

# Model MKFT 240 | Dynamic climate chambers for rapid temperature changes with humidity control and extended low temperature range

The BINDER MKFT series environmental simulation chamber for low temperature alternating climate profiles is the specialist for dynamic alternating climate change between -70 °C and 180 °C. Large performance reserves and rapid cooling make the MKFT environmental simulation chamber the high-end product for complex standards-based climate tests.

## BENEFITS

- Homogeneous climate conditions thanks to APT.line™ technology
- Automatic water and wastewater management
- Pressure humidification with fast response times
- Comprehensive programming and data acquisition
- Large heated viewing window



Model 240



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## MAIN FEATURES

- Temperature range: -70 °C to +180 °C
- Humidity range: 10 % to 98 % RH
- Integrated water-storage tank, 20 liters
- 4 zero-voltage relay contacts
- APT.line™ preheating chamber technology
- Programmable condensation protection for test material
- Intuitive touchscreen controller with time-segment and real-time programming
- Internal data logger, measured values can be read out in open format via USB
- Heated viewing window with LED interior lighting
- Humidity regulation with capacitive humidity sensor and vapor humidification
- BINDER Multi Management Software APT-COM™ Basic Edition
- Troubleshooting system with visual and audible alarms
- Class 2 independent adjustable temperature safety device (DIN 12880) with visual alarm
- Access port with silicone plug: 50 mm, left
- 4 castors, two with brakes
- Computer interface: Ethernet
- Adjustable ramp function
- Integrated chart recorder
- Real-time clock
- Door heating
- Alarm notification in the event of insufficient water in fresh water tank
- 1 stainless steel rack
- Complete safety connection kit for water supply and drainage, up to 1 m in height
- Inner chamber made of stainless steel
- CFC-free refrigerants R-452A and R-23
- Cooling with cascade compressor cooling unit

## ORDERING INFORMATION

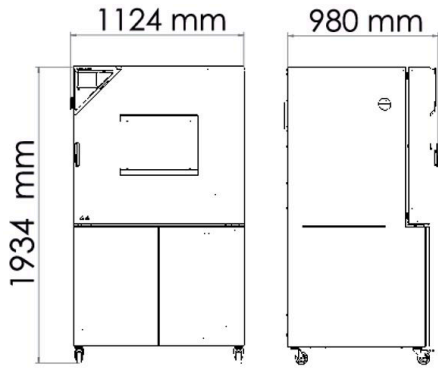
| Interior volume [L] | Voltage           | Option model                         | Version        | Art.-No.  |
|---------------------|-------------------|--------------------------------------|----------------|-----------|
| 228                 | 400 V 3~ ph 50 Hz | Standard                             | MKFT240-400V   | 9020-0383 |
|                     | 480 V 3~ ph 60 Hz | with voltage and frequency converter | MKFT240-480V-C | 9020-0361 |

