



Vacuum oven VO with TwinDISPLAY  
AtmoCONTROL software

Model sizes:

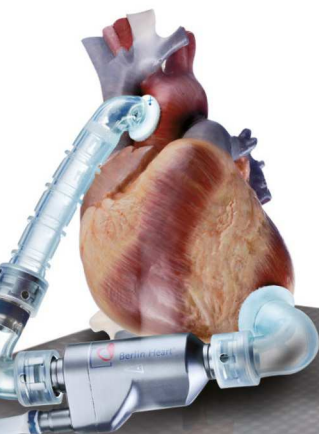
29 / 49 / 101

+20 °C to +200 °C

5 mbar to 1100 mbar

Accessories: lower pump chamber and  
energy-efficient vacuum pump

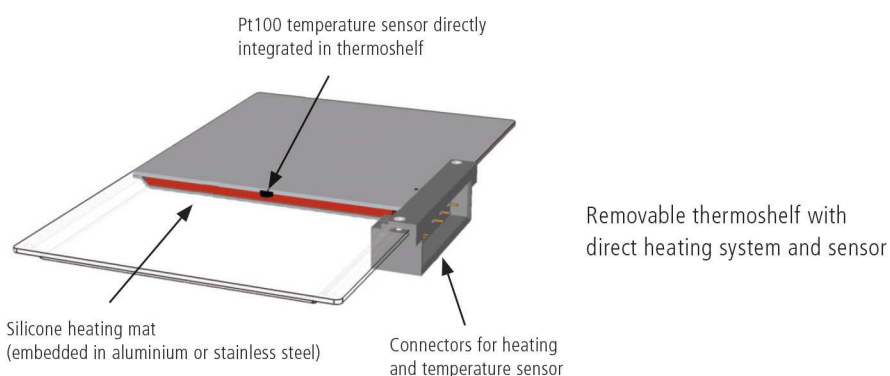
**VACUUM OVEN VO** The high-performance turbo dryer impresses with its many intelligent Memmert features for gentle drying and precise, rapid temperature control: digital pressure control, directly heated and individually controllable thermoshelves, and simple programming via ControlCOCKPIT or AtmoCONTROL 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

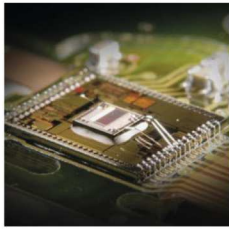
Available only from Memmert: multi-level sensing and heating. For really short heating-up and processing times, heating is provided via individually positionable thermoshelves with integrated shelf heating and sensors. The separate control circuits react precisely to different loads or humidity levels 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

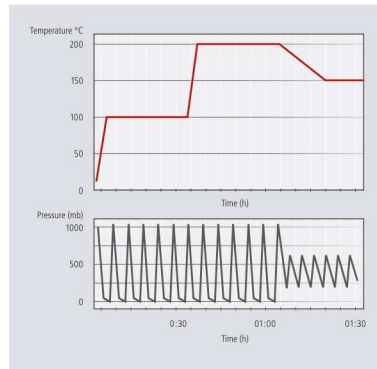
## Optional vacuum pump saves around 70 % energy

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

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## 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:



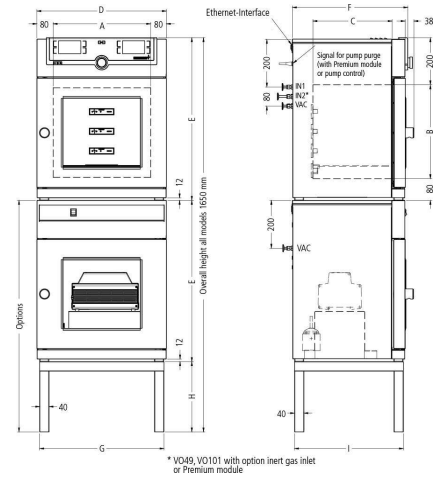
**Interior:** Stainless steel interior, material 1.4404 (ASTM 316 L), hermetically welded, with removable mountings at the sides for cleaning, including thermoshelf guide bars, as well as mounting on top to avoid turbulences

**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 (to DIN 12880:2007-05) (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 small flange DN 16		●		
	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		●		
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

Model sizes/Description		29	49	101	
Further data	Electrical load (maximally equipped) at 230 V, 50/60 Hz	approx. W	820	2020	2420
Packing data	Net weight vacuum oven	approx. kg	55	83	110
	Gross weight vacuum oven (packed in carton)	approx. kg	76	104	135
	Packed dimensions Vacuum oven (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
<b>Order No. Vacuum Ovens</b>			<b>VO29</b>	<b>VO49</b>	<b>VO101</b>

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 (only with option T5)	Temperature actual value (0 to 210 °C = 4 - 20 mA)	-	V3	
	Vacuum actual value (0 bis 1200 mbar = 4 - 20 mA)	-	W2	
	Temperature of a Pt100 sensor positioned flexibly in chamber for external temperature monitoring - price per sensor		V6	
Freely positioned control sensor, MIN and MAX alarm adjustable at ControlCOCKPIT, alarm values captured in internal data logger. Requires option T5		-	H9	
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	
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	
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 one freely selected function 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	
MobileALERT for 2 alarm notifications; temperature and vacuum alarm (only with option T5)		-	C4	
Temperature restriction; Temperatures: +60, +70, +80, +95, +100, +120, +160 or +180°C (Please, indicate upon ordering)			A8	
Works calibration certificate for one (freely selectable) temperature and pressure value (per thermoshelf) according to customer specification			D00116	

Accessories		29	49	101
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
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 °C, +100 °C, +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 NI./min = 3,0 m <sup>3</sup> /h and autom. purge control. Order No. B39410 and B04026 necessary. 230 V, 50 Hz. Max. guarantee period 2 years			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. 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 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. Price for validation at customer site on demand (GER, AT, CH only)			D00117	