, cannot be switched individually, moisture tight IP68 (not for ICH110L)		R3
Entry port, 23 mm clear diameter, for introducing connections at the side, moisture tight, can be closed by flap and silicone stopper, standard positions (F1 and F3 not for models ICHeco L/ICH L)	left centre/centre left centre/top right centre/top	F0 F1 F3
Entry port (silicone), 40 mm clear diameter, moisture tight, can be closed by silicone stopper, at the back (please, state location). Not for models ICHeco L/ICH L		F7
4 – 20 mA current loop interface	Temperature controller actual value (-20 to +70 °C = 4 – 20 mA) Temperature of a Pt100 sensor positioned flexibly in chamber for external temperature monitoring (max. 3) – price per sensor (-20 to +70 °C = 4 – 20 mA) Humidity controller, actual value (0 to 100 % rh = 4 – 20 mA)	V3 V6 V7
Fan speed monitoring with switching off the heating and with alarm in case of failure		V4
Works calibration certificate for one (freely selectable) temperature and humidity value		D00121
Compressed air dehumidification (efficient dehumidification of the interior by means of compressed air – for models ICHeco/ICH and ICHeco L/ICH L) Standard works calibration certificate (measuring point chamber centre) at +10 °C with 10 % rh		C9
Door with lock (safety lock)		B6
Door hinged on the left	B8	-
Potential-free contact (24 V/2 A) with socket, according to NAMUR NE 28 for external monitoring (indicates when setpoint is reached)		H5
Potential-free contact for combination error message (e.g. supply failure, sensor fault, fuse)		H6
Potential-free contact (24 V/2 A) with socket to NAMUR NE 28, for signal generation, controlled by programme segment, for free-selectable functions to be activated (e.g. activation of audible and visual signals, exhaust motors, fans, stirrers, etc.)	2 contacts	H72
Process-dependent programmable door lock		D4
Door-open-recognition, incl. alarm, shuts down humidity control; standard with ICH C and ICHeco L/ICH L		V5
Flexible Pt100 for positioning in chamber or in load with socket, 4-pin, according to NAMUR NE 28, for external temperature recording (load temperature) max. 3 sensors		H4
Flexible 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 display, recorded in the integral data store, and can be documented via the AtmoCONTROL software		H8
MobileALERT, notification by SMS in case of any error or alarm of the device. Requires option H6		C3

Accessories	260	750
Stainless steel grid, electropolished	E28891	E20182
Additional reinforced stainless steel grid, electropolished, max. loading 60 kg; size 750 with guide bars and fixing screws (only in connection with option K1). Please consider max. loading of chamber	E29766	B32190
Perforated stainless steel shelf	B29725	B00328
Additional reinforced stainless steel shelf, max. loading 60 kg; with guide bars and fixing screws (only in connection with option K1). Please consider max. loading of chamber	-	B32191
Stainless steel slide-in drip tray, 15 mm rim (may affect the temperature distribution) – cannot be used in connection with option K1	E29726	E02075
Stainless steel slide-in drip tray, 15 mm rim, with guide bars and fixing screws (can be used only in connection with option K1)	-	B32763
Stainless steel bottom drip tray, 15 mm rim (may affect the temperature distribution) – cannot be used in connection with option K1	B29722	B04362
Stainless steel bottom drip tray, 15 mm rim (can be used only in connection with option K1)	-	B34055
Holder for water tank (2.5 litres) for mounting on the rear of the appliance. Standard equipment for size 750	E32172	-
Central water supply with filter cartridges for connection to the domestic water supply. Product information on demand		ZWVR6
Central water supply without filter cartridges for connection to the domestic water supply (only for demineralised water in accordance with VDE 0510/DIN EN 50272). Product information on demand		ZWVR7
USB-Ethernet adapter		E06192
Ethernet connection cable 5 m for computer interface		E06189
USB User-ID stick (with User-ID licence): Oven-linked authorisation licence (User-ID-programme) on Memory-stick, prevents undesired manipulation by unauthorised third parties. When reordering please specify serial number		B33170
Flush-fit unit (stainless steel frame covering gap between oven and wall opening), with air slots	B29738	B29742
Flush-fit unit (stainless steel frame covering gap between oven and wall opening), without air slots	B29739	B29743
Subframe, adjustable in height (height 500 mm)	B29751	-
Subframe, on castors (height 560 mm)		-
Subframe, adjustable in height, height 130 mm, for example for units with fresh air filter	B33664	-
Software conforming to FDA AtmoCONTROL. 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). Base licence for the control of one unit. Respective IQ/OQ documents available in German and English language (without surcharge)		FDAQ1
Integration of additional units (up to max. 15 units) into an already existent FDA-software licence		FDAQ2

