



Vacuum oven VO with TwinDISPLAY
AtmoCONTROL software

Model sizes:

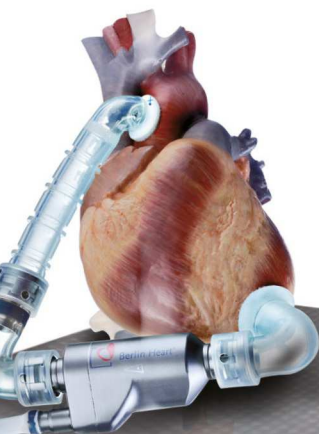
29 / 49 / 101

+20 °C to +200 °C

5 mbar to 1100 mbar

Accessories: lower pump chamber and
energy-efficient vacuum pump

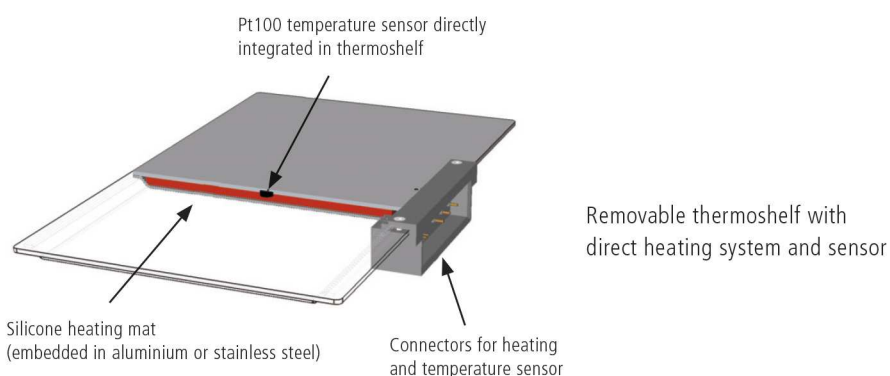
VACUUM OVEN VO The high-performance turbo dryer impresses with its many intelligent Memmert features for gentle drying and precise, rapid temperature control: digital pressure control, directly heated and individually controllable thermoshelves, and simple programming via ControlCOCKPIT or AtmoCONTROL software. Combined together, the speed-controlled vacuum pump and the vacuum oven VO are an unbeatable energy-efficient pairing. The pump fits neatly inside the matching lower chamber.





Unique precision: Memmert VO direct heating

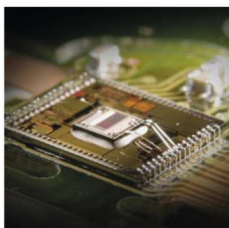
Available only from Memmert: multi-level sensing and heating. For really short heating-up and processing times, heating is provided via individually positionable thermoshelves with integrated shelf heating and sensors. The separate control circuits react precisely to different loads or humidity levels and ensure the setpoint temperature is consistently maintained. Due to the direct contact between the heating and the chamber load, there is practically no loss of heat. Each thermoshelf can be calibrated individually.



Multi-level sensing and heating

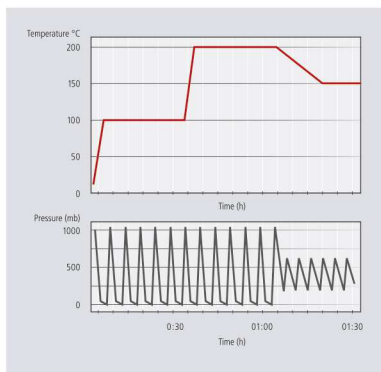
Optional vacuum pump saves around 70 % energy

The speed-controlled chemically resistant Memmert vacuum pump is automatically detected by each vacuum oven VO. Thanks to intelligent speed control, it controls the setpoint with great precision. The energy efficiency is also obvious, with measurements showing energy savings of around 70 % in ramp mode compared with vacuum pumps that are not controlled; it is even possible to achieve higher savings at constant vacuum levels. The final vacuum level of up to 2 mbar favours a wide range of applications, while pump control (based on individual requirements) significantly extends the service life of membranes. If another vacuum pump or a central vacuum supply is connected, vacuum control is achieved via solenoid valves.



Turbo drying thanks to vacuum cycles

Digitally controlled vacuum cycles, during which the working chamber is intermittently vented at short intervals, can achieve further significant reductions in drying times. The AtmoCONTROL software makes it quick and easy to program ramps with different temperature and vacuum setpoints.




