

## Model UF V 500 | Ultra-low temperature freezers with climate-neutral refrigerants

The BINDER ultra low temperature freezer ensures the safe storage of samples at -90 °C. It combines outstanding environmental friendliness with low energy consumption, convenient operation and an individual safety concept.

### BENEFITS

- Lowest energy consumption in its class
- Environmentally-friendly refrigerants R-290 and R-170
- Thermal insulation with unique long-life VIPs (vacuum insulation panels)
- Rust-proof interior made completely of stainless steel



Model UF V 500



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### IMPORTANT FEATURES

- Temperature range: -90 °C to -40 °C
- Lowest energy consumption in its class
- Powerful cascade compressor cooling unit
- Environmentally friendly refrigerants R-290 and R-170
- Thermal insulation with unique long-life VIPs (vacuum insulation panels)
- Innovative door gasket concept reduces buildup of ice
- Ergonomic door handle
- Rust-proof interior made completely of stainless steel
- Detachable inner doors made of stainless steel
- 3 stainless-steel shelves providing flexible placement
- Water cooling (depending on version)
- Zero-voltage alarm contact for in-house alarm system
- Internal data logger, measured values can be read out in open format via USB
- Ethernet interface
- 2 access ports, Ø 28 mm, rear

### ORDERING INFORMATION

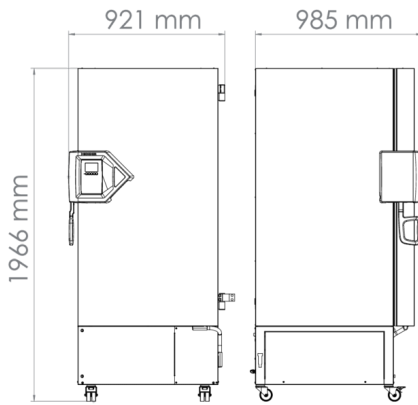
Designation	Option model	Interior volume	Rated Voltage	Power frequency	Article Number
UFV500-230V	Standard	477 L	230 V	50 Hz	9020-0347
UFV500-230V-W	Water cooling	477 L	230 V	50 Hz	9020-0349
UFV500UL-240V	Standard	477 L	208...230 V	60 Hz	9020-0353
UFV500UL-120V	Standard	477 L	115 V	60 Hz	9020-0351

## TECHNICAL DATA

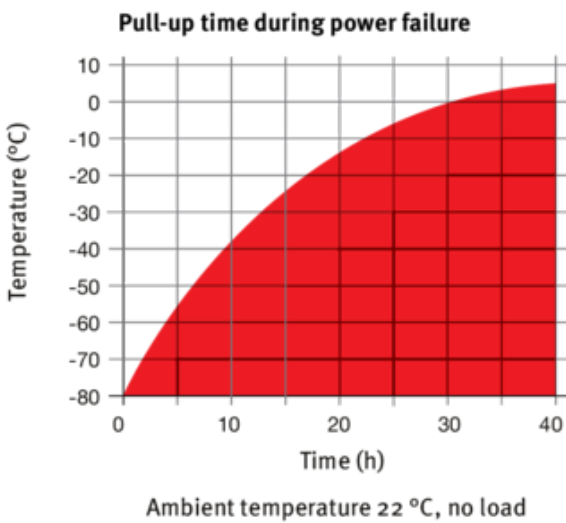
Data				
Designation	UFV500-230V	UFV500-230V-W	UFV500UL-240V	UFV500UL-120V
Article Number	9020-0347	9020-0349	9020-0353	9020-0351
Option model	Standard	Water cooling	Standard	Standard
Performance Data Temperature				
Temperature range	-90...-40 °C	-90...-40 °C	-90...-40 °C	-90...-40 °C
Temperature uniformity at -80°C	2.5 ± K	2.5 ± K	2.5 ± K	2.5 ± K
Temperature fluctuation at -80°C	1.5 ± K	1.5 ± K	1.5 ± K	1.5 ± K
Cooling down time from 22°C to -80°C	360 min	360 min	360 min	360 min
Electrical data				
Rated Voltage	230 V	230 V	208...230 V	115 V
Power frequency	50 Hz	50 Hz	60 Hz	60 Hz
Nominal power	1,6 kW	1,6 kW	1,8 kW	1,4 kW
Unit fuse	10,0 A	10,0 A	10,0 A	15,0 A
Phase (Nominal voltage)	1~	1~	2~	1~
Measures				
Interior volume	477 L	477 L	477 L	477 L
Net weight of the unit (empty)	247 kg	247 kg	247 kg	247 kg
Permitted load	200 kg	200 kg	200 kg	200 kg
Permitted load of individual compartment	50 kg	50 kg	50 kg	50 kg
Wall clearance back	100 mm	100 mm	100 mm	100 mm
Wall clearance sidewise	250 mm	250 mm	250 mm	250 mm
Housing dimensions not incl. fittings and connections				
Width net	826 mm	826 mm	826 mm	826 mm
Height net	1966 mm	1966 mm	1966 mm	1966 mm
Depth net	938 mm	938 mm	938 mm	938 mm
Internal Dimensions				
Interior width	606 mm	606 mm	606 mm	606 mm
Interior height	1300 mm	1300 mm	1300 mm	1300 mm
Interior depth	605 mm	605 mm	605 mm	605 mm
Inner doors	2	2	2	2
Unit doors	1	1	1	1
Environment-specific data				
Sound-pressure level	47 dB(A)	47 dB(A)	47 dB(A)	47 dB(A)
Energieverbrauch bei Sollwert -80 °C und T <sub>u</sub> = 20 °C	7.9 kWh/d	7.9 kWh/d	7.9 kWh/d	7.9 kWh/d
Fixtures				
Number of shelves (std./max.)	3/11	3/11	3/11	3/11
Load-variants				
Freezer racks per compartment	4	4	4	4
Cryoboxes, 50 mm	352	352	352	352