## TECHNICAL DATA

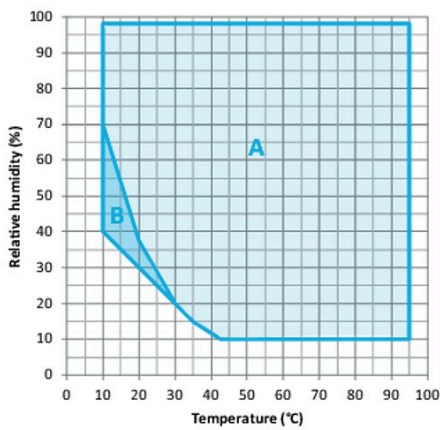
| Description  | MKFT240-400V <sup>1</sup> | MKFT240-480V-C <sup>1</sup> |
|--|---------------------------|-----------------------------|
| <b>Article Number</b>  | <b>9020-0383</b>          | <b>9020-0361</b>            |
| <b>Performance Data Temperature</b>                          |                           |                             |
| Temperature range [°C]                                       | -70...180                 | -70...180                   |
| Temperature variation depending on setpoint [± K]            | 0.2...1.8                 | 0.2...1.8                   |
| Temperature fluctuation depending on setpoint [± K]          | 0.1...0.5                 | 0.1...0.5                   |
| Average heating-up rate according to IEC 60068-3-5 [K/min]   | 5                         | 5                           |
| Average cooling down time according to IEC 60068-3-5 [K/min] | 4.2                       | 4.2                         |
| Max. heat compensation at 25 °C [W]                          | 3000                      | 3000                        |
| <b>Performance Data Climate</b>                              |                           |                             |
| Temperature range [°C]                                       | 10...95                   | 10...95                     |
| Temperature fluctuation depending on setpoint [± K]          | 0.1...1.5                 | 0.1...1.5                   |
| Humidity range   | 10...98                   | 10...98                     |
| Humidity fluctuation depending on setpoint                   | ≤2,5 ± % RH               | ≤2,5 ± % RH                 |
| <b>Electrical data</b>                                       |                           |                             |
| Rated Voltage [V]  | 400                       | 480                         |
| Power frequency [Hz]   | 50                        | 60                          |
| Nominal power [kW]   | 6                         | 6                           |
| Unit fuse [A]  | 16                        | 16                          |
| Phase (Nominal voltage)                                      | 3~                        | 3~                          |
| <b>Measures</b>  |                           |                             |
| Interior volume [L]  | 228                       | 228                         |
| Net weight of the unit (empty) [kg]                          | 415                       | 579                         |
| Permitted load [kg]  | 70                        | 70                          |
| Load per rack [kg]   | 30                        | 30                          |
| Viewing window width [mm]                                    | 508                       | 508                         |
| Viewing window height [mm]                                   | 300                       | 300                         |
| Wall clearance back [mm]                                     | 300                       | 300                         |
| Wall clearance sidewise [mm]                                 | 200                       | 200                         |
| <b>Internal Dimensions</b>                                   |                           |                             |
| Interior width [mm]  | 735                       | 735                         |
| Interior height [mm]   | 700                       | 700                         |
| Interior depth [mm]  | 443                       | 443                         |
| <b>Doors</b>   |                           |                             |
| Unit doors   | 1                         | 1                           |
| <b>Housing dimensions not incl. fittings and connections</b> |                           |                             |
| Width net [mm]   | 1115                      | 1115                        |
| Height net [mm]  | 1940                      | 1940                        |
| Depth net [mm]   | 925                       | 925                         |
| <b>Environment-specific data</b>                             |                           |                             |
| Sound-pressure level [dB(A)]                                 | 67                        | 70                          |
| <b>Fixtures</b>  |                           |                             |
| Number of shelves (std./max.)                                | 1/6                       | 1/6                         |

<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. 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]**

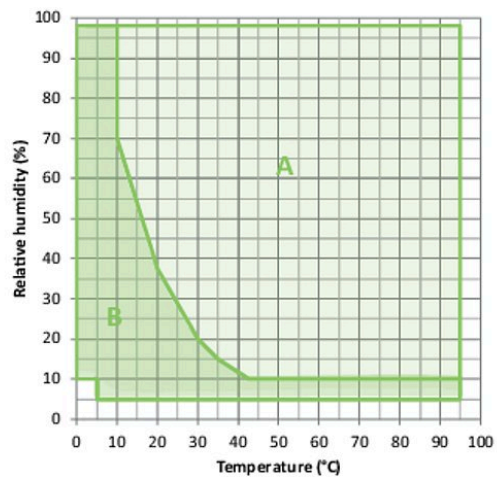


**CHARTS**



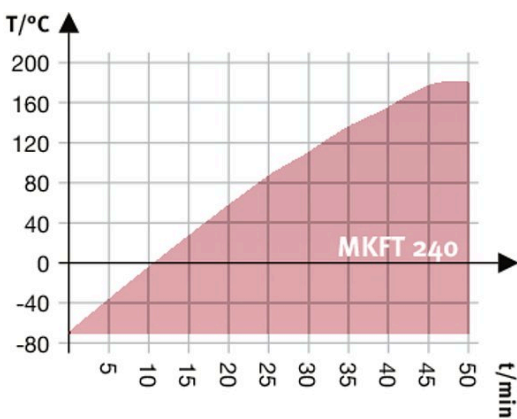
A: Standard Climate range  
B: Time-limited operation (max. 24 hours)

