# Model MKF 1020 | Dynamic climate chambers for rapid temperature changes with humidity control

**A BINDER MKF series environmental simulation chamber is ideally suited for any cold and heat testing based on current temperature and climate testing methods according to DIN and IEC standards. The comprehensive standard equipment for this environmental simulation chamber ensures ease of operation.**

## 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 1020



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## IMPORTANT FEATURES

- Temperature range: -40 °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
- Heated viewing window with LED interior lighting
- Humidity regulation with capacitative humidity sensor and vapor humidification
- BINDER Multi Management Software APT-COM™ 4 Basic Edition
- Troubleshooting system with visual and audible alarms
- Intuitive touchscreen controller with time-segment and real-time programming
- Internal data logger, measured values can be read out in open format via USB
- 2 access ports with silicone plugs: 80 mm, left and right
- 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 height
- Inner chamber made of stainless steel
- CFC-free refrigerant R-452A
- Cooling with compressor cooling unit

## OPTIONAL EQUIPMENT

- APT-COM Multi Management Software – for managing, recording, and documenting unit parameters
- Racks – option of stainless steel racks, depending on test requirements
- Systems for water treatment and compressed air supply
- 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 MKF 1020** | | | | | |
| 991 | 400 V 3~/N/PE 50 Hz -32,0 A | CEE 32 / 6 H plug 5-pin | Standard | MKF1020-400V | 9020-0409 |
| | 480 V 3~ 60 Hz -32,0 A | CEE 32 / 6 H plug 5-pin | with voltage and frequency converter | MKF1020-480V-C | 9020-0448 |

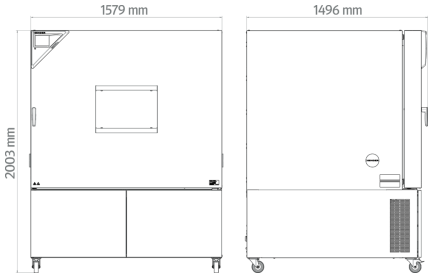
## TECHNICAL DATA

| Data | | |
|---|---|---|
| Article Number | 9020-0409 | 9020-0448 |
| Designation | MKF1020-400V | MKF1020-480V-C |
| Option model | Standard | with voltage and frequency converter |
| **Performance Data Temperature** | | |
| Temperature range | -40...180 °C | -40...180 °C |
| Temperature uniformity dependent on set value | 0.1...1.8 ± K | 0.1...1.8 ± K |
| Temperature fluctuation dependent on set value | 0.1...0.5 ± K | 0.1...0.5 ± 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 | 5.0 K/min | 5.0 K/min |
| Cooling down time from 180°C to -40°C | 120 min | 120 min |
| **Performance Data Climate** | | |
| Humidity range | 10...98 % RH | 10...98 % RH |
| Temperature fluctuation with humidity dependent on set value | 0.1...1.5 ± K | 0.1...1.5 ± K |
| Humidity fluctuation with humidity dependent on set value | 2,5 ± % r.F. | 2,5 ± % r.F. |
| Max. heat compensation at 25°C and 90% RH | 1,500 W | 1,500 W |
| **Electrical data** | | |
| Rated Voltage | 400 V | 480 V |
| Power frequency | 50 Hz | 60 Hz |
| Nominal power | 12,5 kW | 12,5 kW |
| Unit fuse | 32,0 A | 32,0 A |
| Phase (Nominal voltage) | 3~/N/PE | 3~ |
| **Dimensions and weights** | | |
| Interior volume | 991 L | 991 L |
| Net weight of the unit (empty) | 636 kg | 636 kg |
| Load per rack | 40 kg | 40 kg |
| Permitted load | 200 kg | 200 kg |
| Wall clearance back | 300 mm | 300 mm |