All technical data is specified for unloaded units with standard equipment at an ambient temperature of +22 °C ±3 °C and a power supply voltage fluctuation of ±10%. The temperature data is determined in accordance to BINDER factory standard following DIN 12880, observing the recommended wall clearances of 10 % of the height, width, and depth of the inner chamber. All indications are average values, typical for units produced in series. We reserve the right to change technical specifications at any time.

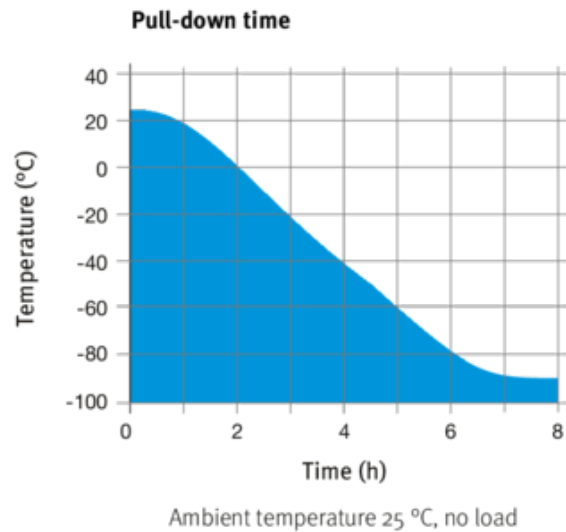
## DIMENSIONS Incl. fittings and connections [mm]



## DIAGRAMS



Heating up rate



Cooling down rate

## OPTIONS

Designation	Description	Article Number
Alarm system, battery-backed	for maintaining temperature display, alarm messages, and communication	8012-1910
Analog output 4-20 mA	for temperature values (output not adjustable)	8012-1898
Buck-boost converter	automatic voltage compensation	8012-1897
CO <sub>2</sub> backup cooling	factory installed (allow for increased depth of UF V: 1085 mm), includes the option of a battery-backed alarm system	8012-1891
Calibration certificate, expanded	for temperature; for extending the measurement in center of chamber to include another test temperature	8012-1126
Calibration certificate, temperature	for temperature, measurement in center of chamber at specified temperature	8012-0031
	temperature measurement incl. certificate, 20 measuring points at specified temperature	8012-0925
Compartment doors	Foam-filled compartment doors with gasket	8012-1893
Door access system	consisting of electromechanical door locking mechanism and electronic access control via NumPad	8012-1899
Door lock	lockable door handle	8012-1911
Shipping pallet	with unloading ramp for installing unit without forklift	8012-1906
Switch cover	Lockable main switch cover	8012-1980

