

# Model MK CO<sub>2</sub> 720 CO<sub>2</sub> | Dynamic climate chambers for rapid temperature changes

The BINDER MK series chamber is suitable for all heat and cold tests between -40 °C and 180 °C. The MK is a clever alternative to complex individual solutions for cyclical temperature tests.

## BENEFITS

- Safe: Reliable protection for samples, data and processes
- Reliable: Long-lasting components, standard-compliant technical data and lasting functional stability
- Smart: Intuitive operation, digital networking and sophisticated equipment
- Economical & ecological: Best price/performance ratio, energy-efficient CO<sub>2</sub> technology and future-proof equipment



Model 720



Model 720

## IMPORTANT FEATURES

- Temperature range: -40 °C to +180 °C
- APT.line™ preheating chamber technology
- Cooling with climate-neutral R-744 refrigerant
- Intuitive touchscreen controller with time-segment and real-time programming
- Ergonomically adjustable operating terminal
- Signal triangle with light-up status display
- Internal data logger, measured values can be read out in open format via USB
- BINDER Multi Management Software APT-COM™ basic edition
- Programmable condensation protection for samples
- Troubleshooting system with visual and acoustic alarms
- Stainless-steel inner chamber
- 1 stainless steel rack
- Access port with silicone plug (models 240, 400), 50 mm, left
- 2 access ports with silicone plugs (models 720), 80 mm, left and right
- Heated viewing window with LED interior lighting
- Class 2 independent adjustable temperature safety device (DIN 12880) with visual alarm
- 4 sturdy twin casters with brakes at the front
- Data interfaces: Ethernet, USB
- Adjustable ramp function
- Integrated line recorder
- Real-time clock
- Door heating to prevent condensation
- Temperature reduction to -50 °C adjustable for up to 8 hours

## OPTIONAL EQUIPMENT

- APT-COM Multi Management Software – for managing, recording, and documenting unit parameters
- Racks – option of stainless steel racks, depending on test requirements
- Compressed air supply system
- Services – wide range of services to ensure that the unit functions correctly

## ORDERING INFORMATION

| Interior volume                                   | Power supply - unit fuse | Plug*                       | Version                 | Model version | Art.-No.      |
|---------------------------------------------------|--------------------------|-----------------------------|-------------------------|---------------|---------------|
| [cu.ft.]      [L]                                 |                          |                             |                         |               |               |
| <b>Model MK CO<sub>2</sub> 720 CO<sub>2</sub></b> |                          |                             |                         |               |               |
| 26                                                | 734                      | 400 V 3~/N/PE 50 Hz -16,0 A | CEE 16 / 6 H plug 5-pin | Standard      | MK720CO2-400V |
|                                                   |                          |                             |                         |               | 9020-0522     |

## TECHNICAL DATA

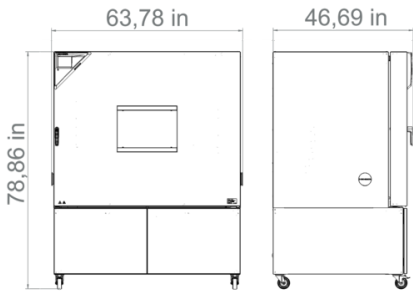
| Data                                                  |                            |
|-------------------------------------------------------|----------------------------|
| Designation                                           | MK720CO <sub>2</sub> -400V |
| Article Number                                        | 9020-0522                  |
| Option model                                          | Standard                   |
| Performance Data Temperature                          |                            |
| Temperature range                                     | -40...180 °C               |
| Temperature uniformity dependent on set value         | 0.3...2.0 ± K              |
| Temperature fluctuation dependent on set value        | 0.1...0.5 ± K              |
| Average heating-up rate according to IEC 60068-3-5    | 4.0 K/min                  |
| Cooling down time from 180°C to -40°C                 | 100 min                    |
| Average cooling down time according to IEC 60068-3-5  | 4.5 K/min                  |
| Electrical data                                       |                            |
| Rated Voltage                                         | 400 V                      |
| Power frequency                                       | 50 Hz                      |
| Nominal power                                         | 8,7 kW                     |
| Unit fuse                                             | 16,0 A                     |
| Phase (Nominal voltage)                               | 3~/N/PE                    |
| Dimensions and weights                                |                            |
| Interior volume                                       | 26 cu.ft.                  |
| Net weight of the unit (empty)                        | 1,078 lbs                  |
| Load per rack                                         | 88 lbs                     |
| Permitted load                                        | 353 lbs                    |
| Wall clearance back                                   | 11,81 in                   |
| Wall clearance sidewise                               | 7,87 in                    |
| Housing dimensions not incl. fittings and connections |                            |
| Width net                                             | 62.09 in                   |
| Height net                                            | 78.94 in                   |
| Depth net                                             | 44.61 in                   |
| Internal Dimensions                                   |                            |
| Interior width                                        | 47.24 in                   |