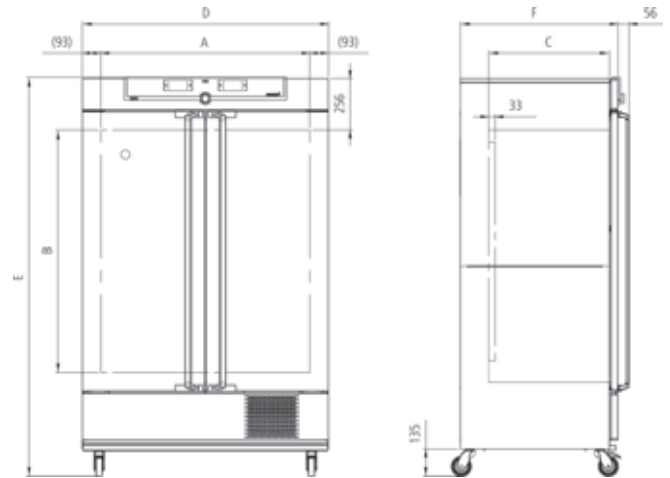
Accessories	260	750
IQ document with device-specific works test data, OQ/PQ check list as support for validation by customer		D00124
IQ/OQ document with device-specific works test data for one free-selectable temperature value, incl. temperature distribution survey at Memmert for 27 measuring points to DIN 12880:2007-05. PQ check list as support for validation by customer. Price for further temperature values and validation at customer site on demand		D00127
IQ/OQ document with device-specific works test data for one free-selectable temperature and humidity value, incl. temperature distribution survey at Memmert for 27 measuring points to DIN 12880:2007-05, PQ check list as support for validation by customer. Price for validation at customer site on demand		D00136
IQ/OQ document with device-specific works test data for one free-selectable temperature, humidity and light value, incl. temperature distribution survey at Memmert for 27 measuring points to DIN 12880:2007-05, PQ check list as support for validation by customer (models ICHeco L/ICH L). Price for validation at customer site on demand		D00137
External measuring instrument with sensors for daylight and UV-light. Product information on demand (models ICHeco L/ICH L)		B04713
External measuring instrument with additional measuring head for temperature and humidity measurement. Product information on demand		B04714

CLIMATE CHAMBERS ICH

according to DIN 12880:2007-05, EN 61010-1 (IEC 61010-1), EN 61010-2-010

Standard units are safety-approved and bear the test marks: 

- Interior: Stainless steel, mat. 1.4301 (ASTM 304), deep-drawn
- Housing: Textured stainless steel, rear zinc-plated steel, intuitively operated TwinDISPLAY (TFT colour display) with touchscreen
- Double doors: Outside stainless steel, fully insulated, inside glass (size 750: two leaves)
- Connection: Mains cable with plug (German type)
- Installation: Mounted on lockable castors
- Interfaces:



Model sizes/Description			110	260	750
Stainless steel interior	Volume	approx. l	108	256	749
	Width	(A) mm	560	640	1040
	Height	(B) mm	480	800	1200
	Depth (less 33 mm for fan)	(C) mm	400	500	600
	Max. number of grids/shelves	number	5	9	14
	Max. loading per grid/shelf	kg	20		30
	Max. loading of chamber	kg	150	200	
	Max. loading per slide-in drip tray	kg	3	4	8
Max. loading per bottom drip tray	kg	3	4	8	
Textured stainless steel exterior	Width	(D) mm	745	824	1224
	Height (with castors)	(E) mm	1233	1552	1950
	Depth (without door handle), door handle + 56 mm	(F) mm	585	685	785
Standard equipment	Stainless steel grids, electropolished	number	2		
	Entry port (silicone), 40 mm clear diameter, moisture tight, can be closed by a silicone stopper, standard position at the back		●		
	Standard works calibration certificate (measuring point chamber center)	°C	+10 °C, +37 °C and +30 °C with 60 % rh		
	Water tank including connection hose		●		
Temperature	Working temperature range without humidity ICH (not suitable for long-term storing at sub-zero temperatures. During permanent operation, the glass door may ice over)	°C	-10 to +60		
	Working temperature range ICH/ICH L with humidity and/or light	°C	+10 to +60		
	Working temperature range ICH C with and without humidity	°C	+10 to +50		
	Working temperature range ICH L without humidity	°C	0 to +60		
	Setting temperature range ICH	°C	-10 to +60		
	Setting temperature range ICH L	°C	0 to +60		
	Setting temperature range ICH C	°C	+10 to +50		
Humidity	Setting range humidity	% rh	10 to 80		
	Setting accuracy	% rh	0.5		
CO ₂ / O ₂	Digital electronic CO ₂ control with autozero, NDIR system, with auto-diagnostic system and acoustic fault indication, barometric pressure compensation (only ICH C), setting range	% CO ₂	0 to 20	0 to 10	
	Setting accuracy CO ₂ (only model ICH C)	% CO ₂	0.1		
	Control accuracy CO ₂ at 0 – 10 % CO ₂	%	+/- 0.2	+/- 0.3	
	Control accuracy CO ₂ at 11 – 15 % CO ₂	%	+/- 0.5	-	
Light	Illumination unit (only model ICH L) acc. ICH Q1B, option 2; separately switchable via controller, one box Number of fluorescent lights with cold white light (size 110: 3, size 260/750: 4) Number of fluorescent lights with UV lamps (all sizes: 2)		daylight: light colour 865 6,500 K; UV spectral range from 320 to 400 nm (daylight and UV light comply with standard illuminant D65)		
Further data	Electrical load at 230/115 V, 50/60 Hz ICH L	approx. W	1450		1530
	Electrical load at 230/115 V, 50/60 Hz ICH and ICH C	approx. W	1350		
Packing data	Net weight	approx. kg	109	160	249
	Gross weight (packed in carton)	approx. kg	137	217	319
	Width	approx. mm	880	930	1330
	Height	approx. mm	1410	1760	2150
	Depth	approx. mm	810	930	1050

