# Model MK 240 $CO_2$ | Dynamic climate chambers for rapid temperature changes

**The environmental simulation chambers in the MK $CO_2$ series are designed for dynamic temperature tests and complex temperature profiles. High alternating speeds facilitate rapid temperature changes and ensure that tests are conducted in accordance with standards and are reproducible. A comprehensive list of standard features ensures incredible value for money.**

**The MK $CO_2$ series uses natural $CO_2$ as a refrigerant, offering an alternative for applications with specific refrigeration requirements.**

## BENEFITS

- More performance for your budget and long-term investment security
- Easy to integrate, intuitive to use, and flexible to network
- Reliable protection for samples, data, and processes
- Reproducible results and long-term operational stability



Model 240



Model 240

## IMPORTANT FEATURES

- Temperature range: -50°C to +180°C*
- APT.line™ preheating chamber technology
- Cooling with R744, a natural $CO_2$ 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, 50 mm, left
- 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

## 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 [L] | Power supply - unit fuse | Plug* | Version | Model version | Art.-No. |
|---|---|---|---|---|---|
| **Model MK 240 $CO_2$** | | | | | |
| 228 | 400 V 3~/N/PE 50 Hz -16,0 A | CEE 16 / 6 H plug 5-pin | Standard | MK240CO2-400V | 9020-0513 |

| Interior volume [L] | Power supply - unit fuse | Plug* | Version | Model version | Art.-No. |
|---|---|---|---|---|---|
| | 480 V 3~/N/PE 60 Hz -16,0 A | – | Standard | MK240CO2-480V | 9020-0515 |

## TECHNICAL DATA

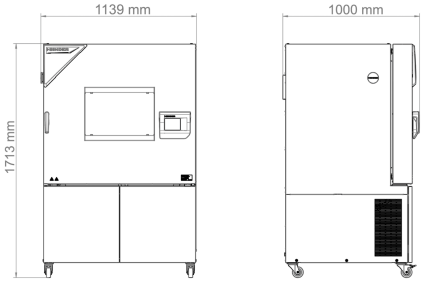
| | | |
|---|---|---|
| **Data** | | |
| Article Number | 9020-0513 | 9020-0515 |
| Designation | MK240CO2-400V | MK240CO2-480V |
| Option model | Standard | Standard |
| **Performance Data Temperature** | | |
| Temperature range | -50...180 °C* | -50...180 °C* |
| Temperature uniformity dependent on set value | 0.1...1.2 ± K | 0.1...1.2 ± K |
| Temperature fluctuation dependent on set value | 0.1...0.4 ± K | 0.1...0.4 ± K |
| Average heating-up rate according to IEC 60068-3-5 between -40°C and 180°C | 5.5 K/min | 5.5 K/min |
| Average cooling down time according to IEC 60068-3-5 between 180°C and -40°C | 5.7 K/min | 5.7 K/min |
| Cooling down time from 180°C to -40°C | 60 min | 60 min |
| **Electrical data** | | |
| Rated Voltage | 400 V | 480 V |
| Power frequency | 50 Hz | 60 Hz |
| Nominal power | 5,2 kW | 5,2 kW |
| Unit fuse | 16,0 A | 16,0 A |
| Phase (Nominal voltage) | 3~/N/PE | 3~/N/PE |
| **Dimensions and weights** | | |
| Interior volume | 228 L | 228 L |
| Net weight of the unit (empty) | 311 kg | 311 kg |
| Load per rack | 30 kg | 30 kg |
| Permitted load | 70 kg | 70 kg |
| Wall clearance back | 300 mm | 300 mm |
| Wall clearance sidewise | 200 mm | 200 mm |
| **Housing dimensions not incl. fittings and connections** | | |
| Width net | 1,115 mm | 1,115 mm |
| Height net | 1,710 mm | 1,710 mm |
| Depth net | 925 mm | 925 mm |
| **Internal Dimensions** | | |

| | | |
|---|---|---|
| Interior width | 735 mm | 735 mm |
| Interior height | 700 mm | 700 mm |
| Interior depth | 443 mm | 443 mm |
| Unit doors | 1 | 1 |
| **Environment-specific data** | | |
| Sound-pressure level | 60 dB(A) | 60 dB(A) |
| Energy consumption at 25°C | 900 Wh/h | 900 Wh/h |
| **Fixtures** | | |
| Number of shelves (std./max.) | 1/6 | 1/6 |

*Temperature reduction to -50°C adjustable for up to 8 hours.

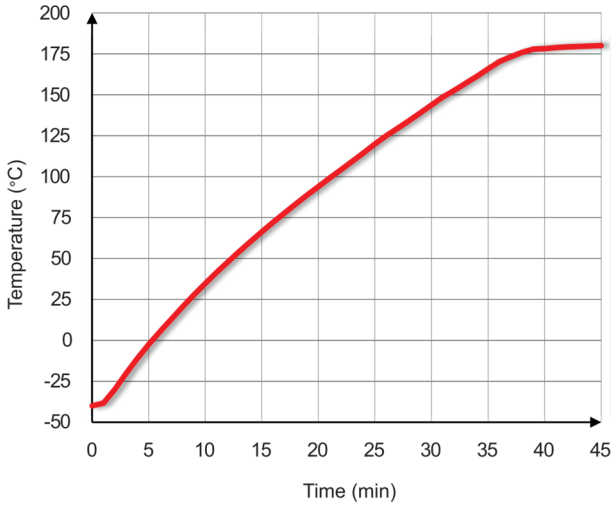
All technical data is specified exclusively for unloaded units with standard equipment at an ambient temperature of 22 ± 3°C and a line voltage fluctuation of ± 10%. The temperature data is determined in accordance with BINDER factory standard following DIN 12880:2007, respecting the recommended wall clearances of 10% of the height, width, and depth of the interior chamber. All figures are typical average values for series units. Technical data refers to 100% fan speed. We reserve the right to alter technical specifications at any time.

