

# 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
- Efficient thermal insulation with vacuum insulation panels
- Rust-proof interior made completely of stainless steel



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### MAIN 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
- Efficient thermal insulation with 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
- Operating hours counter
- 2 access ports, Ø 28 mm, rear

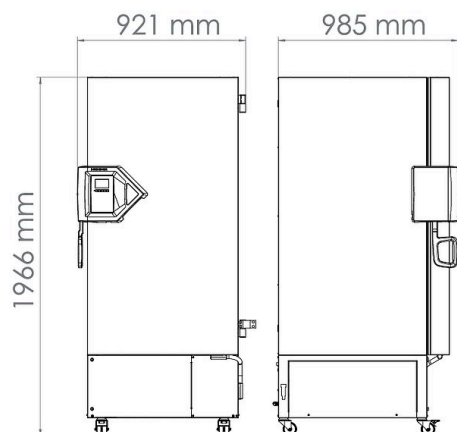
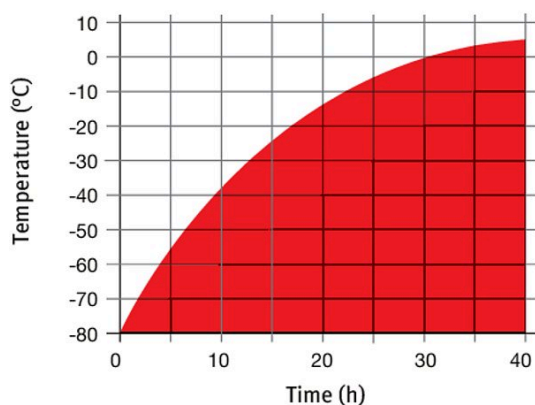
### ORDERING INFORMATION

Interior volume [L]	Voltage	Option model	Version	Art.-No.
477	230 V 1~ ph 50 Hz	Standard	UFV500-230V	9020-0347
		Water cooling	UFV500-230V-W	9020-0349
	120 V 1~ ph 60 Hz	Standard	UFV500UL-120V	9020-0351
	240 V 1~ ph 60 Hz	Standard	UFV500UL-240V	9020-0353

## TECHNICAL DATA

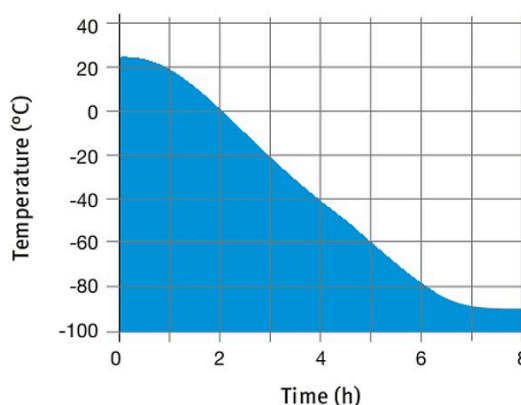
Description	UFV500-230V <sup>1</sup>	UFV500-230V-W <sup>1</sup>	UFV500UL-120V <sup>1</sup>	UFV500UL-240V <sup>1</sup>
Article Number	9020-0347	9020-0349	9020-0351	9020-0353
Performance Data Temperature				
Temperature range	-90...-40	-90...-40	-90...-40	-90...-40
Temperature variation at -80 °C [± K]	2.5	2.5	2.5	2.5
Temperature fluctuation at -80 °C [± K]	1.5	1.5	1.5	1.5
Cooling down time from 22 °C to -80 °C [min]	360	360	360	360
Warm-up time during power failure from -80 °C / -122 °F to -60 °C / -76 °F [min]	230	230	230	230
Electrical data				
Rated Voltage [V]	230	230	120	240
Power frequency [Hz]	50	50	60	60
Nominal power [kW]	1.6	1.6	1.4	1.6
Unit fuse [A]	10	10	13	10
Phase (Nominal voltage)	1~	1~	1~	1~
Measures				
Interior volume [L]	477	477	477	477
Net weight of the unit (empty) [kg]	247	247	247	247
Permitted load [kg]	200	200	200	200
Permitted load of individual compartment [kg]	50	50	50	50
Wall clearance back [mm]	100	100	100	100
Wall clearance sidewise [mm]	250	250	250	250
Internal Dimensions				
Width [mm]	606	606	606	606
Height [mm]	1300	1300	1300	1300
Depth [mm]	605	605	605	605
Doors				
Unit doors	1	1	1	1
Housing dimensions not incl. fittings and connections				
Width net [mm]	826	826	826	826
Height net [mm]	1966	1966	1966	1966
Depth net [mm]	938	938	938	938
Environment-specific data				
Energy consumption at set-point -80 °C and ambient temperature = 21 °C [kWh/d]	7.9	7.9	7.9	7.9
Sound-pressure level [dB(A)]	47	47	47	47
Fixtures				
Number of shelves (std./max.)	3/13	3/13	3/13	3/13
Load-variants				
Freezer racks per compartment	4	4	4	4
Cryoboxes, 50 mm	352	352	352	352