Model sizes/Description	110	260	750
Order No. Climate Chambers	ICH110	ICH260	ICH750
ICH = Climate chamber	ICH110L	ICH260L	ICH750L
ICH L = Climate chamber with light	ICH110C	ICH260C	ICH750C
ICH C = Climate chamber with CO ₂ control			
Options	110	260	750
Voltage 115 V, 50/60 Hz		X2	
Chamber modification for the application of reinforced perforated stainless steel shelves or stainless steel grids (bearing rails mounted in the working chamber) – includes replacement of 2 standard grids by 2 reinforced grids (ICHeco/ICH and ICH C only)		-	K1
Illumination unit (has to be ordered together with the chamber) consisting of 4 fluorescent lights with cold white light (daylight: light colour 865, 6,500 K) and 2 UV lamps in the spectral range of 320 to 400 nm, acc. ICH Q1B, option 2 (daylight and UV light comply with standard illuminant D65) separately switchable via controller (only ICHeco L/ICH L)	second box	-	T72
Alternative light boxes (replace the standard lighting; have to be ordered together with the chamber); number of fluorescent lamps: size 110: 5, sizes 260/750: 6, with cold white light (daylight: light colour 865, 6,500 K; daylight complies with standard illuminant D65) (only ICHeco L/ICH L)	one box second box (cannot be switched on separately)	-	T81 T82
Alternative light boxes (replace the standard lighting; have to be ordered together with the chamber); number of fluorescent UV lamps: size 110: 5, sizes 260/750: 6, in the spectral range of 320 to 400 nm; UV light complies with standard illuminant D65 (only ICHeco L/ICH L)	one box second box (cannot be switched on separately)	-	T01 T02
Interior socket, ampacity 230 V/2.2 A, can be switched off with the On/Off switch, cannot be switched individually, moisture tight IP68 (not for ICH110L)			R3
Entry port, 23 mm clear diameter, for introducing connections at the side, moisture tight, can be closed by flap and silicone stopper, standard positions (F1 and F3 not for models ICHeco L/ICH L)	left centre/centre left centre/top right centre/top	-	F0 F1 F3
Entry port (silicone), 40 mm clear diameter, moisture tight, can be closed by silicone stopper, at the back (please, state location). Not for models ICHeco L/ICH L		-	F7
4 – 20 mA current loop interface (Models ICH C max. 2 interfaces – only combination V3 + V7 or V3 + V9 possible)	Temperature controller actual value (-20 to +70 °C = 4 – 20 mA) Temperature of a Pt100 sensor positioned flexibly in chamber for external temperature monitoring (max. 3) – price per sensor (-20 to +70 °C = 4 – 20 mA) Humidity controller, actual value (0 to 100 % rh = 4 – 20 mA) CO ₂ controller, actual value (0 to 25 % CO ₂ = 4 – 20 mA) (only ICH C)		V3 V6 V7 V9
Fan speed monitoring with switching off the heating and with alarm in case of failure			V4
Works calibration certificate for one (freely selectable) temperature and humidity value			D00121
Compressed air dehumidification (efficient dehumidification of the interior by means of compressed air – for models ICHeco/ICH and ICHeco L/ICH L) Standard works calibration certificate (measuring point chamber centre) at +10 °C with 10 % rh			C9
Door with lock (safety lock)			B6
Door hinged on the left		B8	-
Potential-free contact (24 V/2 A) with socket, according to NAMUR NE 28 for external monitoring (indicates when setpoint is reached)			H5
Potential-free contact for combination error message (e.g. supply failure, sensor fault, fuse)			H6
Potential-free contact (24 V/2 A) with socket to NAMUR NE 28, for signal generation, controlled by programme segment, for free-selectable functions to be activated (e.g. activation of audible and visual signals, exhaust motors, fans, stirrers, etc.)	2 contacts		H72
Process-dependent programmable door lock			D4
Door-open-recognition, incl. alarm, shuts down humidity control; standard with ICH C and ICHeco L/ICH L			V5
Flexible Pt100 for positioning in chamber or in load with socket, 4-pin, according to NAMUR NE 28, for external temperature recording (load temperature) max. 3 sensors			H4
Flexible 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 display, recorded in the integral data store, and can be documented via the AtmoCONTROL software			H8
MobileALERT, notification by SMS in case of any error or alarm of the device. Requires option H6			C3
Accessories	110	260	750
Stainless steel grid, electropolished	E20165	E28891	E20182
Additional reinforced stainless steel grid, electropolished, max. loading 60 kg; size 750 with guide bars and fixing screws (only in connection with option K1). Please consider max. loading of chamber	E29767	E29766	B32190
Perforated stainless steel shelf	B00325	B29725	B00328
Additional reinforced stainless steel shelf, max. loading 60 kg; with guide bars and fixing screws (only in connection with option K1). Please consider max. loading of chamber		-	B32191
Stainless steel slide-in drip tray, 15 mm rim (may affect the temperature distribution) – cannot be used in connection with option K1	E02073	E29726	E02075
Stainless steel slide-in drip tray, 15 mm rim, with guide bars and fixing screws (can be used only in connection with option K1)		-	B32763
Stainless steel bottom drip tray, 15 mm rim (may affect the temperature distribution) – cannot be used in connection with option K1	B04359	B29722	B04362
Stainless steel bottom drip tray, 15 mm rim (can be used only in connection with option K1)		-	B34055
Holder for water tank (2.5 litres) for mounting on the rear of the appliance. Standard equipment for size 750		E32172	-
Central water supply with filter cartridges for connection to the domestic water supply. Product information on demand		ZWVR6	
Central water supply without filter cartridges for connection to the domestic water supply (only for demineralised water in accordance with VDE 0510/DIN EN 50272). Product information on demand		ZWVR7	
USB-Ethernet adapter		E06192	
Ethernet connection cable 5 m for computer interface		E06189	