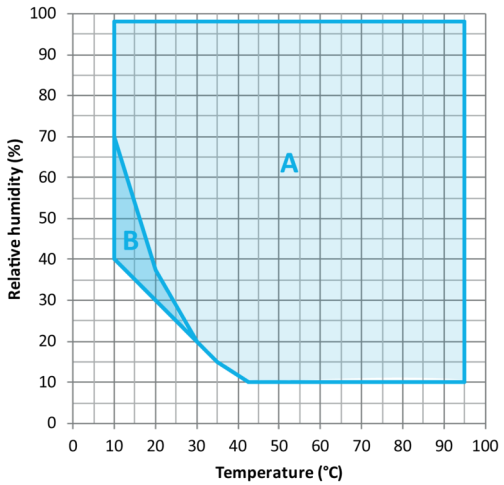
| | | |
|---|---|---|
| Wall clearance sidewise | 200 mm | 200 mm |
| **Housing dimensions not incl. fittings and connections** | | |
| Width net | 1,580 mm | 1,580 mm |
| Height net | 2,005 mm | 2,005 mm |
| Depth net | 1,480 mm | 1,480 mm |
| **Internal Dimensions** | | |
| Interior width | 1,200 mm | 1,200 mm |
| Interior height | 1,020 mm | 1,020 mm |
| Interior depth | 810 mm | 810 mm |
| Unit doors | 1 | 1 |
| **Environment-specific data** | | |
| Sound-pressure level | 69 dB(A) | 69 dB(A) |
| Energy consumption at 25°C and 60% RH | 2,200 Wh/h | 2,200 Wh/h |
| **Fixtures** | | |
| Number of shelves (std./max.) | 1/11 | 1/11 |

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]

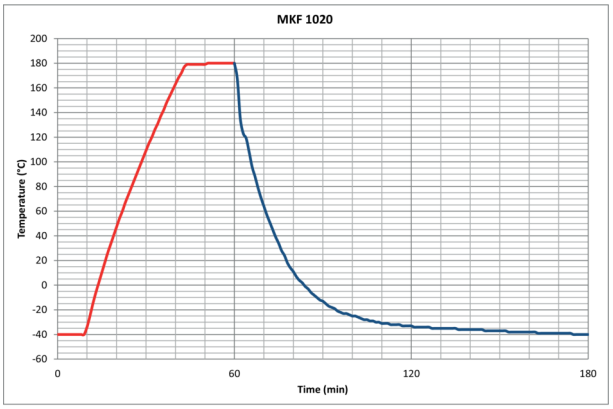


## DIAGRAMS

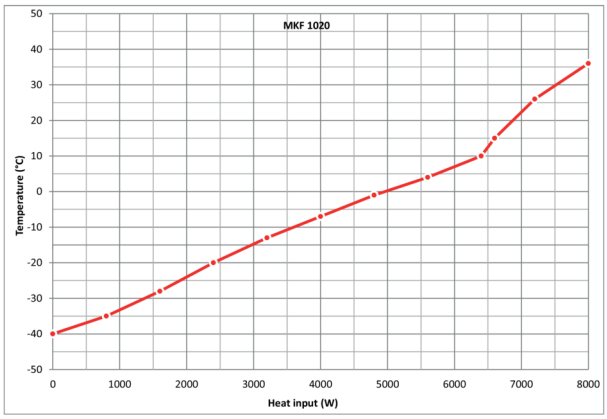



A: Standard Climate range
B: Time-limited operation (max. 24 hours)

Climate chart




Heating up rate / Cooling down rate




Heat compensation chart

## OPTIONS

| Designation | Description | MKF 1020 | * | Art.-No. |
|---|---|---|---|---|
| Access port with silicone plug | left | | | |
| | 30 mm | • | 01 | 8012-1323 |
| | 50 mm | • | 01 | 8012-1329 |
| | 80 mm | • | 01 | 8012-1335 |
| | 100 mm | • | 01 | 8012-1543 |
| | 125 mm | • | 01 | 8012-1352 |
| | right | | | |
| | 30 mm | • | 01 | 8012-1320 |