Climate chart

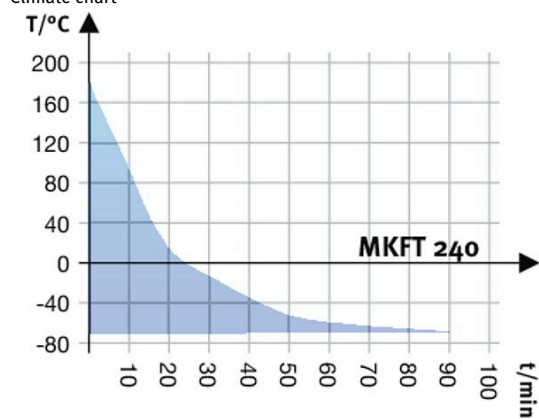


A: Standard Climate range  
B: Expanded range with controlled dry-air purge

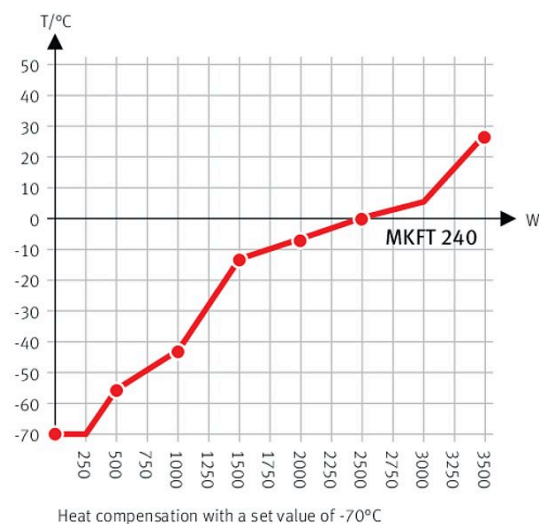
Climate chart



Heating up rate



Cooling down rate



Heat compensation chart

## OPTIONS

| Designation  | Description   | *  | Art.-No.  |
|--|---|----|-----------|
|  | left  |    |           |
|  | 30 mm   | 01 | 8012-0509 |
|  | 50 mm   | 01 | 8012-0511 |
|  | 80 mm   | 01 | 8012-0513 |
|  | 100 mm  | 01 | 8012-0836 |
|  | 125 mm  | 01 | 8012-0533 |
|  | right   |    |           |
| <b>Access port with silicone plug</b>                    | 30 mm   | 01 | 8012-0508 |
|  | 50 mm   | 01 | 8012-0510 |
|  | 80 mm   | 01 | 8012-0512 |
|  | 100 mm  | 01 | 8012-0835 |
|  | 125 mm  | 01 | 8012-0532 |
|  | top   |    |           |
|  | 80 mm   | 01 | 8012-0834 |
|  | 100 mm  | 01 | 8012-0832 |
|  | 125 mm  | 01 | 8012-0833 |
| <b>Analog output 4-20 mA</b>                             | for temperature and humidity values (output not adjustable)   | -  | 8012-1786 |
| <b>Calibration certificate, expanded</b>                 | for temperature and humidity; for extending the measurement in center of chamber to include another test value  | -  | 8012-1193 |
| <b>Calibration certificate, temperature</b>              | temperature measurement incl. certificate and 27 measuring points at specified temperature  | -  | 8012-1608 |
|  | temperature measurement incl. certificate, 15- 18 measuring points at specified temperature   | -  | 8012-1588 |
|  | temperature measurement incl. certificate, 9 measuring points at specified temperature  | -  | 8012-1567 |
| <b>Calibration certificate, temperature and humidity</b> | Measurement in center of chamber at 25 °C / 60% RH or at specified test values  | -  | 8012-1187 |
|  | temperature (according to DIN12880) and humidity measurement incl. certificate, 27 temperature measuring points and 1 humidity measuring point, at 25 °C / 60 % RH or at specified values | -  | 8012-1614 |
| <b>Compressed air connection</b>                         | for the connection to an existing pressurized air network   | -  | 8012-1090 |
| <b>Door lock</b>   | lockable door handle  | -  | 8012-1783 |
| <b>Dry-air purge</b>                                     | controlled, incl. connection; suitable for the simulation of current automobile industry standards  | -  | 8012-1871 |
| <b>Notch-type access port</b>                            | notch-type access port in door, 100 x 35 mm   | -  | 8012-1857 |

\* Notes › See last page

## Data Sheet Model MKFT 240

| Designation                       | Description  | * | Art.-No.  |
|-----------------------------------|--|---|-----------|
| Pt 100 temperature sensor         | additional flexible Pt 100, interior, for displaying the temperature on the unit display             | - | 8012-1791 |
| RS 485 interface, 2-wire          | Additional serial interface can be used parallel to Ethernet, for Multi Management Software APT-COM™ | - | 8012-1767 |
| Temperature safety device class 2 | with visual alarm (DIN 12880)  | - | 8012-1793 |
| Water circuit                     | allows condensed water to be reused  | - | 8012-0785 |