Accessories	110	260	750
USB User-ID stick (with User-ID licence): Oven-linked authorisation licence (User-ID-programme) on Memory-stick, prevents undesired manipulation by unauthorised third parties. When reordering please specify serial number	B33170		
Flush-fit unit (stainless steel frame covering gap between oven and wall opening), with air slots	B29734	B29738	B29742
Flush-fit unit (stainless steel frame covering gap between oven and wall opening), without air slots	B29735	B29739	B29743
Subframe, adjustable in height (height 500 mm)	B29749	B29751	-
Subframe, on castors (height 560 mm)	B29750	-	-
Subframe, adjustable in height, height 130 mm, for example for units with fresh air filter	B33661	B33664	-
Software conforming to FDA AtmoCONTROL. 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). Base licence for the control of one unit. Respective IQ/OQ documents available in German and English language (without surcharge)	FDAQ1		
Integration of additional units (up to max. 15 units) into an already existent FDA-software licence	FDAQ2		
IQ document with device-specific works test data, OQ/PQ check list as support for validation by customer	D00124		
IQ/OQ document with device-specific works test data for one free-selectable temperature value, incl. temperature distribution survey at Memmert for 27 measuring points to DIN 12880:2007-05. PQ check list as support for validation by customer. Price for further temperature values and validation at customer site on demand	D00127		
IQ/OQ document with device-specific works test data for one free-selectable temperature and humidity value, incl. temperature distribution survey at Memmert for 27 measuring points to DIN 12880:2007-05, PQ check list as support for validation by customer. Price for validation at customer site on demand	D00136		
IQ/OQ document with device-specific works test data for one free-selectable temperature, humidity and light value, incl. temperature distribution survey at Memmert for 27 measuring points to DIN 12880:2007-05, PQ check list as support for validation by customer (models ICHeco L/ICH L). Price for validation at customer site on demand	D00137		
IQ/OQ document with device-specific works test data for one free-selectable CO ₂ , humidity and temperature value, incl. temperature distribution survey at Memmert for 27 measuring points to DIN 12880:2007-05, PQ check list as support for validation by customer (models ICH C). Price for validation at customer site on demand	D38897		
External measuring instrument with sensors for daylight and UV-light. Product information on demand (models ICHeco L/ICH L)	B04713		
External measuring instrument with additional measuring head for temperature and humidity measurement. Product information on demand	B04714		



Climatic test chamber CTC
with humidity control
Temperature test chamber TTC
"Celsius" standard software

Model size: 256
- 42 °C to +190 °C (without humidity)
+10 °C to +95 °C (CTC with humidity)
Humidity 10 to 98 % rh (CTC)

CLIMATIC TEST CHAMBER CTC / TEMPERATURE TEST CHAMBER TTC

100% AtmoSAFE: In Memmert environmental test chambers CTC and TTC, the perfect atmosphere for climate and temperature tests, specifically in accordance with IEC 60068 are simulated. Ramp operation, active humidification and dehumidification of 10 to 98 % rh and precise temperature control from -42 °C to +190 °C (without humidity) with humidity control from +10 °C to +95 °C provide unlimited flexibility for controlled material and function tests as well as ageing tests.





Reliable and efficient climate technology

The components of the climate system interact perfectly for quick, precise and energy-saving temperature changes. The 3-layer insulation system for the chamber, derived from aerospace engineering applications, impresses with an excellent K-value and prevents moisture penetration of the insulation material. The electronically controlled injection of refrigerants guarantees an optimal cooling performance and thanks to the automatic defrosting system, the TTC and CTC test chambers run in continuous operation without interruption.



