

Vacuum oven VO
"Celsius" standard software

Model sizes:
200 / 400 / 500
+20 °C to +200 °C
5 mbar to 1100 mbar

VACUUM OVEN VO Memmert vacuum ovens show their full potential with short heating up times, high precision temperature control and turbo drying. At the same time, heat and oxygen sensible materials are treated with incomparable care. Memmert is the only manufacturer worldwide that offers digital pressure control. As addition to the vacuum oven, Memmert offers a special controllable pump for installation in a lower chamber, the pump module, installed on the outside of the vacuum oven.







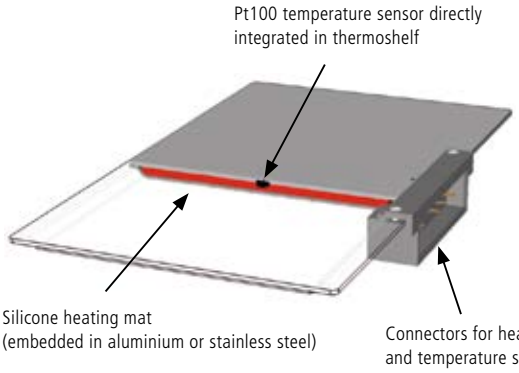
Customised models for every application

As much function as needed, as much customisation as possible! The basic model of the vacuum oven features a thermoshelf, two thermoshelf connectors as well as an USB interface, "Celsius" software and MEMoryCARD. The vacuum oven can be customised with additional functions for individual applications.

- **OPTION INERT GAS INLET:** Programmable and digitally controlled inlet for inert gas with flow rate reduction
- **PREMIUM MODULE:** The option for switching to inert gas well as additional connection (VO200) or two further connections (VO400, VO500) for thermoshelves and one additional thermoshelf (for VO400, VO500), drip tray and interface for printer

Multi-Level-Heating

Each of the thermoshelves that can be inserted as required is equipped with separate large surface heating and its own sensors (Multi-Level-Sensing MLS). The separate control circuits react precisely to different loads and humidity values and maintain the pre-set temperature equally on all the levels used. Due to the direct contact between the heating system and the chamber load, there is practically no loss of heat and heating and process times are reduced by some 75 % compared to a conventional heating system of the interior walls.



Removable thermoshelf with direct heating system and sensor

Repeat function with turbo effect

User-friendly ramp programming saves effort and guarantees reliable processes. Thanks to programming of vacuum cycles, the drying time can be considerably further reduced. 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.

VACUUM OVENS VO

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

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

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)

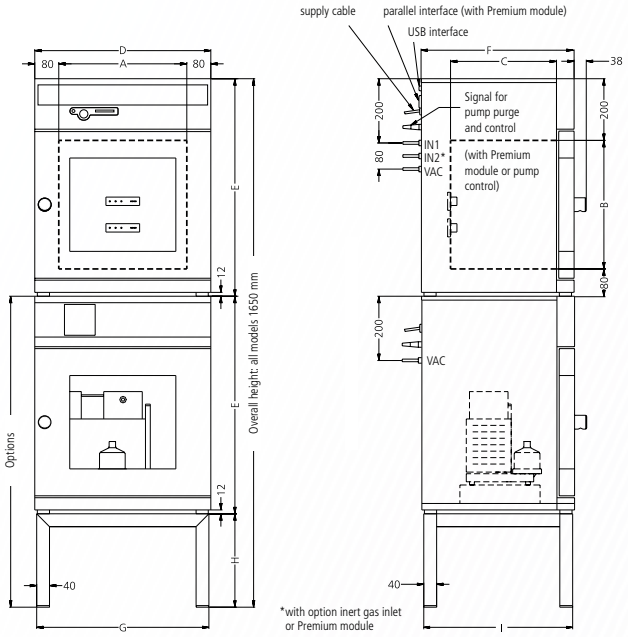
Interfaces:

USB

Optional:

Ethernet
LAN

printer interface
(part of Premium module)



