Cooled vacuum oven VOcool
"Celsius" standard software

Model sizes:
200 / 400
+5 °C to +90 °C
5 mbar to 1100 mbar

COOLED VACUUM OVEN VOcool Freeze-drying, the most common means of drying starter cultures and probiotics is very energy-intensive. Furthermore, some bacterial strains do not survive the freezing process. Thanks to low temperature vacuum drying, unstable substances can be dried at moderate temperatures above zero without causing too much damage to the cell structure. Memmert is the first manufacturer worldwide that has developed a cooled vacuum oven for laboratory application.

Fields of application

Thanks to low temperature vacuum drying in VOcool appliances, bacteria and starter cultures in the pharmaceutical and food industry can be gently dried. Additionally, the appliance offers the possibility to simulate programme-controlled transport and storage scenarios to determine the behaviour of active ingredients or volumes under different pressure and temperature conditions.

Unparalleled precision

The compact, energy-saving and extremely accurate Peltier-cooling unit guarantees a surface temperature distribution with a maximum deviation of ±1 K across the entire temperature range. Memmert is the only manufacturer worldwide that offers digital pressure control. Ramp programming of temperature and vacuum (-cycles) in combination with heating/cooling of thermoshelves allows for quick processes and nullifies residual humidity.

Maximum time savings

The interior of all Memmert vacuum ovens can be ventilated in cycles to remove humidity quicker with the exhaust air. Thanks to ramp programming of temperature and vacuum cycles, the drying process is optimised and drying times are considerably further reduced in comparison to conventional vacuum drying ovens.

Up to 40 ramps with different set temperature and vacuum values can be directly programmed on the device or via the MEMoryCard. When using the "Celsius" software, the number of ramps is practically unlimited.
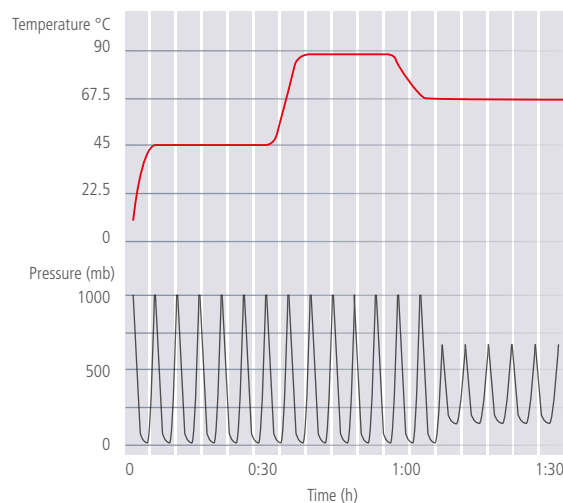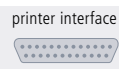
Peltier-element

COOLED VACUUM OVENS VOcool

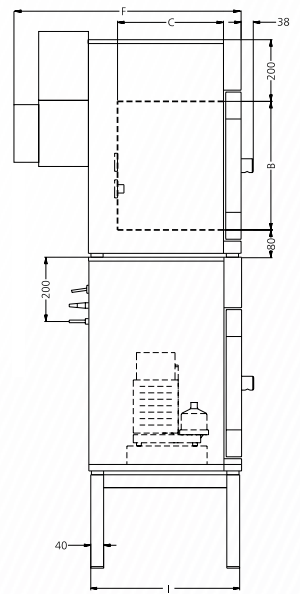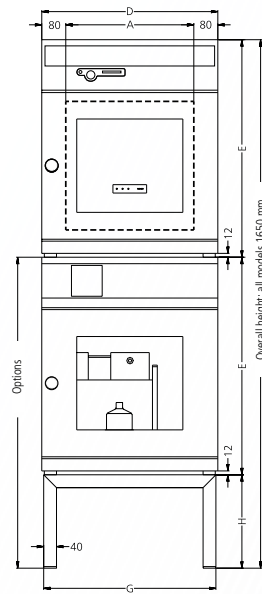according to DIN 12880:2007-05, EN 61010-1 (IEC 61010-1)

CE EAC

Standard equipment

Interior: Stainless steel interior, material 1.4404 (ASTM 316 L), hermetically welded, with removable mountings at the sides for cleaning, including thermoshelf guide bars, as well as mounting on top to avoid turbulences

Internals: Thermoshelf, aluminium, eloxadised material 3.3547 (ASTM B209)

Housing: Textured stainless steel, rear zinc-plated steel, aesthetic functional glass-stainless steel operating panel with multifunction display and input module, safety glass door with inner bullet-proof glass and external anti-splinter screen