## DIMENSIONS Incl. fittings and connections [mm]



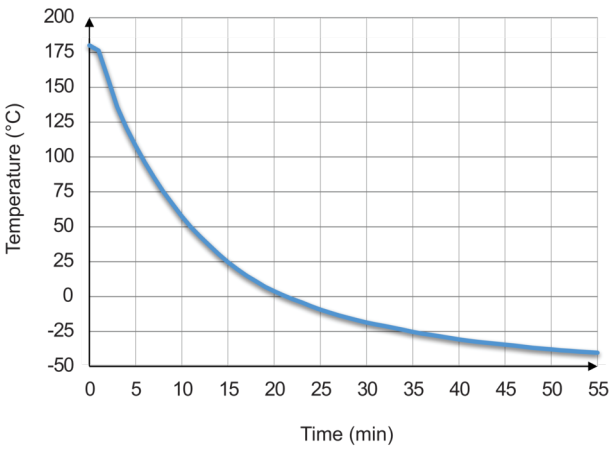
## DIAGRAMS

Heating curve: MK 240 $CO_2$



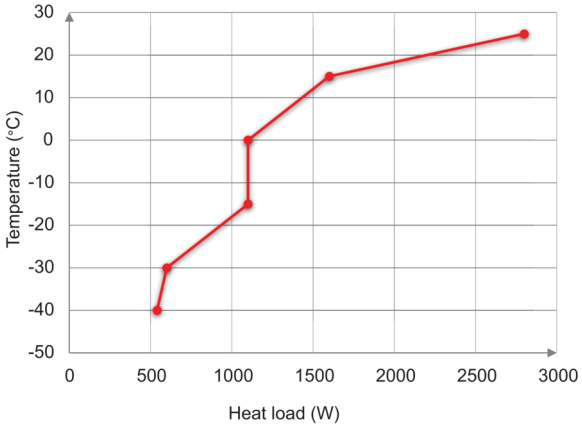

Heating up rate

Cooling curve: MK 240 $CO_2$




Cooling down rate

Heat compensation: MK 240 $CO_2$




Heat compensation chart

## OPTIONS

| Designation | Description | MK $CO_2$ 240 | * | Art.-No. |
|---|---|---|---|---|
| Access port with silicone plug | left | | | |
| | 30 mm | • | 01 | 8012-2649 |
| | 50 mm | • | 01 | 8012-2651 |
| | 80 mm | • | 01 | 8012-2653 |
| | left | | | |
| | 100 mm | • | 01 | 8012-2643 |
| | left | | | |
| | 125 mm | • | 01 | 8012-2646 |

| Designation | Description | MK $CO_2$ 240 | * | Art.-No. |
|---|---|---|---|---|
| | right | | | |
| | 30 mm | • | 01 | 8012-2650 |
| | 50 mm | • | 01 | 8012-2652 |
| | 80 mm | • | 01 | 8012-2655 |
| | 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 |
| Calibration certificate, temperature | 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 |
| 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 | MK $CO_2$ 240 | * | 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. | | | |

| Designation | Description | MK $CO_2$ 240 | * | Art.-No. |
|---|---|---|---|---|
| | version 4, PROFESSIONAL edition | • | - | 9053-0040 |
| pH-neutral detergent | concentrated, for gentle remove of residual contaminants; 1 kg | • | - | 8012-2250 |
| 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, $CO_2$, $O_2$ – 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, $CO_2$, $O_2$, pressure, depending on unit | | | |
| | Digital in PDF format | • | - | 7057-0001 |
| | Hard copy inside folder | • | - | 7007-0001 |
| Rack | stainless steel | • | - | 8012-2053 |
| Rack, reinforced | stainless steel, with fasteners (1 set of 4) | • | - | 8012-0605 |
| Rack accessories | fasteners (1 set of 4) for additional security of racks | • | - | 8012-2280 |
| Shelf, perforated | Stainless steel | • | - | 8012-2251 |

## SERVICES

| Designation | Description | * | Art.-No. |
|---|---|---|---|
| **Calibration services** | | | |
| Calibration certificate, temperature | Calibration of one (1) test temperature specified by the user in center of chamber, including certificate | 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 | 05 | DL30-0102 |
| Temperature measurement, 9 measuring points | Temperature measurement with 9 measuring points with a set value specified by the user, including certificate | 05 | DL30-0109 |
| Temperature measurement, 18 measuring points | Temperature measurement with 18 measuring points with a set value specified by the user, including certificate | 05 | DL30-0118 |
| Temperature measurement, 27 measuring points | Temperature measurement with 27 measuring points with a set value specified by the user, including certificate | 05 | DL30-0127 |
| **Installation services** | | | |
| 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) | 05 | DL10-0170 |
| Unit instructions | Instruction regarding operating principle and basic functions of the unit, operation of the control electronics including programming | 05 | DL10-0560 |
| **Maintenance contracts** | | | |

| Designation | Description | * | Art.-No. |
|---|---|---|---|
| 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 | 05 | DL20-0710 |
| 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 temperature/humidity/pressure value, including certificate | 05 | DL20-0930 |
| 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 | 05 | DL20-0830 |
| **Maintenance services** | | | |
| 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 | 05 | DL20-0607 |
| **Validation services** | | | |
| Execution of IQ/OQ | Execution of IQ/OQ in accordance with qualification folder | 05 | DL41-0200 |
| Execution of IQ/OQ/PQ | Execution of IQ/OQ/PQ in accordance with qualification folder | 05 | DL44-0500 |
| **Warranty service** | | | |
| 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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