Example of ramp programming

Convenience in a package: the Premium Module

The basic version of the vacuum oven VO features a thermoshelf and two thermoshelf connectors (VO29: 1 thermoshelf connector). The Premium Module includes the option for switching to inert gas, a programmable, digitally controlled gas inlet with flow reduction; there is also the MobileALERT option with separate error messages for temperature and pressure as well as (depending on the appliance size) additional thermoshelves and thermoshelf connectors (see the technical data for details).

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: 

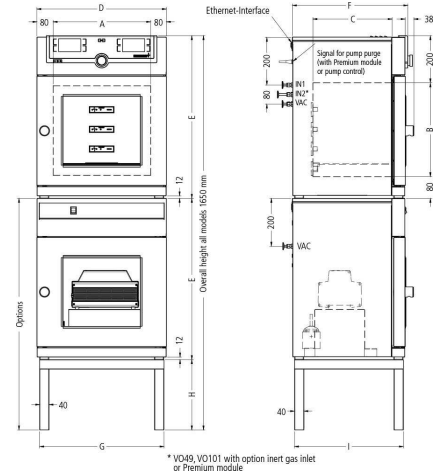
Interior: Stainless steel interior, material 1.4404 (ASTM 316 L), hermetically welded, with removable mountings at the sides for cleaning, including thermoshelf guide bars, as well as mounting on top to avoid turbulences

Housing: Textured stainless steel, rear zinc-plated steel, intuitively operated TwinDISPLAY (TFT colour displays) with touchscreen, safety glass door with inner bullet-proof glass and external anti-splinter screen

Connection: Mains cable with plug (German type)

Installation: 4 feet

Interfaces:



Model sizes/Description			29	49	101
Stainless steel interior	Volume	approx. l	29	49	101
	Width	(A) mm	385		545
	Height	(B) mm	305	385	465
	Depth	(C) mm	250	330	400
	Distance between thermoshelves	mm	75		95
	Maximum load per oven	approx. kg	40	60	
	Max. number of thermoshelves	number	1	2	
	Max. number of thermoshelves (with premium module)	number	2	4	
	Max. loading per thermoshelf	kg	20		
Textured stainless steel exterior	Width	(D) mm	550		710
	Height	(E) mm	607	687	767
	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		●		
Standard equipment	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	°C	●		
Temperature	Temperature sensors 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		
	Setting accuracy	°C	up to 99.9: 0.1 / from 100: 0.5		
	Temperature variation in time (aluminium thermoshelf)	K	≤ ± 0.3		
	Temperature uniformity (surface) at +160 °C/20 mbar (aluminium thermoshelf)	K	≤ ± 2.5		
Pressure (vacuum)	Vacuum connection with small flange DN16, and gas inlet with fresh air supply		●		
	Digital electronic pressure control for a speed-controlled vacuum pump. 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		●		
	Pump control: optimised rinsing procedures for the pump membranes as well as signal output for pump ON/OFF		●		
	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		
Control technology	Digital over- and undertemperature monitor		●		
	Temperature monitoring band automatically linked to the setpoint (ASF)		●		
	Monitor relay for reliable heating cut-off in case of fault		●		
	Mechanical temperature limiter (TB)		●		
	Multi-Level-Overtemperature-Protection (MLOP) for each thermoshelf		●		