Installation 4 feet

Connection: Mains cable with plug (German type)

Interfaces:

USB

printer interface

Optional:

Ethernet
LAN

Model sizes/Description				200	400
Stainless steel interior	Volume		approx. l	29	49
	Width	(A) mm		385	385
	Height	(B) mm		305	385
	Depth	(C) mm		250	330
	Maximum load per shelf		approx. kg	20	
Textured stainless steel housing (The dimensions also apply to the optional pump module)	Width	(D) mm		550	550
	Height	(E) mm		600	680
	Depth (without door handle, depth of handle 38 mm) incl. Peltier-cooling device CDP115	(F) mm		650	730
	Safety glass door: Textured stainless steel frame with spring-loaded safety glass on inside and anti-splinter screen ESG on outside of door			□	
Door seal	Endless silicone profile seal			□	
Temperature	Electronic microprocessor temperature controller with Pt100 and auto-diagnostic system			□	
	Temperature sensor Pt100 Class A in 4-wire circuit individually for each thermoshelf			□	
	Working-temperature range		°C	+5 to +90	
	Setting temperature range		°C	+5 to +90	
	Temperature variation in time (to DIN 12880:2007-05) (aluminium thermoshelf)		K	≤ ± 0.3	
	Temperature uniformity (surface) at +20 °C/20 mbar		K	≤ ± 1	
Pressure (vacuum)	Digital electronic pressure control (in programme operation up to 40 ramps, adjustable for each segment) for vacuum via solenoid valves. Tubing for vacuum, air and inert gas are made of material 1.4571 (ASTM 316 Ti). Adjustable from 5 mbar up to 1100 mbar. Programmable, digitally controlled inlet for air. Integrated process control with programmable temperature and vacuum cycles enabling amongst others accelerated moisture reduction.			□	
	Rapid air intake for door opening without alteration of selected vacuum setpoint			□	
	Permitted final vacuum		mbar	0.01	
	Maximum leakage rate		bar/h	0.01	
Monitor	Microprocessor temperature monitor acting as overtemperature protection (protection class 3.1) with Pt100, incorporating fault diagnostics with visual and acoustic alarm			□	
	Digital over- and undertemperature monitor			□	
	Temperature monitoring band automatically linked to the setpoint (ASF)			□	
	Multi-Level-Overtemperature-Protection (MLOP) for each thermoshelf			□	
	Relay for reliable heating cut-off in case of fault			□	
	Accoustic alarms: Over- and undertemperature			□	

Model sizes/Description			200	400
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		□	
Documentation	Internal log memory 1024 kB as ring memory for all setpoints, actual values, errors, settings with real-time and date; capacity up to 3 months at 1 min. intervals		□	
	"Celsius" software for control and documentation of temperature and pressure		□	
	Parallel interface		□	
Setup	Calibration (no sep. PC required), temperature and pressure: 3-point calibration on controller		□	
	Setting of language for dialogue and display DE / EN / ES / FR / IT		□	
Connections	Vacuum connection with small flange DN16, and gas inlet with small flange DN 16		□	
Further data	Electrical load (loading with max. number of thermoshelves), at 230 V, 50/60 Hz	approx. W	400	500
Standard accessories	Removable interior mounting – stainless steel material 1.4404 (ASTM 316 L) – with integrated lateral guide bars for thermoshelves		□	
	Thermoshelves – aluminium eloxadised, mat. 3.3547 (ASTM B209) – with integral large-area heating/cooling incl. local temperature sensing (Pt100, 4-wire-circuit); individual overtemp. protection for each shelf. Further data see stainless steel inner working chamber	number	1	
	Works calibration certificate(s) (measuring point in the middle of the individual shelf for +50 °C at 20 mbar pressure): a separate certificate is prepared for each thermoshelf ordered and shipped together with the vacuum oven		□	
	Removable bottom drip-tray made of stainless steel No. 1.4404 (ASTM 316 L)		□	
	Inert gas inlet: programmable and digitally controlled inlet for inert gas with flow rate reduction		□	
	Pump control: optimised rinsing procedures for the pump membranes as well as signal output for pump ON/OFF (recommended in combination with PMP)		□	
Packing data / Vacuum oven	Net weight/Gross weight (packed in carton)	approx. kg	76/92	89/112
	Packed dimensions Width/Height/Depth	approx. cm	73/95/67	83/105/80
Packing data / Pump module	Net weight without/with pump	approx. kg	25/41	30/46
	Gross weight (packed in carton) without/with pump	approx. kg	46/62	51/67
	Packed dimensions Width/Height/Depth	approx. cm	73/95/67	83/105/80
Order No. Cooled Vacuum Ovens			**VO200cool**	**VO400cool**

