

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

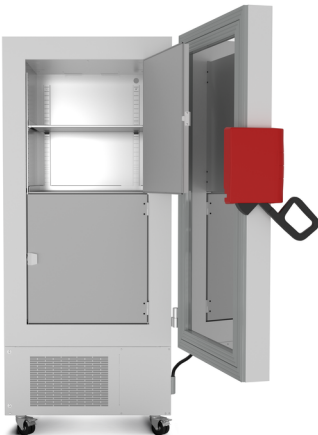
The BINDER ultra low temperature freezer ensures the safe storage of samples at -90 °C. It combines outstanding environmental friendliness with low energy consumption, convenient operation and an individual safety concept.

## 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
  - Energy Star certified
  - 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
  - 3 access ports, Ø 28 mm, rear

## ORDERING INFORMATION

| Interior volume |     | Power supply - unit fuse     | Plug*     | Version       | Model version | Art.-No.  |
|-----------------|-----|------------------------------|-----------|---------------|---------------|-----------|
| [L]             | [L] |                              |           |               |               |           |
| Model UF V 500  |     |                              |           |               |               |           |
| 501             | 501 | 230 V 1~ 50 Hz -10,0 A       | CEE 7/7   | Standard      | UFV500-230V   | 9020-0347 |
|                 |     |                              |           | Water cooling | UFV500-230V-W | 9020-0349 |
|                 |     | 115 V 1~ 60 Hz -15,0 A       | NEMA 5-15 | Standard      | UFV500UL-120V | 9020-0351 |
|                 |     | 208...230 V 2~ 60 Hz -10,0 A | NEMA 6-15 | Standard      | UFV500UL-240V | 9020-0353 |

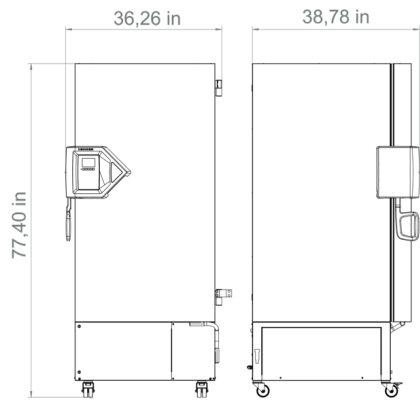
## TECHNICAL DATA

| 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                                       | 501 L        | 501 L         | 501 L         | 501 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        |
| 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                                            | 1,966 mm     | 1,966 mm      | 1,966 mm      | 1,966 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                                       | 1,300 mm     | 1,300 mm      | 1,300 mm      | 1,300 mm      |
| Interior depth                                        | 636 mm       | 636 mm        | 636 mm        | 636 mm        |

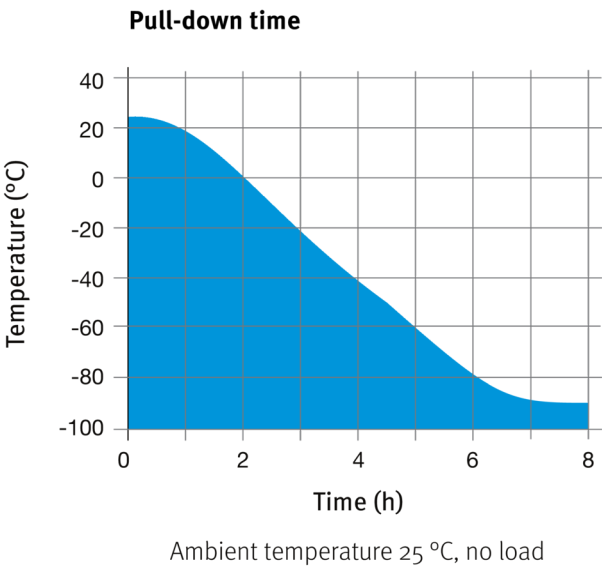
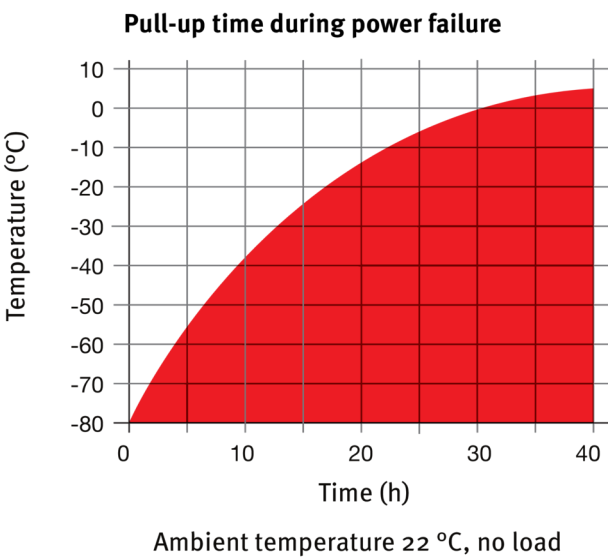
|                                                                 |           |           |           |           |
|-----------------------------------------------------------------|-----------|-----------|-----------|-----------|
| Inner doors                                                     | 2         | 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                                                                                                          | UF V 500 | * | 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 |
| 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                                                          | UF V 500 | * | 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             | Multi Management Software APT-COM™                                   |          |   |           |
|                        | version 4, BASIC edition                                             | •        | — | 9053-0039 |
|                        | version 4, GLP edition                                               | •        | — | 9053-0042 |
|                        | 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 |          |   |           |

