

## MK 240 (E3) - Environmental test chamber for complex temperature profiles

This series covers the classic temperature range between -40 °C (-40 °F) and 180 °C (356 °F) for heat and refrigeration tests – with the added benefit of natural simulation by means of preheating chamber technology and the Horizontal Air Flow Design. Unique technology, developed by BINDER. With these features, the MK series thus meets the highest precision and performance requirements for cyclic temperature tests and presents an intelligent alternative to expensive individual solutions.



### ► Performance features and equipment:

- Electronically controlled APT.line™ preheating chamber assuring temperature accuracy and reproducible results
- Temperature range from -40 °C to 180 °C (-40 °F to 356 °F) (at an ambient temperature of 25 °C / 77 °F)
- 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
- Programmable condensation protection for test material
- 230 V power socket on the right-side operating panel
- Adjustable ramp function via program editor
- Access port Ø 50 mm (1.97 inch), left side
- Heated viewing window with LED interior lighting
- Temperature safety device class 2 (DIN 12880) with visual and acoustic temperature alarm
- Environmental friendly refrigerant R 404a
- Ethernet interface for GLP/GMP and FDA guideline 21 CFR Part 11 compliant APT-COM™ DataControlSystem software
- 1 stainless steel rack included
- BINDER test certificate



**MK 240 (E3)**

<b>Exterior dimensions</b>	
Width (mm/inch)	1130 / 44.5
Height (incl. castors) (mm/inch)	1713 / 67.4
Depth, excl. 55 mm (2.2 inch) for door handle (mm/inch)	946 / 37.2
Wall clearance rear (mm/inch)	100 / 3.9
Wall clearance (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

<b>Interior dimensions</b>	
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.)	1 / 6
Load per rack (kg/lbs.)	30 / 66
Permitted total load (kg/lbs.)	70 / 155
Weight (empty) (kg/lbs.)	360 / 795

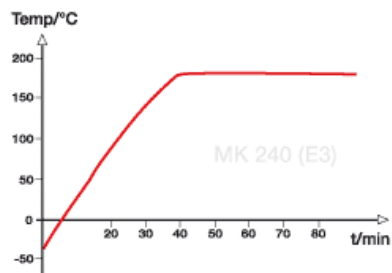
<b>Temperature data 1)</b>	
Temperature range (°C/°F)	-40 - 180 / -40 - 356
Temperature variation	
-40 °C (-40 °F) (± °C)	0.9
-10 °C (14 °F) (± °C)	0.8
0 °C (32 °F) (± °C)	0.7
20 °C (68 °F) (± °C)	1
70 °C (158 °F) (± °C)	0.9
150 °C (302 °F) (± °C)	1
Temperature fluctuation (± °C) 2)	0.1 - 0.5
Recovery time after 30 sec door open	
at -10 °C (14 °F) (Min.)	8
at 70 °C (158 °F) (Min.)	2
at 150 °C (302 °F) (Min.)	7
Mean heating rate acc. IEC 60068-3-5 (K/min.)	5
Mean cooling rate acc. IEC 60068-3-5 (K/min.)	5
Heating up time from -40 °C up to 180 °C (Min.)3)	45
Cooling down time from 180 °C up to -40 °C (Min.)3)	98

<b>Electrical data</b>	
Housing protection acc. to EN 50529	IP 20
Nominal voltage (±10 %) 50 / 60 Hz (V)	400 V / 3N~
Nominal power (kW)	4.2
Energy consumption 4) at 20 °C (68 °F) (W)	1750
Noise level (ca. dB(A))	62

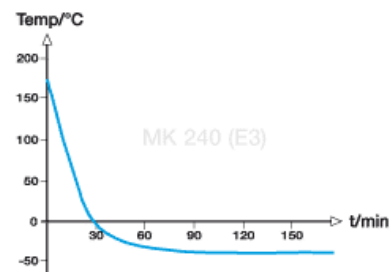
- 1) Lower value is valid at an ambient temperature of max. 25 °C (77 °F)
- 2) Depending on the set-point
- 3) to 98% of the set value
- 4) These values can be used for dimensioning air condition systems

All technical data are specified for units with standard equipment at an ambient temperature of 25 °C (77 °F) and a voltage fluctuation of ±10 %. The temperature data are 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.

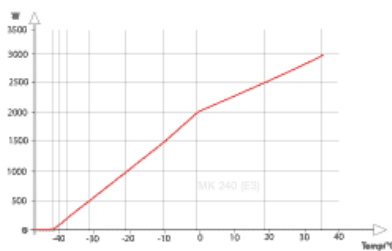
## Heating up rate

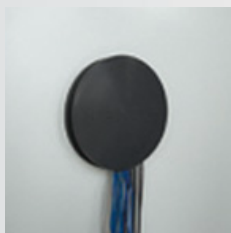


## Cooling down rate



## Heat compensation





▶ Access port

With silicon plugs for inserting external measuring devices into the chamber. Access ports with 30, 50, 80, 100 and 125 mm (1.2, 2, 3.1, 4 and 4.9 inches) diameter.



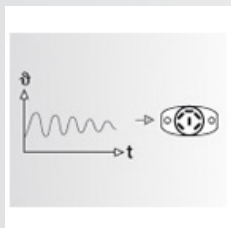
▶ Notch-type access port in door

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.



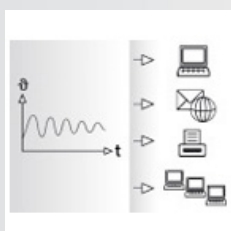
▶ Reinforced rack

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.)



▶ Analog output

Analog temperature output, 4 - 20 mA, with 6 - pin DIN socket (output not adjustable).



▶ APT-COM™ DataControlSystem

Software for easy control, programming, and documentation.

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Access port with silicone plugs, 30 mm (1.18 inch), 50 mm (1.97 inch), 80 mm (3.14 inch), 100 mm (3.94 inch), 125 mm (4.72 inch)	<input type="radio"/>
Analog temperature output, 4 - 20 mA, with 6 - pin DIN socket (output not adjustable)	<input type="radio"/>
Securing elements for additional fastening of racks (1 set of 4)	<input type="radio"/>
Lockable door	<input type="radio"/>
Factory calibration certificate. Measurement in center of chamber at 150 °C (302 °F) or at specified testing temperature	<input type="radio"/>
Extension to factory calibration certificate. Each additional measurement at an additional measuring point or temperature	<input type="radio"/>
Additional measuring channel for digital display of specimen temperature, with flexible PT 100 temperature sensor. Measuring data recorded through device interface	<input type="radio"/>
Temperature safety device for preventing too low and high temperatures, class 2	<input type="radio"/>
Zero - voltage relay outputs accessible via 6 - pin DIN socket. Additional module for controlling 3 relay outputs via 3 of the programmable controller's controller contacts	<input type="radio"/>
Rack, stainless steel	<input type="radio"/>
Reinforced rack, stainless steel, with 1 set of securing elements (4 pieces) (max. load 70 kg / 154 lbs.)	<input type="radio"/>
Shelf, perforated, stainless steel	<input type="radio"/>
Notch - type access port in door, 100 x 35 mm (4 x 1.4 inch)	<input type="radio"/>