

MKF 240 (E3) - Environmental simulation chamber for complex alternating climatic profiles

The MKF series is ideally suited for all tests in accordance with current temperature and climatic test standards based on DIN and IEC standards. The required temperature and humidity values can be attained rapidly and maintained accurately, even under extreme conditions. The unparalleled ease of operation as well as extensive standard features provide that 'little extra' in handling.



► Performance features and equipment:

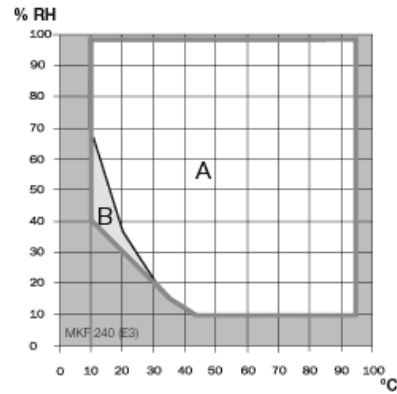
- Electronically controlled APT.line™ preheating chamber assuring temperature accuracy and reproducible results
- Temperature range without humidity -40 °C to 180 °C (-40 °F to 356 °F), with humidity 10 °C to 95 °C (50 °F to 203 °F)
- Humidity range 10 % RH to 98 % RH
- MCS controller with 25 storable programs of 100 sections each for a maximum of 500 program segments
- User friendly LCD screen
- Easy-to-read menu guide
- Integrated electronic chart recorder
- Variety of options for the graphic display of process parameters
- Real time clock
- Electronically controlled humidification and dehumidification system with capacitive humidity sensor and pressurized steam humidification
- Integrated water storage tank
- Heated viewing window with interior illumination
- Programmable condensation protection for test material
- Adjustable ramp functions via program editor
- Environmental friendly refrigerant R 404a
- 230 V power socket on the right-side operating panel
- Temperature safety device, Class 2 (DIN 12880)
- 4 potential-free relay outputs that can be activated via MCS controller
- Ethernet interface for use with optional GMP/GLP and FDA guideline 21 CFR Part 11 compliant APT-COM™ DataControlSystem software
- 1 access port Ø 50 mm (1.97 inch), left side
- 1 stainless steel rack included
- 4 castors (with 2 brakes)
- BINDER test certificate



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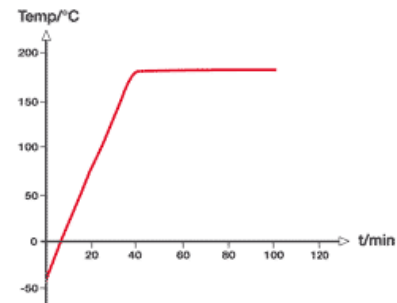
Exterior dimensions	
Width (mm/inch)	1130 / 44.5
Height (incl. castors) (mm/inch)	1713 / 67.4
Depth plus 54 mm door handle (mm/inch)	946 / 37.2
Wall clearance rear (mm/inch)	100 / 3.9
Wall clearance side (mm/inch)	160 / 6.3
Viewing window width (mm/inch)	508 / 20.0
Viewing window height (mm/inch)	300 / 11.8
Number of doors	1
Interior dimensions	
Width (mm/inch)	735 / 28.9
Height (mm/inch)	700 / 27.6
Depth (mm/inch)	443 / 17.4
Interior volume (l/cu.ft.)	228 / 8.0
Racks (number standard/max.)	2 / 6
Load per rack (kg/lbs.)	30 / 66
Permitted total load (kg/lbs.)	70 / 155
Weight (empty) (kg/lbs.)	360 / 773
Temperature data (without humidity)	
Temperature range (°C / °F)	-40 - 180 / -40 - 356
Temperature fluctuation without humidity (± °C)2)	0.1 - 0.5
Temperature variation without humidity (± °C)2)	0.5 - 2.0
Average heating up time acc. to IEC 60068-3-5 (K/min.) 1)	5
Average cooling down time acc. to IEC 60068-3-5 (K/min.) 1)	5
Heating up time from -40 °C to 180 °C / -40°F to 356°F (min.) 3)	45
Cooling down time from 180 °C to -40 °C / 356°F to -40°F (minutes) 3)	98
Max. heat compensation (W) 5)	2800
Climatic data	
Temperature range (°C/°F)	10 - 95 / 50 - 203
Humidity range (% RH)	10 - 98
Humidity fluctuation (± % RH) 2), 4)	0.5 - 3.0
Dew point temperature range (°C)	5 - 94
Max. heat compensation (W) 5)	300
Electrical data	
Housing protection acc. to EN 60529	IP 20
Nominal voltage (±10 %) 50 / 60 Hz (V)	400 3N~
Nominal power (kW)	5.1