| Designation                               | Description                                                                      | UF V 500 | * | Art.-No.  |
|-------------------------------------------|----------------------------------------------------------------------------------|----------|---|-----------|
|                                           | Set of 3                                                                         | •        | - | 8012-2345 |
|                                           | Set of 4                                                                         | •        | - | 8012-2346 |
|                                           | 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                                                                         | •        | - | 8012-2357 |
|                                           | Set of 4                                                                         | •        | - | 8012-2358 |
|                                           | 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                                                                         | •        | - | 8012-2349 |
|                                           | Set of 4                                                                         | •        | - | 8012-2350 |
|                                           | 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                                                                         | •        | - | 8012-2361 |
|                                           | Set of 4                                                                         | •        | - | 8012-2362 |
|                                           | 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                                                                         | •        | - | 8012-2353 |
|                                           | Set of 4                                                                         | •        | - | 8012-2354 |
|                                           | for 5x4 standard boxes (50 mm) incl. boxes, dimensions: H 278 x W 140 x D 562 mm |          |   |           |
|                                           | Set of 3                                                                         | •        | - | 8012-2355 |

| Designation             | Description                                                                                                                                                                                                                                                                                                                                                                                                            | UF V 500 | * | Art.-No.  |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|---|-----------|
|                         | Set of 4                                                                                                                                                                                                                                                                                                                                                                                                               | •        | - | 8012-2356 |
|                         | for 6x4 standard boxes (50 mm), dimensions: H 334 x W 140 x D 562 mm                                                                                                                                                                                                                                                                                                                                                   |          |   |           |
|                         | Set of 3                                                                                                                                                                                                                                                                                                                                                                                                               | •        | - | 8012-2365 |
|                         | Set of 4                                                                                                                                                                                                                                                                                                                                                                                                               | •        | - | 8012-2366 |
|                         | 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                                                                                                                                                                                                                                                                                                                                                              | •        | - | 8012-2369 |
| Deicing kit             | consisting of de-icing tray, wiper and scraper                                                                                                                                                                                                                                                                                                                                                                         | •        | - | 8012-1900 |
| 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                                                                                                                             | * | Art.-No.  |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|---|-----------|
| <b>Calibration services</b> |                                                                                                                                         |   |           |
| Temperature calibration     | Calibration of one (1) test temperature specified by the user in center of chamber, including certificate Travel to be quoted separate. | – | DL30-0101 |

| Designation                                  | Description                                                                                                                                                                                                                                                                                                                                                   | * | Art.-No.  |
|----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|-----------|
|                                              | Extension of calibration of one (1) additional test temperature specified by the user in the center of the usable space, including certificate Travel to be quoted separate.                                                                                                                                                                                  | – | DL30-0102 |
| Temperature measurement, 20 measuring points | Temperature measurement with 20 measuring points with a set value specified by the user, including certificate                                                                                                                                                                                                                                                | – | DL30-0620 |
| <b>Installation services</b>                 |                                                                                                                                                                                                                                                                                                                                                               |   |           |
| Unit installation                            | 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) Travel to be quoted as separate.                                                                                             | – | DL10-0300 |
| Unit instructions                            | Instruction regarding operating principle and basic functions of the unit, operation of the control electronics including programming. Travel to be quoted as separate Limited to 3 hours.                                                                                                                                                                    | – | DL10-0700 |
| <b>Maintenance services</b>                  |                                                                                                                                                                                                                                                                                                                                                               |   |           |
| BRONZE 3-year maintenance contract           | Annual Device Inspection Includes Preventive Maintenance with Calibration Certificate. 10% Discount on Spare Parts and Labor for any additional Services needed Wear + tear parts to be purchased or billed to customer. Travel to be quoted as separate.                                                                                                     | – | DL20-0710 |
| GOLD 3-year maintenance contract             | Annual Device Inspection Includes Preventive Maintenance with Calibration Certificate of Temperature. 25% Discount on Spare Parts and Labor for any additional Services needed. One additional courtesy visit per year can be used for service visit or operator. Wear + tear parts to be purchased or billed to customer. Travel to be quoted separate.      | – | DL20-0910 |
| Preventive maintenance                       | One-off maintenance service in accordance with maintenance schedule. Visual inspection of mechanical and electrical components, testing of all key functions. Checking a test temperature specified by the user in center of usable space without certificate. Wear + tear parts need to be purchased or billed to customer. Travel to be quoted as separate. | – | DL20-0200 |
| SILVER 3-year maintenance contract           | Annual Device Inspection Includes Preventive Maintenance with Calibration Certificate 15% Discount on Spare Parts and Labor for any additional Services needed One additional courtesy visit per year can be used for service visit or operator training. Wear + tear parts to be purchased or billed to customer. Travel to be quoted separate.              | – | DL20-0810 |
| <b>Validation services</b>                   |                                                                                                                                                                                                                                                                                                                                                               |   |           |
| Execution of IQ/OQ                           | Execution of IQ/OQ in accordance with qualification folder. Travel to be quoted separate.                                                                                                                                                                                                                                                                     | – | DL41-0210 |
| Execution of IQ/OQ/PQ                        | Execution of IQ/OQ/PQ in accordance with qualification folder. Travel to be quoted separate.                                                                                                                                                                                                                                                                  | – | DL44-0500 |

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