Options		200	400
Extended temperature range (0 °C to +90 °C)		A8	

Accessories		200	400
Removable bottom drip-tray made of stainless steel No. 1.4404 (ASTM 316 L)		E04256	E04257
Subframe, tubular steel, black enamelled (for stacking unit consisting of vacuum oven and pump module, total height: 1650 mm, see sketch of oven dimensions) Width/Height/Depth (see sketch of oven dimensions) G/H/I	mm	E02030 529/450/ 383	E02031 529/290/ 463
Works calibration certificate for 3 temperatures: +5 °C, +30 °C, +90 °C at 20 mbar pressure		D00133	
Guarantee extension by 1 year (VOcool only)		GA2Q5	
Noise-insulated vacuum pump module without pump (exterior dimensions and -material No. s. vacuum oven) with antivibration metal plate at the bottom to accommodate the vacuum pump, incl. full-sight glass door. Socket, signal cable and connecting hose to the vacuum oven		PM200	PM400
Noise-insulated vacuum pump module, as above, however with built-in pump 230 V, 50/60 Hz (pump B04133 for VO200 and pump B04134 for VO400)		PMP200	PMP400
Signal cable (3 m) for optimising pump performance by demand-controlled activation of purge of Memmert pump		B04027	
Vacuum connecting hose (3 m) from oven to Memmert pump incl. optimised connection accessories (partially stainless steel)		B04026	
Chemically resistant vacuum pump with PTFE double diaphragm, pump capacity at atm. pressures: approx. 34 Nl./min = 2,04 m³/h and autom. purge control from vacuum oven. Order No. B04027 and B04026 necessary. 230 V, 50 Hz. Max. guarantee period 2 years		B04133	–
Chemically resistant vacuum pump with PTFE double diaphragm, pump capacity at atm. pressures: approx. 60 Nl./min = 3,6 m³/h and autom. purge control from vacuum oven. Order No. B04027 and B04026 necessary. 230 V, 50/60 Hz. Max. guarantee period 2 years		–	B04134

Not all options/accessories are combinable with each other. Please contact us for individual combination requests.

Mar-2017

SOFTWARE AtmoCONTROL

AtmoCONTROL – The innovative control and logging software

Parameters such as temperature and humidity as well as the process time can be set directly at the ControlCOCKPIT.
Ramp programming is done via the control and logging software AtmoCONTROL, which features a completely new software design.

Drag, drop & go!

Numerical and graphic programming of complex processes is a thing of the past. Today, programming is done via AtmoCONTROL by means of the mouse or touchpad on your notebook. Even the most complex ramp programmes are created within minutes. Simply drag & drop the graphical symbols for the desired parameters to the input field and change the values according to your wishes with a mouse click.

Programme functions
SingleDISPLAY and TwinDISPLAY

- Reading out, managing and organising the data logger
- Saving the log memory in various formats
- Online monitoring of up to 32 connected appliances
- Optical alarms when the alarm limits individually set at the ControlCOCKPIT are exceeded
- Automatic alarm to one or several e-mail addresses

Additional functions
TwinDISPLAY

- Intuitive programming and archiving of ramps and programme sequences
- Synchronous visualisation of the created programme sequence during programming
- Application-specific repeat functions (loops) can be inserted within a temperature control programme in any place
- Simple creation of repeating weekly programmes
- Programming, managing and transferring programmes via Ethernet interface or USB port