Temperature-humidity chart

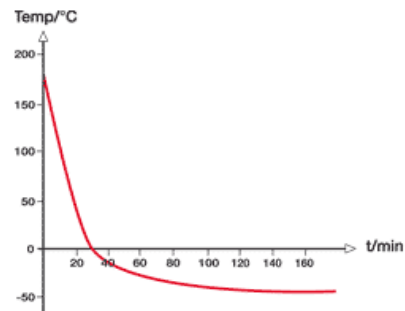


A: Standard Climate range / B: Discontinuous range

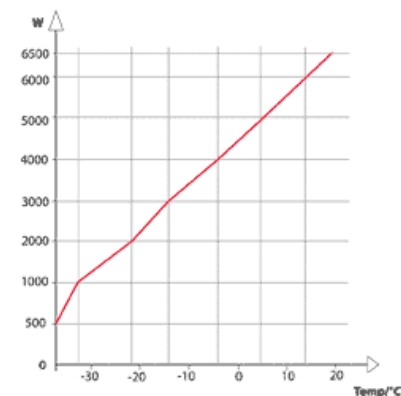
Heating - up rate



Cooling - down rate



Heat Compensation





1. Tap water [municipal] with a max. hardness of 8.0° dH = 1.4285 mmol/l.
(The hardness can be established from the water analysis of your water supplier.)
2. We recommend the BINDER Pure Aqua Service for longer maintenance intervals, regardless of water quality.
3. Demineralized or deionized water available at the customers location.

- 1) Lower values are valid at an ambient temperature of max. 25 °C (77 °F)
- 2) Depending on the set-point
- 3) to 98% of the set value
- 4) Upon door opening > 1.5 % RH, recovery time approx. 20 min.
- 5) Within a range from 25 °C (77 °F) to 95 °C (203 °F) and < 90% RH

All technical data is specified for units with standard equipment at an ambient temperature of 25 °C and a voltage fluctuation of ±10 %. The temperature data is determined in accordance to factory standard following DIN 12880 respecting 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 alter technical specifications at all times.



▶ Notch-type access port in door

Provide easy connection of cables to test specimens and facilitate loading and unloading of the chamber. Doors have access ports measuring 100 x 35 mm (4 x 1.4 inches), which can be sealed with the included silicon plugs.



▶ Reinforced rack

To ensure safe and stable storage of heavy test specimens. Stainless steel, with 1 set of securing elements (4 pieces), max. load 70 kg (154 lbs.)

▶ Specimen temperature measurement

Additional flexible PT 100 temperature sensor for precise temperature measurement of the specimen with digital temperature display. Recording of measured data possible via Ethernet or RS 422 interface.



▶ External fresh water supply set

External fresh water supply set consists of fresh and waste water canister, cabling and pump.



▶ BINDER Pure Aqua Service

Our efficient, flexible water purification system delivers top water quality and extends the maintenance period. Special feature: Our system uses a disposable purification cartridge and also has a water quality indicator.


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(E3)**

Access port with silicone plugs, 30 mm (1.18 inch), 50 mm (1.97 inch), 100 mm (3.94 inch), 125 mm (4.72 inch)	○
Analog temperature output, 4 - 20 mA, with 6 - pin DIN socket (output not adjustable)	○
Securing elements for additional fastening of racks (1 set of 4)	○
Lockable door	○
Additional measuring channel for digital display of specimen temperature, with flexible PT 100 temperature sensor. Measuring data recorded through device interface	○
Temperature safety device for preventing too low and high temperatures, class 2	○
RS 422 interface	○
Temperature measurement acc. to DIN 12880-2 and 9 point humidity measurement/factory standard with measuring protocol and certificate at 25 °C / 60 % RH or at specified values	○
Calibration certificate for temperature and humidity. Measurement in the center at 25 °C / 60 % RH or at specified values	○
Extension for calibration certificate for temperature and humidity. Measurement at each additional measuring point or temperature	○
External fresh supply set consists of fresh and waste water canister, cabling and pump	○
BINDER PURE AQUA SERVICE consisting of disposable cartridge, hose set and measuring unit	○
Rack, stainless steel	○
Reinforced rack, stainless steel, with 1 set of securing elements (4 pieces) (max. load 70 kg / 154 lbs.)	○
Shelf, perforated, stainless steel	○
Notch-type access port in door, 100 x 35 mm (4 x 1.4 inch)	○