|                               |            |
|-------------------------------|------------|
| Interior height               | 40.12 in   |
| Interior depth                | 23.62 in   |
| Unit doors                    | 1          |
| Environment-specific data     |            |
| Sound-pressure level          | 65 dB(A)   |
| Energy consumption at 20°C    | 1,900 Wh/h |
| Fixtures                      |            |
| Number of shelves (std./max.) | 1/11       |

The technical specifications provided are accurate at the time of creation and are subject to change without prior notice as product development continues. They do not constitute guaranteed characteristics. Technical modifications are reserved. The technical data provided corresponds to the status at the time this data sheet was created and is therefore only **preliminary technical data**. It may still change during further product validation or with the start of series production. The technical data provided cannot be guaranteed at this time.

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. Technical data refers to 100 % fan speed. 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]



OPTIONS

| Designation                    | Description | *  | Art.-No.  |
|--------------------------------|-------------|----|-----------|
| Access port with silicone plug | left        |    |           |
|                                | 30 mm       | 01 | 8012-2649 |
|                                | 50 mm       | 01 | 8012-2651 |
|                                | 80 mm       | 01 | 8012-2653 |
|                                | 100 mm      | 01 | 8012-2643 |
|                                | 125 mm      | 01 | 8012-2646 |
|                                | right       |    |           |
|                                | 30 mm       | 01 | 8012-2650 |
|                                | 50 mm       | 01 | 8012-2652 |
|                                | 80 mm       | 01 | 8012-2655 |

| Designation                       | Description                                                                                                  | *  | Art.-No.  |
|-----------------------------------|--------------------------------------------------------------------------------------------------------------|----|-----------|
|                                   | 100 mm                                                                                                       | 01 | 8012-2645 |
|                                   | 125 mm                                                                                                       | 01 | 8012-2648 |
|                                   | top                                                                                                          |    |           |
|                                   | 80 mm                                                                                                        | 01 | 8012-2654 |
|                                   | 100 mm                                                                                                       | 01 | 8012-2644 |
|                                   | 125 mm                                                                                                       | 01 | 8012-2647 |
| Analog output 4-20 mA             | for temperature values (output not adjustable)                                                               | -  | 8012-2634 |
| Calibration certificate, expanded | for temperature; for extending the measurement in center of chamber to include another test temperature      | -  | 8012-2660 |
|                                   | for temperature, measurement in center of chamber at specified temperature                                   | -  | 8012-2656 |
|                                   | temperature measurement incl. certificate, 9 measuring points at specified temperature                       | -  | 8012-2659 |
|                                   | temperature measurement incl. certificate, 15- 18 measuring points at specified temperature                  | -  | 8012-2657 |
|                                   | temperature measurement incl. certificate and 27 measuring points at specified temperature                   | -  | 8012-2658 |
| Door lock                         | lockable door handle                                                                                         | -  | 8012-2669 |
| Pt 100 temperature sensor         | additional flexible Pt 100, interior, for displaying the temperature on the unit display                     | -  | 8012-2667 |
| RS 485 interface, 2-wire          | Additional serial interface can be used parallel to Ethernet, for Multi Management Software APT-COM™         | -  | 8012-2665 |
| Temperature safety device class 2 | with visual alarm (DIN 12880)                                                                                | -  | 8012-2666 |
| Zero voltage relay contacts       | for controlling 3 relay contacts via program regulators, accessible via 6-pin DIN socket (max. 24 V - 2.5 A) | -  | 8012-2664 |