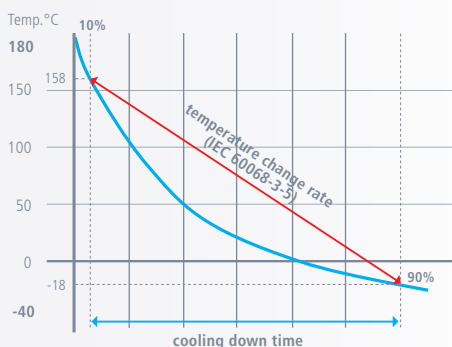
The stainless steel evaporator stands out with a long and corrosion-free life and the twin-compressor, regulated according to the output, saves valuable energy. The temperature-dependent speed-controlled condenser fan ensures low noise level in partial load operation.



Economical at high performance

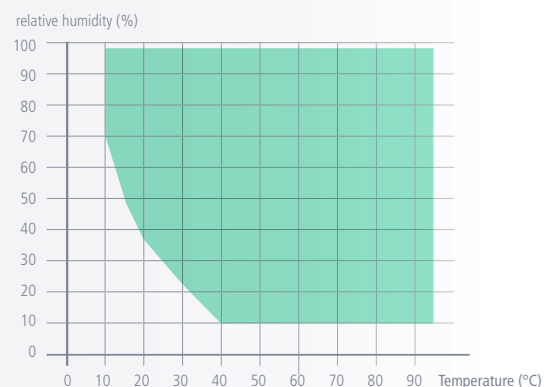
The high level of standardisation and the highly efficient principle of equal parts in production at Memmert allow an extensive range of standard features, along with constantly excellent quality at an outstanding cost/benefit ratio. However, this high-performance duo proves to be extremely cost-efficient not only in their procurement costs, but also in their operating costs. Thanks to the steam generator and the twin compressor, which is regulated according to the output, the CTC consumes only about half of what standard environmental simulation chambers do in climate control operation.

Temperature change rate in cooling operation



According to Newton's law of cooling, the rate of temperature change follows an exponential curve. The rate of temperature change calculated according to IEC 60068-3-5 applies to cooling from 90 % to 10 %. In the upper temperature range, the rate of temperature change is significantly higher, in the lower temperature range it is significantly lower.

Temperature-humidity working range



Note:

Within the respective temperature-humidity range, condensation-free permanent operation is possible. To which extent condensation may occur in the threshold range depends on the humidity content of the chamber load and the ambient conditions.

CLIMATIC TEST CHAMBERS CTC - TEMPERATURE TEST CHAMBERS TTC

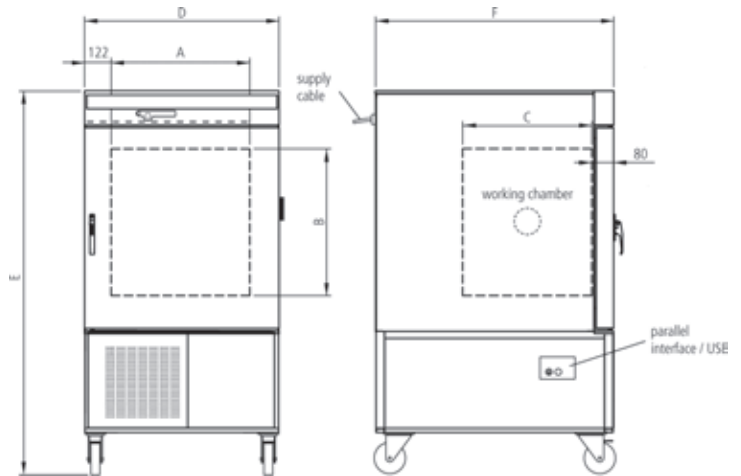
according to DIN 12880:2007-05, EN 61010-1 (IEC 61010-1), EN 61010-2-010, IEC 60068



- Interior: Stainless steel, material 1.4301 (ASTM 304)
- Housing: Textured stainless steel, rear zinc-plated steel, aesthetic functional glass-stainless steel operating panel with multifunction display and input module
- Door: Stainless steel, fully insulated, heated
- Connection: Mains cable with plug (CEE)
- Installation: Mounted on lockable castors



Ethernet interface is optional (extra cost)