<sup>1</sup> 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]****CHARTS****Pull-up time during power failure**

Ambient temperature 22 °C, no load

Heating up rate

**Pull-down time**

Ambient temperature 25 °C, no load

Cooling down rate

**OPTIONS**

Designation	Description	*	Art.-No.
<b>Alarm system, battery-backed</b>	for maintaining temperature display, alarm messages, and communication	-	8012-1910
<b>Analog output 4-20 mA</b>	for temperature values (output not adjustable)	-	8012-1898
<b>Buck-boost converter</b>	automatic voltage compensation	-	8012-1897
<b>Calibration certificate, expanded</b>	for temperature; for extending the measurement in center of chamber to include another test temperature	-	8012-1126
<b>Calibration certificate, temperature</b>	for temperature, measurement in center of chamber at specified temperature	-	8012-0031
	temperature measurement incl. certificate, 20 measuring points at specified temperature	-	8012-0925
<b>Compartment doors</b>	Foam-filled compartment doors with gasket	-	8012-1893
<b>CO<sub>2</sub> backup cooling</b>	factory installed (allow for increased depth of UF V: 1085 mm), includes the option of a battery-backed alarm system	-	8012-1891
<b>Door access system</b>	consisting of electromechanical door locking mechanism and electronic access control via NumPad	-	8012-1899
<b>Door lock</b>	lockable door handle	-	8012-1911
<b>Shipping pallet</b>	with unloading ramp for installing unit without forklift	-	8012-1906
<b>Switch cover</b>	Lockable main switch cover	-	8012-1980