\* Notes › See last page

## 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.<br>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.<br>version 4, PROFESSIONAL edition  | - | 9053-0040 |
| BINDER PURE AQUA SERVICE              | System for preparation or complete desalination of tap water, complete set containing PURE AQUA 300 single-use cartridge, measuring device, and all necessary connecting parts   | - | 8012-0759 |
| BINDER PURE AQUA SERVICE, accessories | Single-use, replacement cartridge for BINDER PURE AQUA System  | - | 6011-0165 |
| pH-neutral detergent                  | concentrated, for gentle remove of residual contaminants; 1 kg   | - | 8012-2250 |
| 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 and humidity values<br>Digital in PDF format   | - | 7057-0002 |
|                                       | Hard copy inside folder  | - | 7007-0002 |
|                                       | 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 and humidity values<br>Digital in PDF format  | - | 7057-0006 |
|                                       | Hard copy inside folder  | - | 7007-0006 |
| Rack                                  | stainless steel  | - | 8012-2053 |
| Rack accessories                      | fasteners (1 set of 4) for additional security of racks  | - | 8012-2280 |
| Rack, reinforced                      | stainless steel, with fasteners (1 set of 4)   | - | 8012-0605 |
| RS 485 / RS 422 interface converter   | RS 422 cable set and RS 485 / RS 422 interface converter for connection to 10-way plug distributor<br>115 V option model   | - | 8012-0599 |
|                                       | 230 V option model   | - | 8012-0589 |
| Shelf, perforated                     | Stainless steel  | - | 8012-2251 |
| 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 |

\* Notes › See last page

## SERVICES

| Designation                        | Description  | *  | Art.-No.  |
|------------------------------------|--|----|-----------|
| Maintenance contracts              |  |    |           |
| Installation services              |  |    |           |
| Calibration services               |  |    |           |
| Validation services                |  |    |           |
| Maintenance services               |  |    |           |
| Warranty service                   |  |    |           |
| 1-year warranty extension          | The warranty is extended by 1 year from the delivery date, wear parts are excluded   | -  | DL50-0040 |
| 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 |
| Execution of IQ/OQ                 | Execution of IQ/OQ in accordance with qualification folder   | 05 | DL42-0300 |

\* Notes › See last page

**Data Sheet Model MKFT 240**

| Designation   | Description  | *             | Art.-No.  |
|---|--|---------------|-----------|
| Execution of IQ/OQ/PQ                                       | Execution of IQ/OQ/PQ in accordance with qualification folder  | 05            | DL44-0500 |
| 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 and CO <sub>2</sub> value, including certificate       | 05            | DL20-0940 |
| Leakage test  | Testing and logging of the leak-tightness of systems containing hydrofluorocarbons in accordance with Regulation EC842/2006, incl. test book   | 05            | DL00-0034 |
| 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            | DL20-0500 |
| 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 |
| Temperature and humidity calibration                        | Expansion –Temperature and humidity calibration with 1 measuring point in center of chamber with 1 specified pair of values, including certificate   | 03, 04,<br>05 | DL30-0302 |
|   | Temperature and humidity calibration with 1 measuring point in center of chamber with 1 specified pair of values, including certificate  | 03, 04,<br>05 | DL30-0301 |
| Temperature and humidity measurement according to DIN12880  | Temperature measurement in accordance with DIN 12880 with 27 temperature measuring points and 1 humidity measuring point in center of chamber with a pair of values specified by the user, including certificate   | 03, 04,<br>05 | DL30-0427 |
| Temperature and humidity measurement, 18-1 measuring points | Temperature measurement with 18 temperature measuring points and 1 humidity measuring point in center of chamber with a pair of values specified by the user, including certificate  | 03, 04,<br>05 | DL30-0318 |
| Temperature and humidity measurement, 27-1 measuring points | Temperature measurement with 27 temperature measuring points and 1 humidity measuring point in center of chamber with a pair of values specified by the user, including certificate  | 03, 04,<br>05 | DL30-0327 |
| Temperature and humidity measurement, 9-1 measuring points  | Temperature measurement with 9 temperature measuring points and 1 humidity measuring point in center of chamber with a pair of values specified by the user, including certificate   | 03, 04,<br>05 | DL30-0309 |
| 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            | DL10-0300 |
| Unit instructions   | Instruction regarding operating principle and basic functions of the unit, operation of the control electronics including programming  | 05            | DL10-0700 |

\* 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 Sensor calibration is performed in an accredited calibration laboratory.
- 04 Calibration is performed according to the BINDER factory standard.
- 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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