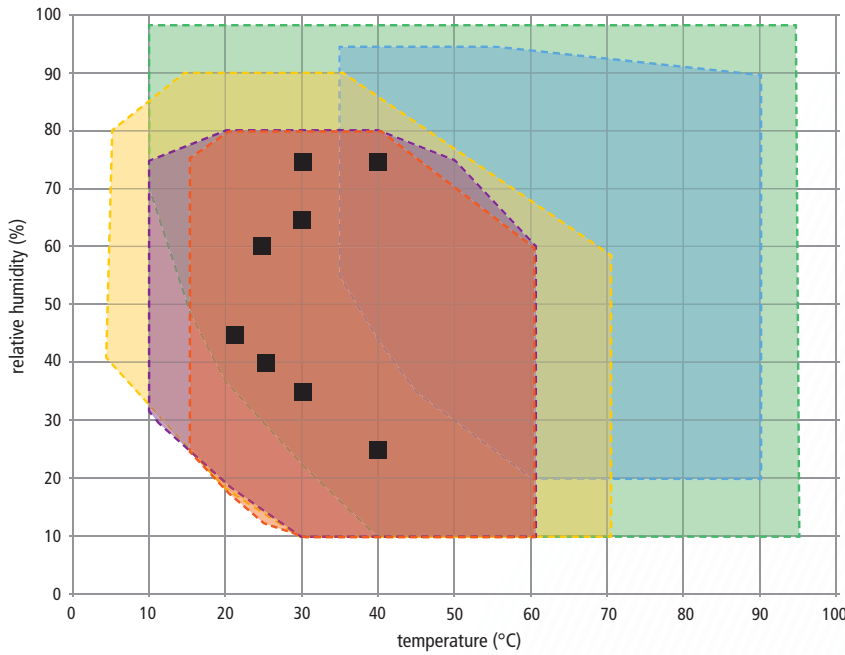
Model sizes/Description		CTC256	TTC256
Stainless steel interior	Volume	approx. l	256
	Width	(A) mm	640
	Height	(B) mm	670
	Depth	(C) mm	597
	Support ribs for stainless steel grids	number	6
	Max. loading per grid	kg	25
	Max. loading of chamber	kg	100
Textured stainless steel exterior	Width (plus 20 mm for silicone plug and 5 mm for interfaces)	(D) mm	898
	Height	(E) mm	1730
	Depth (without door handle), depth of door handle 50 mm	(F) mm	1100
	Fully insulated heated stainless steel door		●
	Lockable castors for ease of transport		●
Standard equipment	Stainless steel grids, electropolished	number	1
	Entry port right, 80 mm, with stopper		●
	High-performance air fan, speed adjustable in 10 % steps with monitoring function of fan speed and automatic speed adjustment		●
	Works calibration certificate (measuring point chamber centre)	°C	-20 °C and +160 °C
	Works calibration certificate (measuring point chamber centre)	°C	+30 °C and 60 % rh
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
	Temperature range with humidity control	°C	+10 to +95
	Temperature range without humidity control	°C	-42 to +190
	Setting accuracy	°C	-42 to 99,9: 0.1 / 100 to 190: 0.5
	Temperature change rate in heating operation (acc. to IEC 60068-3-5) -40 to +180 °C measured at an ambient temperature of 22 °C	°C	10 K / minute
	Temperature change rate in cooling operation (acc. to IEC 60068-3-5) +180 °C to -40 °C measured at an ambient temperature of 22 °C	°C	3 K / minute
	Temperature variation in time acc. to DIN 12880:2007-05 (setpoint dependent of min. temperature up to +150° C and humidity > 20 %)	K	± 0.2 ... 0.5
	Temperature uniformity in chamber (setpoint dependent)	K	± 0.5 ... 2
Humidity	Capacitive humidity sensor		●
	Active microprocessor control for humidifying and dehumidifying (10 – 98 % rh) incl. digital indication and auto-diagnostic system ensures rapid reaching of set humidity and very short recovery times; humidity supply with distilled water (from an external tank) by self-priming pump		●
	Humidity stability in time	% rh	± 1 ... 3
	Telescopic slide for each 2 x 10 l tanks for distilled water as well as 2 x 10 l tanks as condensate collector		●
	Automatic water tank change-over with alarm for continuous operation		●
Control technology	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		●
	Calibration (no separate PC required), Temperature: 3-point calibration on controller		●

Model sizes/Description		CTC256	TTC256
Control technology	Calibration (no separate PC required), humidity: 2-point calibration at 20 % and 90 % rh	●	-
	Setting of language for dialogue and display DE / EN / ES / FR / IT		●
	Microprocessor temperature monitor acting as over- and undertemperature protection (protection class 3.3), with Pt100 incorporating fault diagnostics with visual and acoustic alarm		●
	Temperature monitoring band automatically linked to the setpoint (ASF)		●
	Monitor relay for reliable heating cut-off in case of fault		●
	Mechanical temperature limiter (TB)		●
Communication	Internal log memory 1024 kB as ring memory for all setpoints, actual values, errors, settings with real-time and date; capacity approx. 3 months (CTC) resp. 6 months (TTC) 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" software for control and documentation of temperature and relative humidity (CTC)		●
Refrigeration	High-performance twin compressor (refrigerant R449A) with adjustable speed condenser fan and electronically controlled refrigerant injection		●
	Large-area stainless steel evaporator		●
Light	Halogen interior lighting 2 x 25 W		●
Further data	Acoustic and optical alarm: Door-open		●
	Acoustic and optical alarm: Empty water tank	●	-
	Acoustic and optical alarm: Over- and undertemperature		●
	Acoustic and optical alarm: Underhumidity	●	-
	Electrical load at 400 V, 3 ph N, 50 Hz	approx. W	7000
Packing data	Net weight	approx. kg	337
	Gross weight	approx. kg	463
	Width	approx. mm	1020
	Height	approx. mm	1910
	Depth	approx. mm	1310
Order No. Climatic Test Chamber – Temperature Test Chamber		CTC256	TTC256