## ACCESSORIES

Designation	Description	Option model	Article Number
5 m power cable	C 13 refrigerator connection cable with BS 1363 British plug		5023-0285
	C 13 refrigerator connection cable with CEE 7/7 European plug		5023-0283
	C 13 refrigerator connection cable with type 13 Swiss plug		5023-0284
APT-COM™ 4 BASIC-Edition	for simple logging and documentation requirements with up to 5 networked units.	version 4, BASIC edition	9053-0039
APT-COM™ 4 GLP-Edition	for working under GLP-compliant conditions. Measured values are documented in a tamper-proof way in line with the requirements of FDA Regulation 21 CFR 11.	version 4, GLP edition	9053-0042
APT-COM™ 4 PROFESSIONAL-Edition	convenient unit and user management built on the BASIC edition. Suitable for networking up to 100 units.	version 4, PROFESSIONAL edition	9053-0040
Chamber rack, aluminum	for 5x4 standard boxes (50 mm), dimensions: H 278 x W 139 x D 564 mm	Set of 3	6017-0041
		Set of 4	8012-2345
	for 5x4 standard boxes (50 mm) incl. boxes, dimensions: H 278 x W 139 x D 564 mm	Set of 3	8012-2346
		Set of 4	6017-0042
	for 5x4 standard boxes (50 mm) incl. boxes, dimensions: H 278 x W 139 x D 564 mm	Set of 3	8012-2347
		Set of 4	8012-2348
	for 6x4 standard boxes (50 mm), dimensions: H 334 x W 139 x D 564 mm	Set of 3	6017-0047
		Set of 4	8012-2357
	for 6x4 standard boxes (50 mm) incl. boxes, dimensions: H 334 x W 139 x D 564 mm	Set of 3	8012-2358
		Set of 4	6017-0048
	for 6x4 standard boxes (50 mm) incl. boxes, dimensions: H 334 x W 139 x D 564 mm	Set of 3	8012-2359
		Set of 4	8012-2360
Chamber rack, stainless steel	for 5x4 standard boxes (50 mm), dimensions: H 278 x W 139 x D 561 mm	Set of 3	6017-0043
		Set of 4	8012-2349
	for 5x4 standard boxes (50 mm) incl. boxes, dimensions: H 278 x W 139 x D 561 mm	Set of 3	8012-2350
		Set of 4	6017-0044
	for 5x4 standard boxes (50 mm) incl. boxes, dimensions: H 278 x W 139 x D 561 mm	Set of 3	8012-2351
		Set of 4	8012-2352
	for 6x4 standard boxes (50 mm), dimensions: H 334 x W 139 x D 561 mm	Set of 3	6017-0049
		Set of 4	8012-2361
	for 6x4 standard boxes (50 mm) incl. boxes, dimensions: H 334 x W 139 x D 561 mm	Set of 3	8012-2362
		Set of 4	6017-0050
	for 6x4 standard boxes (50 mm) incl. boxes, dimensions: H 334 x W 139 x D 561 mm	Set of 3	8012-2363
		Set of 4	8012-2364
Chamber rack with drawer, stainless steel	for 5x4 standard boxes (50 mm), dimensions: H 278 x W 140 x D 562 mm	Set of 3	6017-0045
		Set of 4	8012-2353
	for 5x4 standard boxes (50 mm) incl. boxes, dimensions: H 278 x W 140 x D 562 mm	Set of 3	8012-2354
		Set of 4	6017-0046
	for 5x4 standard boxes (50 mm) incl. boxes, dimensions: H 278 x W 140 x D 562 mm	Set of 3	8012-2355
		Set of 4	8012-2356
	for 6x4 standard boxes (50 mm), dimensions: H 334 x W 140 x D 562 mm	Set of 3	6017-0051
		Set of 4	8012-2365
	for 6x4 standard boxes (50 mm) incl. boxes, dimensions: H 334 x W 140 x D 562 mm	Set of 3	8012-2366
		Set of 4	6017-0052
	for 6x4 standard boxes (50 mm) incl. boxes, dimensions: H 334 x W 140 x D 562 mm	Set of 3	8012-2367
		Set of 4	8012-2368
Cryoboxes	set consisting of 36 cardboard boxes with sample dividers		6017-0053
Deicing kit	consisting of de-icing tray, wiper and scraper		8012-2369
Gas tank changer	external, BINDER Gas Supply Service, for connecting 2 gas tanks (CO <sub>2</sub> , N <sub>2</sub> or O <sub>2</sub> ), with audible and visual alarms, as well as zero-voltage alarm output		8012-2344