Model sizes/Description				200	400	500
Stainless steel interior	Volume		approx. l	29	49	101
	Width	(A)	mm	385	385	545
	Height	(B)	mm	305	385	465
	Depth	(C)	mm	250	330	400
	Max. number of thermoshelves – basic equipment/with Premium Module		number	2/3	2/4	
	Distance between thermoshelves		mm	75		95
	Maximum load per shelf		approx. kg	20		
	Maximum load per oven		approx. kg	40	60	
Textured stainless steel housing The dimensions also apply to the optional pump module	Width	(D)	mm	550	550	710
	Height	(E)	mm	600	680	760
	Depth (without door handle, depth of handle 38 mm)	(F)	mm	400	480	550
	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	at least 5 above ambient temperature to +200		
	Setting temperature range		°C	+20 to +200		
	Temperature variation in time (to DIN 12880:2007-05) (aluminium thermoshelf)		K	≤ ± 0.3		
	Temperature uniformity (surface) at +160 °C/20 mbar (aluminium thermoshelf)		K	≤ ± 2		
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			□		

Model sizes/Description			200	400	500
	Mechanical temperature limiter (TB)			□	
	Acoustic alarm: Over- and undertemperature			□	
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			□	
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	1200	2000	2400
Standard accessories	Pump control: optimised rinsing procedures for the pump membranes as well as signal output for pump ON/OFF			□	
	Removable interior mounting – stainless steel material 1.4404 (ASTM 316 L) – with integrated lateral guide bars for thermoshelves			□	
	Connectors for thermoshelves	number		2	
	Thermoshelves - aluminium eloxadised, mat. 3.3547 (ASTM B209) – with integrated large-area heating including local temperature sensing (Pt100, 4-wire-circuit); individual overtemp. protection for each shelf. Further data see stainless steel number inner working chamber	number		1	
	Works calibration certificate (measuring point in the middle of the individual shelf for +160 °C at 20 mbar pressure): a separate certificate is prepared for each thermoshelf ordered and shipped together with the vacuum oven			□	
Packing data / Vacuum oven	Net weight/Gross weight (packed in carton)	approx. kg	55/76	83/104	110/135
	Packed dimensions Width/Height/Depth	approx. cm	66/87/59	66/87/59	83/105/80
Packing data / Pump module	Net weight without/with pump	approx. kg	25/41	30/46	41/57
	Gross weight (packed in carton) without/with pump	approx. kg	46/62	51/67	66/82
	Packed dimensions Width/Height/Depth	approx. cm	66/87/59	66/87/59	83/105/80
Order No. Vacuum Ovens			**VO200**	**VO400**	**VO500**

Options	200	400	500
Inert gas inlet: programmable and digitally controlled inlet for inert gas with flow rate reduction		W5	
Premium Module: comprises the inert gas inlet, one printer interface, extra connectors for thermoshelves, 1 (size 200), 2 (sizes 400/500), an additional thermoshelf (sizes 400/500) and a drip tray		T5	

Accessories		200	400	500
Additional thermoshelf – aluminium eloxadised material W.-St. 3.3547 (ASTM B209) with integrated large-area heating including local temperature sensing (Pt100, 4-wire-circuit); individual overtemp. protection for each shelf MLOP (Multi-Level-Overtemperature-Control) and calibration certificate		B00741	B00743	B00744
Additional thermoshelf – stainless steel material 1.4404 (ASTM 316 L) for especially corrosive material with integrated large-area heating including local temperature sensing (Pt100, 4-wire-circuit); individual overtemp. protection for each shelf MLOP (Multi-Level-Overtemperature-Control) and calibration certificate		B00733	B00734	B00735
Removable bottom drip tray – stainless steel material 1.4404 (ASTM 316 L)		E04256	E04257	E04258
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	E02037 689/130/ 533
Works calibration certificate for 3 temperatures: +50 °C, +100 °C, +160 °C at 20 mbar pressure			D00115	
Guarantee extension by 1 year (VO only)			GA2Q5	
Noise-insulated vacuum pump module without pump (exterior dimensions and material No. see 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	PM500
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 and VO500)		PMP200	PMP400	PMP500
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	

Further options/accessories see pages 28 - 30.
Not all options/accessories are combinable with each other. Please contact us for individual combination requests.

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

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	ICOmed 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.

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	