Options		CTC256	TTC256
Works calibration certificate for one temperature according to customer specification		-	D00109
Works calibration certificate for one temperature and humidity according to customer specification		D00110	-
Door hinged on the left			B8
Full-sight glass door (5-layer insulating glazing), heated			B0
Entry port, left, 80 mm, with stopper			F0
Start-up of CTC and TTC chambers and brief training (D, A, CH only) through Memmert service not subject to discount			K9
Interface Ethernet instead of USB including software			W4
RS232 interface instead of USB			W6
Computer interface RS485 (for networking a max. of 16 ovens) instead of RS232			V2
Flexible Pt100 for positioning in chamber or in load with socket, 4-pin, according to NAMUR NE 28, for external temperature recording (load temperature)			H4
Potential-free contact (24 V/2 A) with socket, according to NAMUR NE 28 for external monitoring (indicates when setpoint is reached)			H5
Potential-free contact (24 V/2 A) with socket, according to NAMUR NE 28 for combination error message (e.g. supply failure, sensor fault, fuse)			H6
Potential-free contact (24 V/2 A) with socket, according to NAMUR NE 28, triple, for signal generation, controlled by programme segment for a total of 3 freely selected functions to be activated (e.g. acoustic and visual signals, exhaust motors, fans, stirrers etc.).			H7
MobileALERT, notification by SMS in case of any error or alarm of the device. Requires option H6			C3

Accessories		CTC256	TTC256
Additional stainless steel grid, electropolished			E20591
External control and logging package consisting of mini-Notebook and software "Celsius", pre-configured, and lateral swivel arm			B04410
USB connection cable for computer interface			E03643
Parallel/USB converter cable with integrated power supply unit to connect HP printers with USB interface to Memmert units			E05300
Documentation package consisting of parallel USB converter cable including PCL3-compatible HP colour inkjet printer with USB interface (HP OfficeJet 6000 or successor) for direct connection of printer to Memmert unit			B04432
Temperature profile write/read unit for programming via PC, for writing to and reading from the chip card, up to 40 ramps			E05284
Additional chip card, blank, formatted (32 kB MEMoryCard XL for a maximum of 40 ramps)			E04004
Oven-linked authorisation card (User-ID-Card) prevents undesired manipulation by unauthorised third parties. When reordering please specify serial number			E04159
Software conforming to FDA "Celsius FDA Edition". 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). Base licence for the control of one unit			E05019
Integration of additional units (up to max. 15 units) into an already existent FDA-software licence (E05019)			FDAQ4
IQ check list with device-specific works test data as support for validation by customer			D00103
OQ check list with device-specific works test data for one free-selectable temperature value, incl. temperature distribution survey at Memmert for 27 measuring points to DIN 12880:2007-05 as support for validation by customer. Price for validation at customer site on demand			D00104
OQ check list with device-specific works test data for one free-selectable humidity and temperature value, incl. temperature distribution survey at Memmert for 27 measuring points to DIN 12880:2007-05 as support for validation by customer. Price for validation at customer site on demand		D00104	-
External measuring instrument with sensors for daylight and UV-light, with additional measuring head for temperature and humidity. Product information on demand		B04714	-

DECISION AID FOR PRODUCTS WITH HUMIDITY CONTROL



Explanation of diagram:

Within the respective temperature-humidity range, condensation-free permanent operation is possible. To which extent condensation may occur in the threshold range depends on the humidity content of the chamber load and the ambient conditions.

- ICHeco/ICH
- HPP110-HPP1060
- HPP1400
- HCP
- CTC

■ Climate testing points according to ICH guidelines

Model selection

Model size in litres (= dm ³)	ICHeco/ICH	HPP		HCP	CTC
56				HCP50	
107				HCP105	
108	ICH110	HPP110			
156				HCP150	
241				HCP240	
256	ICH260eco/ICH260	HPP260			CTC256
384		HPP400			
749	ICH750eco/ICH750	HPP750			
1060		HPP1060			
1360			HPP1400		
Temp. with hum.	+10 to +60 °C	5 ² to +70 °C	15 ³ to +60 °C	6 ¹ to +90 °C	+10 to +95 °C
Temp. w/o hum.	-10 to +60 °C	0 ² to +70 °C	15 ³ to +60 °C	6 ¹ to +90 °C	-42 to +190 °C
Humidity range	10 to 80 % rh	10 to 90 % rh	10 to 80 % rh	20 to 95 % rh	10 to 98 % rh
Ambient conditions	+19 to +25 °C, max 50 % rh according to Memmert works standard				

¹ above ambient temperature
² at least 20 °C below ambient temperature
³ at least 10 °C below ambient temperature

Important notes concerning working ranges

If the temperature-humidity values exceed the specific limits (working range), the superheated steam introduced will immediately condense at the coldest point in the appliance, due to the dew point.

If the temperature-humidity values fall below the specific limits (working range), the effective range is heavily dependent on the humidity content of the chamber load.

The higher the humidity content of the chamber load, the more steam is generated inside the chamber. This may influence the maintenance of the constant humidity. If you need constant stable operation at the edges or the chamber load is very humid, we recommend dehumidifying with compressed air. We also have other technical solutions for special needs that guarantee stable operation. Send us your inquiry!