\* Notes › See last page

## ACCESSORIES

Designation	Description	*	Art.-No.
<b>5 m power cable</b>	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
<b>APT-COM™ 4 BASIC-Edition</b>	for simple logging and documentation requirements with up to 5 networked units. version 4, BASIC edition	19	9053-0039
<b>APT-COM™ 4 GLP-Edition</b>	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	19	9053-0042
<b>APT-COM™ 4 PROFESSIONAL-Edition</b>	convenient unit and user management built on the BASIC edition. Suitable for networking up to 100 units. version 4, PROFESSIONAL edition	19	9053-0040
<b>Chamber rack with drawer, stainless steel</b>	for 5x4 standard boxes (50 mm) incl. boxes, dimensions: H 285 x W 140 x D 560 mm	–	6017-0046
	for 5x4 standard boxes (50 mm), dimensions: H 285 x W 140 x D 560 mm	–	6017-0045
	for 6x4 standard boxes (50 mm) incl. boxes, dimensions: H 340 x W 140 x D 560 mm	–	6017-0052
	for 6x4 standard boxes (50 mm), dimensions: H 340 x W 140 x D 560 mm	–	6017-0051
<b>Chamber rack, aluminum</b>	for 5x4 standard boxes (50 mm) incl. boxes, dimensions: H 276 x W 139 x D 558 mm	–	6017-0042
	for 5x4 standard boxes (50 mm), dimensions: H 276 x W 139 x D 558 mm	–	6017-0041
	for 6x4 standard boxes (50 mm) incl. boxes, dimensions: H 331 x W 139 x D 558 mm	–	6017-0048
	for 6x4 standard boxes (50 mm), dimensions: H 331 x W 139 x D 558 mm	–	6017-0047
<b>Chamber rack, stainless steel</b>	for 5x4 standard boxes (50 mm) incl. boxes, dimensions: H 276 x W 139 x D 558 mm	–	6017-0044
	for 5x4 standard boxes (50 mm), dimensions: H 276 x W 139 x D 558 mm	–	6017-0043
	for 6x4 standard boxes (50 mm) incl. boxes, dimensions: H 331 x W 139 x D 558 mm	–	6017-0050
	for 6x4 standard boxes (50 mm), dimensions: H 331 x W 139 x D 558 mm	–	6017-0049
<b>CO<sub>2</sub> backup cooling</b>	upgrade kit, for on-site installation by our service technician, requires the option of a battery-backed alarm system	–	8012-1892
<b>Cryoboxes</b>	set consisting of 36 cardboard boxes with sample dividers	–	6017-0053
<b>Data Logger Kit</b>	T 220: For continuous temperature logging from -90 °C to 220 °C. The kit includes 1 data logger, Pt 100 sensor with 2 m extension cable and 1 magnetic fixture for mounting to the BINDER unit	19	8012-0715
<b>Deicing kit</b>	consisting of de-icing tray, wiper and scraper	–	8012-1900
<b>Gloves</b>	for low temperatures, covers forearms	–	1007-0141
<b>pH-neutral detergent</b>	concentrated, for gentle remove of residual contaminants; 1 kg	–	1002-0016
<b>Qualification documents</b>	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
	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
<b>Shelf</b>	Incl. shelf supports stainless steel	–	8012-1901

\* Notes › See last page

**SERVICES**

Designation	Description	*	Art.-No.
<b>Installation services</b>			
Installation of CO <sub>2</sub> backup cooling	Installation of CO <sub>2</sub> backup cooling on unit	18	DL02-8002
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)	13, 18	DL10-0300
Unit instructions	Instruction regarding operating principle and basic functions of the unit, operation of the control electronics including programming	18	DL10-0700
<b>Maintenance services</b>			
Maintenance	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 chamber without certificate	14, 18	DL20-0200
<b>Calibration services</b>			
Calibration certificate, temperature	Calibration of one (1) test temperature specified by the user in center of chamber including certificate	14, 16, 17, 18	DL30-0101
	Extension of calibration of one (1) additional test temperature specified by the user in the center of the usable space, including certificate	14, 16, 17, 18	DL30-0102
Temperature measurement, 20 measuring points	Temperature measurement with 20 measuring points with a set value specified by the user, including certificate	14, 16, 17, 18	DL30-0620
<b>Validation services</b>			
Execution of IQ/OQ	Execution of IQ/OQ in accordance with qualification folder	15, 18	DL41-0200
Execution of IQ/OQ/PQ	Execution of IQ/OQ/PQ in accordance with qualification folder	15, 18	DL44-0500

\* Notes › See last page

**NOTES**

- 01 Condensation may occur in the area around the access port. Access ports may be placed in custom locations for an additional charge.  
02 UL mark is not granted when this option is used.  
03 Heat resistant only to max. 200 °C.  
04 Only available on units rated for 230 V.  
07 The additional heat input may affect the temperature behavior.  
09 Not in conjunction with the optional access port, door with window and interior lighting.  
10 Not available on 23-liter units.  
11 Not available on 23- or 53-liter units.  
12 Only available on units rated for 230 V or 400 V.  
13 Installation and connections take place at unit location; transport within the company only upon consultation.  
14 We recommend a BINDER service contract to cover unit inspections, calibrations and validations.  
15 OQ according to Yellow Paper = completed factory validation documentation of all OQ checklists.  
16 Sensor calibration is performed in an accredited calibration laboratory.  
17 Calibration is performed according to the BINDER factory standard.  
18 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).  
19 For additional accessories, refer to the Process documentation chapter.

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