## ACCESSORIES

| Designation                     | Description                                                                                                                                                                                                   | * | Art.-No.  |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|-----------|
| 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 |
| pH-neutral detergent            | concentrated, for gentle remove of residual contaminants; 1 kg                                                                                                                                                | - | 8012-2250 |
| Qualification documents IQ/OQ   | IQ/OQ documents digital in PDF format – supporting documents for validation consisting of: IQ/OQ checklists, comprehensive unit documentation covering: temperature. Excluded: Document execution is separate |   |           |
|                                 | temperature. Excluded: Document execution is separate                                                                                                                                                         | - | 7057-0010 |

| Designation                      | Description                                                                                                                                                                                                                                                                                                                                          | * | Art.-No.  |
|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|-----------|
| Qualification documents IQ/OQ/PQ | IQ/OQ/PQ documents digital in PDF format – supporting documents for validation customized to customer requirements, PQ section added to the qualification folder IQ/OQ; supporting documents for validation consisting of: IQ/OQ checklists, comprehensive unit documentation covering: temperature values. Excluded: Document execution is separate |   |           |
|                                  | temperature values. Excluded: Document execution is separate                                                                                                                                                                                                                                                                                         | - | 7057-0016 |
| Rack                             | stainless steel                                                                                                                                                                                                                                                                                                                                      | - | 8012-2054 |
| Rack, reinforced                 | stainless steel, with fasteners (1 set of 4)                                                                                                                                                                                                                                                                                                         | - | 8012-0684 |
| Rack accessories                 | fasteners (1 set of 4) for additional security of racks                                                                                                                                                                                                                                                                                              | - | 8012-2280 |
| Shelf, perforated                | Stainless steel                                                                                                                                                                                                                                                                                                                                      | - | 8012-2253 |

## 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.                                                                                                                                                                                                                                               | 05 | DL30-0130 |
|                                              | 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.                                                                                                                                                                                                          | 05 | DL30-0102 |
| Temperature measurement, 9 measuring points  | Temperature measurement with 9 measuring points with a set value specified by the user, including certificate. Travel to be quoted separate. A total of 3 shelves are required.                                                                                                                                                                                                       | 05 | DL30-0109 |
| Temperature measurement, 18 measuring points | Temperature measurement with 18 measuring points with a set value specified by the user, including certificate. Travel to be quoted separate. A total of 2 shelves are required.                                                                                                                                                                                                      | 05 | DL30-0118 |
| Temperature measurement, 27 measuring points | Temperature measurement with 27 measuring points with a set value specified by the user, including certificate. Travel to be quoted separate. A total of 3 shelves are required.                                                                                                                                                                                                      | 05 | DL30-0127 |
| <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.                                                                                                                     | 05 | DL10-0170 |
| 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.                                                                                                                                                                                            | 05 | DL10-0560 |
| <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.                                                                                                                             | 05 | DL20-0710 |
| GOLD 3-year maintenance contract             | Annual Device Inspection Includes Preventive Maintenance with Calibration Certificate of Temperature, Humidity and pressure value. 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. | 05 | DL20-0930 |

| Designation                        | Description                                                                                                                                                                                                                                                                                                                                                   | *  | Art.-No.  |
|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|-----------|
| Leakage test                       | 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                                                                                           | 05 | DL00-0034 |
| 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. | 05 | DL20-0607 |
| 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.              | 05 | DL20-0830 |
| <b>Validation services</b>         |                                                                                                                                                                                                                                                                                                                                                               |    |           |
| Execution of IQ/OQ                 | Execution of IQ/OQ in accordance with qualification folder. Travel to be quoted separate.                                                                                                                                                                                                                                                                     | 05 | DL41-0200 |
| Execution of IQ/OQ/PQ              | Execution of IQ/OQ/PQ in accordance with qualification folder. Travel to be quoted separate.                                                                                                                                                                                                                                                                  | 05 | DL44-0500 |
| <b>Warranty service</b>            |                                                                                                                                                                                                                                                                                                                                                               |    |           |
| 1-year warranty extension          | The warranty is extended by 1 year from the delivery date, wear parts are excluded                                                                                                                                                                                                                                                                            | 05 | DL50-0040 |

## NOTES

- 01      Condensation may occur in the area around the access port. Access ports may be placed in custom locations for an additional charge.
- 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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