



Vacuum oven VO with TwinDISPLAY
AtmoCONTROL software

Model sizes:

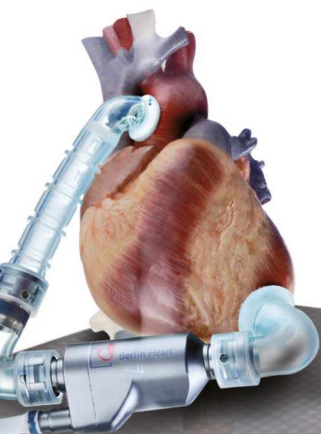
29 / 49 / 101

+20 °C to +200 °C

5 mbar to 1100 mbar

Accessories: lower pump chamber and
energy-efficient vacuum pump

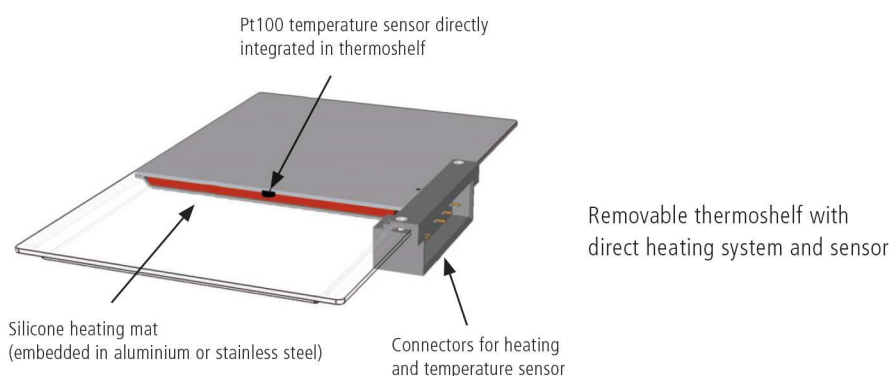
VACUUM OVEN VO The high-performance turbo dryer impresses with its many intelligent Memmert features for gentle drying and precise, rapid temperature control: digital pressure control, directly heated and individually controllable thermoshelves, and simple programming via ControlCOCKPIT or AtmoCONTROL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

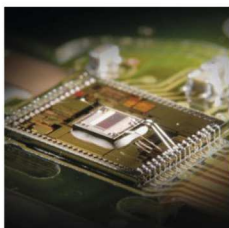
Available only from Memmert: multi-level sensing and heating. For really short heating-up and processing times, heating is provided via individually positionable thermoshelves with integrated shelf heating and sensors. The separate control circuits react precisely to different loads or humidity levels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

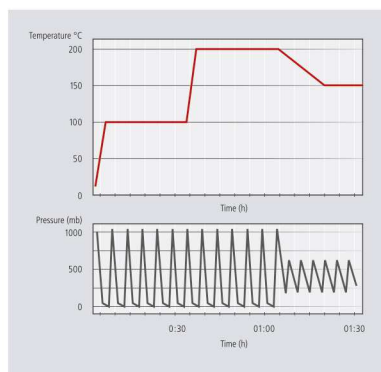
Optional vacuum pump saves around 70 % energy

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

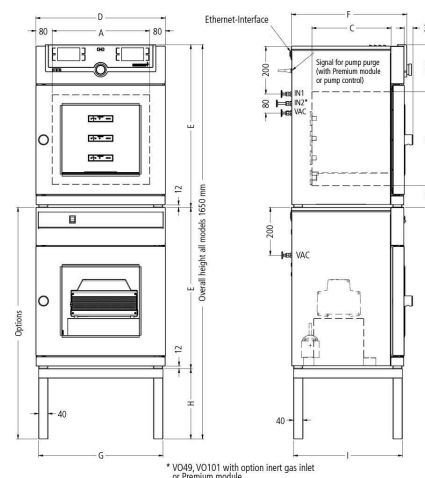
Interfaces:

USB



Ethernet





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
	Net weight	approx. kg	55	83	110
Packing data	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 m³/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)		500218	