

## Model UF V 500 | Ultra low temperature freezers with climateneutral refrigerants

### neutral refrigerants

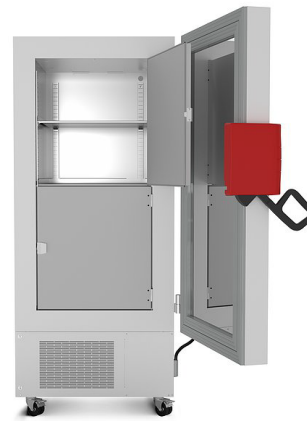
The BINDER ultra low temperature freezer ensures the safe storage of samples at -90 °C. It combines outstanding environmental friendliness with low energy consumption, convenient operation and an individual safety concept.

#### BENEFITS

- Lowest energy consumption in its class
- Environmentally friendly refrigerant
- Multi-level safety concept
- 5-year warranty



Model UF V 500



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#### MAIN FEATURES

- Range of temperature controller: -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
- Ethernet interface
- Elapsed time indicator
- 2 access ports, Ø 28 mm, rear

#### ORDERING INFORMATION

Interior volume [cu.ft.]	Voltage	Option model	Version	Art.-No.
16.8	230 V 1~ 50 Hz	Standard	UFV500-230V	9020-0347
		Water cooling	UFV500-230V-W	9020-0349
	120 V 1~ 60 Hz	Standard	UFV500UL-120V	9020-0351
		Standard	UFV500UL-240V	9020-0353

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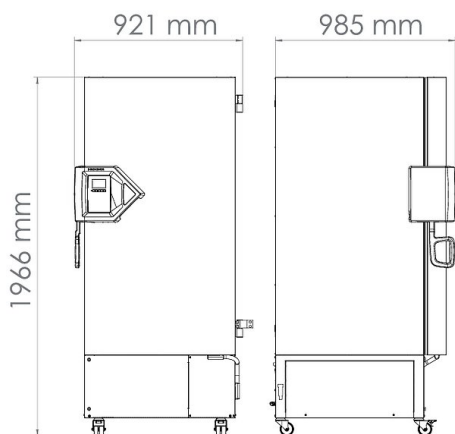
## TECHNICAL DATA

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
<b>Performance Data Temperature</b>				
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
<b>Electrical data</b>				
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~
<b>Measures</b>				
Interior volume [cu.ft.]	16.8	16.8	16.8	16.8
Net weight of the unit (empty) [lbs]	545	545	545	545
Permitted load [lbs]	441	441	441	441
Permitted load of individual compartment [lbs]	110	110	110	110
Wall clearance back [in]	3.94	3.94	3.94	3.94
Wall clearance sidewise [in]	9.85	9.85	9.85	9.85
<b>Internal Dimensions</b>				
Width [in]	23.88	23.88	23.88	23.88
Height [in]	51.2	51.2	51.2	51.2
Depth [in]	23.84	23.84	23.84	23.84
<b>Doors</b>				
Unit doors	1	1	1	1
<b>Housing dimensions not incl. fittings and connections</b>				
Width net [in]	32.54	32.54	32.54	32.54
Height net [in]	77.5	77.5	77.5	77.5
Depth net [in]	36.96	36.96	36.96	36.96
<b>Environment-specific data</b>				
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
<b>Fixtures</b>				
Number of shelves (std./max.)	3/13	3/13	3/13	3/13
<b>Load-variants</b>				
Freezer racks per compartment	4	4	4	4
Cryoboxes, 50 mm	352	352	352	352

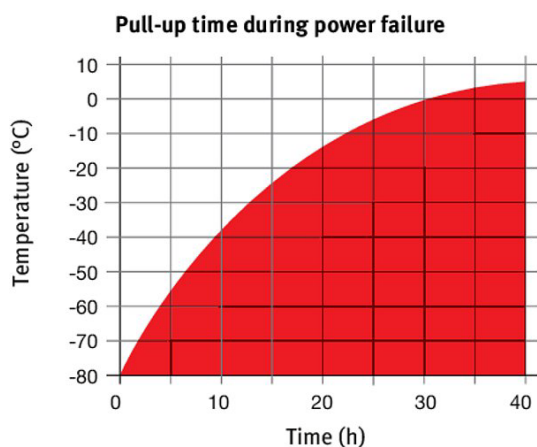
1 All technical data is specified for unloaded units with standard equipment at an ambient temperature of +22 °C ±3 °C and a power supply voltage fluctuation of ±10%. The temperature data is determined in accordance to BINDER factory standard following DIN 12880, observing the recommended wall clearances 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.

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## DIMENSIONS INCL. FITTINGS AND CONNECTIONS [MM]

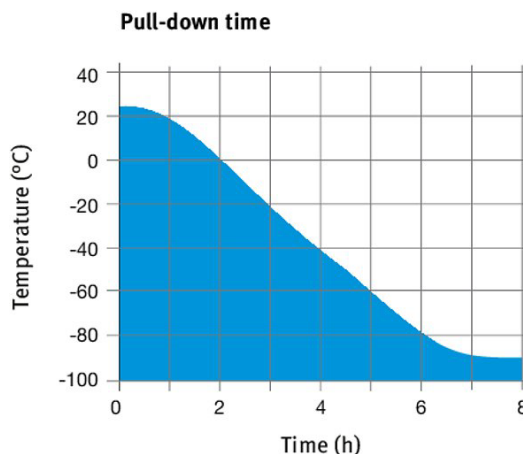


## CHARTS



Ambient temperature 22 °C, no load

Heating up rate



Ambient temperature 25 °C, no load

Cooling down rate

## OPTIONS

Designation	Description	*	Art.-No.
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
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
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
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

\* Notes > See last page

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## ACCESSORIES

Designation	Description	*	Art.-No.
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	19	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	19	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	19	9053-0040
Chamber rack with drawer, stainless steel	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
Chamber rack, aluminum	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
Chamber rack, stainless steel	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
CO <sub>2</sub> backup cooling	upgrade kit, for on-site installation by our service technician, requires the option of a battery-backed alarm system	–	8012-1892
Cryoboxes	set consisting of 36 cardboard boxes with sample dividers	–	6017-0053
Data Logger Kit	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
Deicing kit	consisting of de-icing tray, wiper and scraper	–	8012-1900
Gloves	for low temperatures, covers forearms	–	1007-0141
pH-neutral detergent	concentrated, for gentle remove of residual contaminants; 1 kg	–	1002-0016
Qualification documents	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
Shelf	Incl. shelf supports		
	stainless steel	–	8012-1901

\* Notes › See last page

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### 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 installation	Unpacking and setting up of unit, connecting to existing connections, and checking function	13, 18	DL10-0300
Unit instructions	Unit function instructions for operation and programming of the controller	18	DL10-0700
<b>Preventive maintenance</b>			
Maintenance	Functional testing of all electrical and mechanical components, short calibration, documentation in the maintenance schedule	14, 18	DL20-0200
<b>Calibration services</b>			
Temperature calibration	Expansion – including certificate, each additional measuring point in center of chamber at specified test temperature	14, 16, 17, 18	DL30-0102
	Temperature calibration with 1 measuring point in center of chamber at a specified test temperature, including certificate	14, 16, 17, 18	DL30-0101
Temperature measurement, 20 measuring points	Temperature measurement with 20 measuring points at a specified test temperature, 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

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### 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.