Designation	Description	Option model	Article Number
Grid shelf	For temperature range -40 °C to -60 °C, 3 provided in set, including shelf supports	stainless steel	8012-1903
Qualification documents	IQ/OQ/PQ documents – supporting documents for validation performed by customers, according to customer requirements, PQ section added to qualification folder IQ/OQ; parameters: temperature, CO <sub>2</sub> , O <sub>2</sub> – or pressure, depending on unit	Digital in PDF format	7057-0005
		Hard copy inside folder	7007-0005
	IQ/OQ documents – supporting documents for validation performed by customers, consisting of: IQ/OQ checklists incl. calibration guide and comprehensive unit documentation; parameters: temperature, CO <sub>2</sub> , O <sub>2</sub> , pressure, depending on unit	Digital in PDF format	7057-0001
		Hard copy inside folder	7007-0001
Shelf	Incl. shelf supports	stainless steel	8012-1901
WLAN kit	The kit contains a client bridge that establishes a wireless connection between BINDER units and APT-COM4, LIMS, or customer-specific software via an Ethernet interface. It provides an alternative solution in situations where units need to be positioned in locations without an on-site Ethernet connection. In secured networks, installation and configuration must be performed by the customer's IT service.		8012-2262
pH-neutral detergent	concentrated, for gentle remove of residual contaminants; 1 kg		8012-2250

## SERVICES

Designation	Description	* Article Number
BRONZE 3-year maintenance contract	Maintenance service as contractually agreed, visual inspection of mechanical and electrical components, check of control response, 20% discount on spare parts	DL20-0710
Calibration certificate, temperature	Calibration of one (1) test temperature specified by the user in center of chamber, including certificate	DL30-0101
	Extension of calibration of one (1) additional test temperature specified by the user in the center of the usable space, including certificate	DL30-0102
Execution of IQ/OQ	Execution of IQ/OQ in accordance with qualification folder	DL41-0200
		DL41-0210
Execution of IQ/OQ/PQ	Execution of IQ/OQ/PQ in accordance with qualification folder	DL44-0500
GOLD 3-year maintenance contract	Maintenance service as contractually agreed, visual inspection of mechanical and electrical components, check of control response, 20% discount on spare parts, testing of all key functions, replacement of wear parts, calibration of one test temperature specified by the user in the center of the usable space, including certificate	DL20-0910
Installation of CO <sub>2</sub> backup cooling	Installation of CO <sub>2</sub> backup cooling on unit	5 DL02-8002
Maintenance	One-off maintenance service in accordance with maintenance schedule. Visual inspection of mechanical and electrical components, testing of all key functions. Calibration of a test temperature specified by the user in center of usable space without certificate	DL20-0200
SILVER 3-year maintenance contract	Maintenance service as contractually agreed, visual inspection of mechanical and electrical components, check of control response, 20% discount on spare parts, testing of all key functions, calibration of one test temperature specified by the user in the center of the usable space, without certificate	DL20-0810
Temperature measurement, 20 measuring points	Temperature measurement with 20 measuring points with a set value specified by the user, including certificate	DL30-0620
Unit commissioning	Connect the unit to the customer-side connections (electricity, water, wastewater, gas), basic functions check, brief operating instructions. (excl.: unpacking, setup, controller instructions, programming, installation work)	DL10-0300
Unit instructions	Instruction regarding operating principle and basic functions of the unit, operation of the control electronics including programming	5 DL10-0700

**NOTES**

- 05 Quoted prices do not include travel costs. Please refer to the chapter on BINDER Service for travel costs for your region. Quoted prices for services performed in Switzerland do not include a country-specific added fee (available on request).

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