Model sizes/Description		29	49	101	
Further data	Subframe tubular steel (extra cost), black enamelled (for stacking unit consisting of vacuum oven and pump module, total height: 1650 mm, see sketch of oven dimensions G/H/I) Width/Height/Depth	mm	529/450/ 383	529/290/ 463	689/130/ 533
	Electrical load (maximally equipped) at 230 V, 50/60 Hz	approx. W	820	2020	2420
Packing data	Net weight	approx. kg	55	83	110
	Gross weight (packed in carton)	approx. kg	76	104	135
	Packed dimensions (Width, Height, Depth)	approx. mm	660/870/590		830/1050/ 800
	Net weight pump module without/with pump	approx. kg	25/41	30/46	41/57
	Gross weight pump module without/with pump (packed in carton)	approx. kg	46/62	51/67	66/82
	Packed dimensions pump module (Width, Height, Depth)	approx. mm	660/870/590		830/1050/ 800
Order No. Vacuum Ovens			VO29	VO49	VO101
Options		29	49	101	
Premium module: comprises the inert gas inlet (only size 49 and 101), extra connectors for thermoshelves, 1 (size 29), 2 (sizes 49/101), an additional thermoshelf (sizes 49/101)			T5		
4 - 20 mA current loop interface (requires option T5)	Temperature actual value (0 to 210 °C = 4 - 20 mA)	-	V3		
	Temperature of a Pt100 sensor positioned flexibly in chamber for external temperature monitoring - price per sensor		V6		
Potential-free contact (24 V/2 A) with socket, 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; notification by SMS. temperature and vacuum alarm (only in connection with option T5)		-	C4		
Works calibration certificate for one (freely selectable) temperature and pressure value (per thermoshelf) according to customer specification			D00116		
Accessories		29	49	101	
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	
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	
Subframe, tubular steel, black enamelled (for stacking unit consisting of vacuum oven and pump module, total height: 1650 mm, see "further data" and sketch of oven dimensions)		E02030	E02031	E02037	
Works calibration certificate for 3 temperatures: +50, +100, +160 °C at 20 mbar pressure. Price per thermoshelf			D00115		
Guarantee extension by 1 year			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		PM29	PM49	PM101	
Noise-insulated vacuum pump module, as above, however with built-in pump, 230 V, 50/60 Hz		PMP29	PMP49	PMP101	
Signal cable (3 m) for control of rotation speed and optimising pump performance by demand-controlled activation of purge of Memmert pump (not required with pump module)			B39410		
Vacuum connecting hose (3 m) from oven to Memmert pump incl. optimised connection accessories (partially stainless steel), (not required with pump module)			B04026		
Vacuum pump with chemically resistant 4x diaphragm, pump capacity at atm. pressures: approx. 50 Nl./min = 3,0 m ³ /h and autom. purge control, 230 V, 50 Hz. Max. guarantee period 2 years (requires accessories B39410 and B04026)			E07509		
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		
FDA conforming software AtmoCONTROL (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. Respective IQ/OQ documents available in German and English language (without surcharge)			FDAQ1		
Integration of additional units (up to max. 31 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 vacuum value, incl. temperature distribution survey at Memmert for 5 measuring points per thermoshelf to DIN 12880:2007-05. PQ check list as support for validation by customer valid for one thermoshelf; dito further thermoshelves, price on demand. 360 € for further temperature and vacuum values			D00117		
On-site IQ/OQ for a freely selectable temperature and pressure value of a thermoshelf, including temperature distribution survey for 5 measuring points to DIN 12880: 2007-05 (excluding travel costs, not subject to discount, GER, AT, FR only)			DLQ106		
Extension of DLQ106 by an additional freely selectable temperature and pressure value (each thermoshelf) (not subject to discount)			DLQ106A		
Extension of DLQ106 by a further thermoshelf for a freely selectable temperature and pressure value (not subject to discount)			DLQ106T		
Individual on-site Performance Qualification (PQ)			DLQ200		
Maintenance VO - carrying out and documentation according to Memmert maintenance plan (excluding travel costs, not subject to discount, GER, AT, FR only)			S00320		
Maintenance contract VO - carrying out and documentation according to Memmert maintenance plan, minimum duration 3 years (excluding travel costs, not subject to discount, GER, AT, FR only)			S00320J		
Calibration of one freely selectable temperature value (excluding travel costs, not subject to discount, GER, AT, FR only)			S00205		
Calibration of an additional temperature value (not subject to discount)			S00215		
Calibration of one freely selectable temperature and pressure value (excluding travel costs, not subject to discount, GER, AT, FR only)			S00212		

Accessories	29	49	101
Calibration of an additional temperature and pressure value (not subject to discount)		S00218	

MODEL VARIANTS

SingleDISPLAY ControlCOCKPIT with one TFT display	TwinDISPLAY ControlCOCKPIT with two TFT displays
AVAILABLE APPLIANCES UN / UF / IN / IF / IPPeco / IPP / UNm / UFm / INm / IFm / SN / SF / IFbw	AVAILABLE APPLIANCES HPPeco / ICHeco / ICH / HCP / UNplus / UFplus / UF TS / UNpa / VO / INplus / IFplus / ICO / IPPecoplus / IPPplus / ICPeco / ICP / UNmplus / UFmplus / INmplus / IFmplus / SNplus / SFplus / ICOfmed
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 Control COCKPIT: All parameters of the SingleDISPLAY and device-specific parameters like relative humidity, illumination and 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, HPP110eco, IPP110ecoplus, ICPeco, ICP, ICHeco, ICH)
AtmoCONTROL software ¹⁾ 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 ¹⁾ 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 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	

¹⁾ As a manufacturer, Memmert GmbH + Co. KG clearly labels its devices, which are medical devices in the sense of the European legislation. The AtmoCONTROL software is not a medical device. All Memmert medical devices can be used for their purpose without the software AtmoCONTROL. AtmoCONTROL is only intended for reading the data logging in conjunction with Memmert GmbH + Co. KG medical devices.