SPECIAL EQUIPMENT FOR MODELS U, UF TS, UNpa, S, I, ICP, IPP, IPS, HPP, ICH — ICOmed

Options for models U, UF TS, UNpa, S, I, ICP, IPP, IPS, HPP, ICH	30	55	75	110	160	260	400	450	750	1060	1400	50 / 105 / 150 / 240
Door with lock (safety lock); for models UF TS per side; standard with SN/SF and SNplus/SFplus 450 and 750 (not for models ICOmed)					B6							–
Door hinged on the left; for models UF TS per side			B8					–				B8
Potential-free contact (24 V/2 A) with socket to NAMUR NE 28 for external monitoring (indicates when setpoint is reached); models ICOmed: when set points of temperature and CO_2 are 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.). Only for units with TwinDISPLAY; max. 2 contacts on 1-phase appliances; max. 4 contacts on 3-phase appliances (not for models ICOmed) 2 contacts						H72						–
4 contacts		–						H74				–
Process-dependent door lock (only for units with TwinDISPLAY); for models UF TS see page 11 of oven brochure; not for models ICOmed					D4							–
Door-open-recognition, incl. alarm, shuts down fan and after 30 sec. also heating (only for units with TwinDISPLAY); for models UF TS per side; standard with ICOmed, ICH C, 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; not for models ICOmed					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. Not for models ICOmed					H8							–
MobileALERT, notification by SMS in case of any error or alarm of the device. Requires option H6 "floating contact for alarm"						C3						
MobileALERT for up to 4 alarm notifications; standard: temperature and CO_2 alarm, additionally humidity alarm (when equipped with option K7) and O_2 alarm (when equipped with option T6)					–							C4
Temperature restriction (for UN/UF/UNplus/UFplus/UNm/UFm/UNmplus/UFmplus and models UF TS); Temperatures: +60, +70, +80, +95, +100, +120, +160, +180, +200, +220 or +250 °C (Please, indicate upon ordering)			A8				–		A8			–
Castor frame (2-part), height 140 mm (not for models UF TS, ICP, ICH, ICH L, ICH C, ICOmed)			R9						–			

Not all options/accessories are combinable with each other. Please contact us for individual combination requests.

SPECIAL EQUIPMENT FOR MODELS U, UF TS, UNpa, S, I, ICP, IPP, IPS, HPP, ICH — ICOmed

Accessories for models U, UF TS, UNpa, S, I, ICP, IPP, IPS, HPP, ICH	30	55	75	110	160	260	400	450	750	1060	1400	50 / 105 / 150 / 240
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 (only for units with TwinDISPLAY)							B33170					
USB stick with documentation software AtmoCONTROL and operation manual for products with SingleDISPLAY (the standard equipment of appliances with TwinDISPLAY includes one USB stick with AtmoCONTROL)							B33171					
Set of height adjustable feet (4 pcs) not available for ICP, ICH, ICH L, ICH C – standard on models ICOmed			B29768									–
Stacking set (4 pcs) for stacking of appliances of same size (not for models 160, 260, 450, 750, 1060, 1400, ICH110, ICH110L, ICH110C, ICP55, ICP110)		B29744					–				B29744	–
Stacking set (consisting of stacking corners, one connecting plate for the rear, two wall brackets) for stacking two units ICO150med or ICO240med						–						B42114 (150) B42115 (240)
Plug-in tube extension (outer diam. 60.3 mm, inner 57 mm), straight, for exhaust air ducting (if necessary for connection by hose), only models U, I, S not for models UF TS					B29718						–	
Plug-in tube extension (outer diam. 60.3 mm, inner 57 mm), angled, for exhaust air ducting (if necessary for connection by hose), only models U, I, S not for models UF TS					B29719						–	
Flush-fit unit (stainless steel frame covering gap between oven and wall opening), with air slots	B29728	B29730	B29732	B29734	B29736	B29738	B42116	B29740	B29742	B42118		
Flush-fit unit (stainless steel frame covering gap between oven and wall opening), without air slots for models UF TS see page 11 of oven brochure; not for models ICOmed	B29729	B29731	B29733	B29735	B29737	B29739	B42117	B29741	B29743	B42119		
Subframe, adjustable in height (size 30 to 75: height 600 mm, size 110 to 450: height 500 mm); not for models ICOmed, UF TS and HPP400	B29745	B29747		B29749	B29751	–		B29753			–	
Subframe, on castors (size 30 to 75: height 660 mm, size 110 to 160: height 560 mm); not for models ICOmed and UF TS	B29746	B29748		B29750						–		
Subframe, adjustable in height, height 130 mm, for example for units with fresh air filter; not for models ICOmed and UF TS	B33657	B33659		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 (only for units with TwinDISPLAY)							FDAQ1					
Integration of additional units (up to max. 15 units) into an already existent FDA-software licence (only for units with TwinDISPLAY)							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 9 measuring points (size 30), 27 measuring points (sizes 55 – 1060) to DIN 12880:2007-05, PQ check list as support for validation by customer. Further temperature values and validation at customer site on demand	D00125					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 model HPP1400) to DIN 12880:2007-05, PQ check list as support for validation by customer (models HPP and ICH). Validation at customer site on demand	–			D00136	–	D00136	–		D00136	–	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 HPP with light and ICH L). Validation at customer site on demand	–			D00137	–	D00137	–		D00137		–	
IQ/OQ document with device-specific works test data for one free-selectable CO_2, humidity and temp. value, incl. temp. 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 and ICOmed, on models ICOmed a free-selectable humidity value is only possible with option K7). Validation at customer site on demand	–			D38897	–	D38897	–		D38897	–		D38897
IQ/OQ document with device-specific works test data for one free-selectable CO_2 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 (model ICOmed). Validation at customer site on demand						–						D38898
External measuring instrument with sensors for daylight and UV-light. Product information on demand (models HPP, ICH L, IPPplus)				B04713					–		B04713	–
Ditto with additional measuring head for temperature and humidity measurement. Product information on demand (models HPP, ICH L, IPPplus)				B04714					–		B04714	–