To support you in choosing the right appliance, the Memmert TechLab MPTC is always available for tests under realistic conditions. Your customer service representative will gladly establish contact.

MODEL VARIANTS

SingleDISPLAY ControlCOCKPIT with one TFT display	TwinDISPLAY ControlCOCKPIT with two TFT displays
<p>AVAILABLE APPLIANCES</p> <p>UN/UNm / UF/UFm / IN/INm / IF/IFm / IFbw / SN / SF / IPP / IPS</p>	<p>AVAILABLE APPLIANCES</p> <p>UNplus/UNmplus / UFplus/UFmplus / UF TS / UNpa INplus/INmplus / IFplus/IFmplus / SNplus / SFplus / VO ICOMed / IPPplus / ICPeco / ICP / HPP / ICHeco / ICH / HCP</p>
<p>One high-resolution TFT colour display with touch-sensitive buttons for selection of functions</p>	<p>Two high-resolution TFT colour displays with touch-sensitive buttons for selection of functions</p>
<p>Available parameters on the ControlCOCKPIT: Temperature (Celsius or Fahrenheit), fan speed, exhaust air flap position, programme time</p>	<p>Available parameters on the ControlCOCKPIT: Temperature (Celsius or Fahrenheit), fan speed, exhaust air flap position, programme time, relative humidity, illumination, CO₂</p>
<p>One temperature sensor Pt100 DIN class A in a 4-wire circuit</p>	<p>Two Pt100 sensors DIN class A in a 4-wire circuit for mutual monitoring, taking over functions in case of an error</p>
	<p>HeatBALANCE function for application specific adjustment of heat output distribution (balance) between the upper and lower heating groups in an adjustment range between -50 % and +50 % (not valid for models 30, HPP110, IPP110plus, ICP, ICH)</p>
<p>AtmoCONTROL software for reading out, managing and organising the data logger via Ethernet interface (temporary trial version can be downloaded). USB stick with AtmoCONTROL software available as accessory (on demand)</p>	<p>AtmoCONTROL software on a USB stick for programming, managing and transferring programmes via Ethernet interface or USB port</p>
	<p>ControlCOCKPIT with USB port for uploading programmes, reading out protocol logs, activating the User-ID function</p>
	<p>Displaying of already logged protocol data on the ControlCOCKPIT (max 10,000 values correspond to approx. 1 week)</p>
<p>Ethernet interface on the rear of the appliance for reading out the protocol log and for online logging</p>	<p>Ethernet interface on the rear of the appliance for reading out the protocol log and for uploading programmes and for online logging</p>
<p>Double overtemperature protection: Electronic temperature monitoring with freely adjustable monitoring temperature, for models U, I, S with option A6 TWW/TWB (protection class 3.1 or 2), mechanical temperature limiter TB acc. to DIN 12880</p>	<p>Multiple overtemperature protection: Electronic temperature monitoring TWW/TWB (protection class 3.1 or 2 resp. 3.3 for units with active cooling) and mechanical temperature limiter TB (protection class 1) acc. to DIN 12880, AutoSAFETY automatically adjusts to the set value within a freely adjustable tolerance range. Setting individual MIN / MAX values for over/undertemperature alarm and also for all other parameters such as relative humidity, CO₂</p>
<p>PID microprocessor control with integrated auto-diagnostic system</p>	
<p>Structured stainless steel housing, scratch-resistant, robust and durable; rear of zinc-plated steel</p>	
<p>High-temperature connectors on the rear of the appliance for single-phase power connection according to country specific systems and IEC standards</p>	
<p>Internal data logger with a storage capacity of at least 10 years</p>	
<p>German, English, French, Spanish, Polish, Czech, Hungarian language settings available on the ControlCOCKPIT</p>	
<p>Digital backwards counter with target time setting, adjustable from 1 minute to 99 days</p>	
<p>The SetpointWAIT function guarantees that the process time does not start until the set temperature is reached at all measuring points – optional for temperature values recorded by the freely positionable Pt100 sensors inside the chamber</p>	
<p>Adjustment of three calibration values for temperature and additional appliance specific parameters directly at the ControlCOCKPIT</p>	



memmert
Experts in Thermostatics

HEATING AND DRYING OVENS

UNIVERSAL OVEN U

PASS-THROUGH OVEN UF TS

PARAFFIN OVEN UNpa

STERILISER S

VACUUM OVEN VO

BLANKET WARMER IFbw

INCUBATORS

INCUBATOR I

CO₂ INCUBATOR ICOmed

COMPRESSOR-COOLED INCUBATOR ICPeco/ICP

PELTIER-COOLED INCUBATOR IPP

COOLED STORAGE INCUBATOR IPS

CLIMATE CHAMBERS

CONSTANT CLIMATE CHAMBER HPP

HUMIDITY CHAMBER HCP

CLIMATE CHAMBER ICHeco/ICH

ENVIRONMENTAL TEST CHAMBER CTC/TTC

WATERBATHS / OILBATHS

WATERBATH W

OILBATH O

YOUR MEMMERT PARTNER



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