SOFTWARE AtmoCONTROL

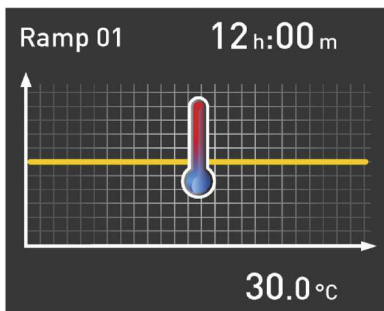
AtmoCONTROL

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.

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.

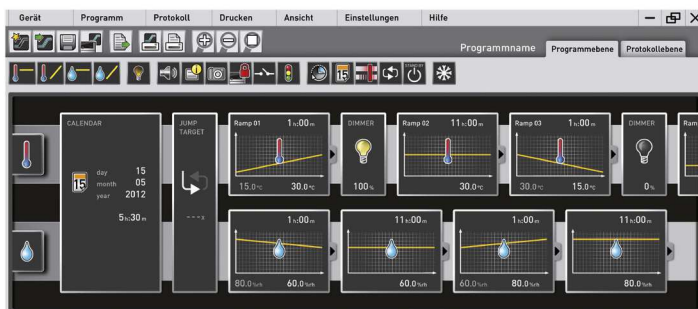


Programme functions for appliances with SingleDISPLAY and TwinDISPLAY

- 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 for appliances with 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



Device Modifications - Proven and Good

The perfect extension for your Memmert appliance

Our mission at Memmert is to provide you with the best possible solution for your individual application. With the increasing complexity of customer processes, a custom-fit modification of our appliances has many advantages for your application. Through modifications, process and set-up times can be significantly reduced or errors in the application can be completely ruled out by monitoring devices. Even small measures, such as individually adapted accessories, have a noticeable influence on the ergonomics and user-friendliness in the operation of the appliance.

You as a customer have the best ideas - and often already have a specific idea of how our products can be better used in your working environment.

Tell us about your thoughts and let us create an individual solution together with you! Please contact us and call us at +49 9122-925-0 or send us an email to sonderbau@memmert.com.

The Memmert customisation department team is looking forward to hearing from you!

Versatile modifications for our standard appliances



Mechanics

- Customised interior fittings
- Individual entry ports in all sizes and shapes
- Telescopic slide pull-outs for ergonomic loading



Electronics

- Extended parameter monitoring e.g. by means of additional measuring sensors
- Optical and acoustic process monitoring e.g. by means of a traffic light system



Software

- Additional interfaces for data evaluation
- Individual temperature, humidity and CO₂ parameters



Accessories

- Tailor-made subframe and stacking options
- Modified grids and shelves
- Individual air filters

Customised solutions for your requirements

Our expertise as a development partner in plant and project business

The Memmert customisation department has been active in the project business for over 20 years now and has proven itself in countless projects as a strong and reliable partner. The experts in customisation benefit from two aspects: Access to the complete capacities of an ultra-modern and specialised production line, as well as the entire technical know-how of the Memmert company in designing climate and temperature control appliances. Combined with the experience of our project managers, the Memmert customisation department is also able to find a solution for the most complex requirements.

Special sizes

Does your product not fit into a standard unit? We build appliances to measure! Whether you need more volume in the interior or there is not enough space for installation at the installation location, we have the expertise to design your appliance individually. Ask us!

Process and plant integration

Integrate our technology seamlessly into your plant or your work organisation. We will find the right solution together for your process integration:

- Preparation for integration into your plant
- Integration of your processes into our appliances
- Inclusion of customer-specific installations
- Interface for semi-automatic assembly

Project business

Are you a project developer with ideas for innovative products and looking for a strategic cooperation? Take advantage of our know-how and manufacturing capacities for your project. Our customisation department will be pleased to hear from you!