Not all options/accessories are combinable with each other. Please contact us for individual combination requests.

Mär-2017

SPECIAL EQUIPMENT FOR MODELS VO, VOcool, HCP, TTC, CTC

Options for models VO, VOcool, HCP, TTC, CTC	200	400	500	108	153	246	256
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			
Door with lock (safety lock, not available for VO, VOcool, TTC/CTC)				B6			
Flexible Pt100 for positioning in chamber or in load with socket, 4-pin, according to NAMUR NE 28, for external temperature recording (load temperature); for VO and VOcool on demand				H4			
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" software or on an attached printer. (Not available for VO, VOcool, TTC and CTC)				H8			
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.). Not available for VO, VOcool				H7			
MobileALERT, notification by SMS in case of any error or alarm of the device. Requires option H6 "floating contact for alarm"				C3			

Accessories for models VO, VOcool, HCP, TTC, CTC	200	400	500	108	153	246	256
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 per additional unit (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. Validation at customer site on demand				D00104			
OQ check list with device-specific works test data for one free-selectable temperature value, incl. temperature distribution survey at Memmert for 5 measuring points to DIN 12880:2007-05 as support for validation by customer valid for one thermoshelf; ditto for further thermoshelves VO on demand (VO and VOcool only). Validation at customer site on demand				D00117			
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 (models HCP and CTC). 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 (models HCP)				B04714			

Not all options/accessories are combinable with each other. Please contact us for individual combination requests.

MODEL VARIANTS

SingleDISPLAY ControlCOCKPIT with one TFT display	TwinDISPLAY ControlCOCKPIT with two TFT displays
AVAILABLE APPLIANCES **UN/UNm / UF/UFm / IN/INm / IF/IFm / SN / SF / IPP / IPS**	**AVAILABLE APPLIANCES** **UNplus/UNmplus / UFplus/UFmplus / UF TS / UNpa** **INplus/INmplus / IFplus/IFmplus / SNplus / SFplus** **ICOmed / IPPplus / ICP / HPP / ICH**
One high-resolution TFT colour display with touch-sensitive buttons for selection of functions	Two high-resolution TFT colour displays with touch-sensitive buttons for selection of functions
Available parameters on the ControlCOCKPIT: Temperature (Celsius or Fahrenheit), fan speed, exhaust air flap position, programme time	Available parameters on the ControlCOCKPIT: Temperature (Celsius or Fahrenheit), fan speed, exhaust air flap position, programme time, relative humidity, illumination, CO_2
One temperature sensor Pt100 DIN class A in a 4-wire circuit	Two Pt100 sensors DIN class A in a 4-wire circuit for mutual monitoring, taking over functions in case of an error
	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)
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)	AtmoCONTROL software on a USB stick for programming, managing and transferring programmes via Ethernet interface or USB port
	ControlCOCKPIT with USB port for uploading programmes, reading out protocol logs, activating the User-ID function
	Displaying of already logged protocol data on the ControlCOCKPIT (max 10,000 values correspond to approx. 1 week)
Ethernet interface on the rear of the appliance for reading out the protocol log and for online logging	Ethernet interface on the rear of the appliance for reading out the protocol log and for uploading programmes and for online logging
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	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, CO_2

PID microprocessor control with integrated auto-diagnostic system

Structured stainless steel housing, scratch-resistant, robust and durable; rear of zinc-plated steel

High-temperature connectors on the rear of the appliance for single-phase power connection according to country specific systems and IEC standards

Internal data logger with a storage capacity of at least 10 years

German, English, French, Spanish, Polish, Czech, Hungarian language settings available on the ControlCOCKPIT

Digital backwards counter with target time setting, adjustable from 1 minute to 99 days

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

Adjustment of three calibration values for temperature and additional appliance specific parameters directly at the ControlCOCKPIT