| Designation | Description | MKF 1020 | * | Art.-No. |
|---|---|---|---|---|
| | 50 mm | • | 01 | 8012-1326 |
| | 80 mm | • | 01 | 8012-1332 |
| | 100 mm | • | 01 | 8012-1540 |
| | 125 mm | • | 01 | 8012-1349 |
| | top | | | |
| | 80 mm | • | 01 | 8012-1537 |
| | 100 mm | • | 01 | 8012-1531 |
| | 125 mm | • | 01 | 8012-1534 |
| Analog output 4-20 mA | for temperature and humidity values (output not adjustable) | • | - | 8012-1085 |
| Calibration certificate, expanded | for temperature and humidity; for extending the measurement in center of chamber to include another test value | • | - | 8012-1194 |
| Calibration certificate, temperature | temperature measurement incl. certificate, 9 measuring points at specified temperature | • | - | 8012-1568 |
| | temperature measurement incl. certificate, 15- 18 measuring points at specified temperature | • | - | 8012-1589 |
| | temperature measurement incl. certificate and 27 measuring points at specified temperature | • | - | 8012-1609 |
| Calibration certificate, temperature and humidity | Measurement in center of chamber at 25°C / 60% RH or at specified test values | • | - | 8012-1188 |
| | 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 | • | - | 8012-1615 |
| Compressed air connection | for the connection to an existing pressurized air network | • | - | 8012-1798 |
| Door lock | lockable door handle | • | - | 8012-1862 |
| Notch-type access port | notch-type access port in door, 100 x 35 mm | • | - | 8012-1859 |
| Pt 100 temperature sensor | additional flexible Pt 100, interior, for displaying the temperature on the unit display | • | - | 8012-1094 |
| RS 485 interface, 2-wire | Additional serial interface can be used parallel to Ethernet, for Multi Management Software APT-COM™ | • | - | 8012-1769 |
| Temperature safety device class 2 | with visual alarm (DIN 12880) | • | - | 8012-1864 |
| Water circuit | allows condensed water to be reused | • | - | 8012-1512 |
| Water cooling | for reduced heat loss to ambient air | • | - | 8012-2445 |

## ACCESSORIES

| Designation | Description | MKF 1020 | * | 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 |
| 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/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 | | | |
| | Digital in PDF format | • | - | 7057-0006 |
| | Hard copy inside folder | • | - | 7007-0006 |
| | 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 | | | |
| | Digital in PDF format | • | - | 7057-0002 |
| | Hard copy inside folder | • | - | 7007-0002 |
| Rack | stainless steel | • | - | 8012-2124 |
| Rack, reinforced | stainless steel | • | - | 8012-2105 |
| Rack accessories | fasteners (1 set of 4) for additional security of racks | • | - | 8012-2280 |
| RS 485 / RS 422 interface converter | RS 422 cable set and RS 485 / RS 422 interface converter for connection to 10-way plug distributor | | | |
| | 115 V option model | • | - | 8012-0599 |
| | 230 V option model | • | - | 8012-0589 |
| Shelf, perforated | Stainless steel | • | - | 8012-2261 |

## SERVICES

| Designation | Description | * | Art.-No. |
|---|---|---|---|
| **Calibration services** | | | |
| 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 | 05 | DL30-0302 |

| Designation | Description | * | Art.-No. |
|---|---|---|---|
| | Temperature and humidity calibration with 1 measuring point in center of chamber with 1 specified pair of values, including certificate | 05 | DL30-0330 |
| 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 | 05 | DL30-0309 |
| 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 | 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 | 05 | DL30-0327 |
| 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 | 05 | DL30-0427 |
| **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 | DL10-0180 |
| Unit instructions | Instruction regarding operating principle and basic functions of the unit, operation of the control electronics including programming | 05 | DL10-0560 |
| **Maintenance contracts** | | | |
| 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 test temperature specified by the user in the center of the usable space, including certificate | 05 | DL20-0935 |
| 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 | DL20-0835 |
| **Maintenance services** | | | |
| 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 | DL20-0610 |
| **Validation services** | | | |
| Execution of IQ/OQ | Execution of IQ/OQ in accordance with qualification folder | 05 | DL42-0300 |
| 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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