

## MK 53 (E2.1) - 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:

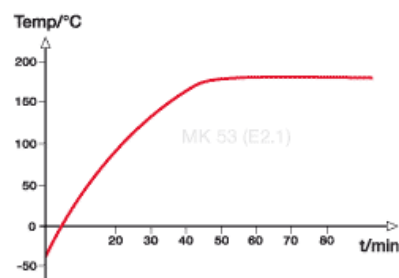
- Electronically controlled APT.line™ preheating chamber assuring temperature accuracy and reproducible results
- Temperature range -40 °C (-40 °F) up to 180 °C (356 °F) at ambient temperature 25 °C (77 °F)
- MCS controller with 25 storable programs of 100 sections each for a maximum of 500 program segments
  - 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
- Powerful adjustable fan
- Access port, Ø 80 mm (3.1 inch), top
- Heated viewing window with interior LED lighting
- Environmental friendly refrigerant R 404a
- Temperature safety device class 2 (DIN 12880) with visual and audible temperature alarm
- Printer- and communication interface RS 422 interface for use with optional GMP/GLP and FDA guideline 21 CFR Part 11 compliant APT-COM™ DataControlSystem software
- 1 stainless steel shelf included
- BINDER test certificate



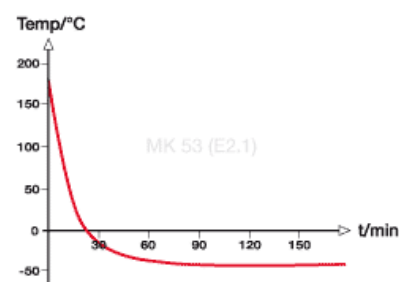
**MK 53 (E2.1)**

<b>Exterior dimensions</b>	
Width (mm/inch)	740 / 29.1
Height (incl. feet/castors) (mm/inch)	1242 / 48.9
Depth, excl. 55 mm (2.2 inch) for door handle (mm/inch)	794 / 31.3
Wall clearance rear (mm/inch)	100 / 3.9
Wall clearance side (mm/inch)	160 / 6.3
Viewing window width (mm/inch)	280 / 11.0
Viewing window height (mm/inch)	280 / 11.0
Number of doors	1
<b>Interior dimensions</b>	
Width (mm/inch)	402 / 15.8
Height (mm/inch)	402 / 15.8
Depth (mm/inch)	330 / 13.0
Interior volume (l/cu.ft.)	53 / 1.9
Racks (number standard/max.)	1 / 5
Load per rack (kg/lbs.)	15 / 33
Permitted total load (kg/lbs.)	40 / 88
Weight (empty) (kg/lbs.)	150 / 331
<b>Temperature data</b>	
Temperature range (°C/°F)	-40 - 180 / -40 - 356
Temperature variation	
-40 °C (-40 °F) (± °C)	0.8
-10 °C (14 °F) (± °C)	0.7
0 °C (32 °F) (± °C)	0.4
20 °C (68 °F) (± °C)	0.8
70 °C (158 °F) (± °C)	1.2
150 °C (302 °F) (± °C)	2
Temperature fluctuation (± °C) 2)	0.3
Recovery time after 30 sec door open	
at -10 °C (14 °F) (Min.)	5
at 70 °C (158 °F) (Min.)	1
at 150 °C (302 °F) (Min.)	5
Mean heating-up rate acc. to factory standard -40°C to 180°C (K/min.)	4.6
Mean cooling rate acc. factory standard 180°C to -40°C (K/min.)	4.1
Heating up time from -40 °C up to 180 °C (Min.)***	47
Cooling down time from 180 °C up to -40 °C (Min.)***	93
Heat Compensation, max. (W)	500
<b>Electrical data</b>	
Housing protection acc. to EN 50529	IP 20
Nominal voltage (±10 %) 50 Hz (V)	230 V 1N~
Nominal power (kW)	2.6
Energy consumption <sup>1)</sup> at 20 °C (kW)	1.02
Noise level (ca. dB(A))	59

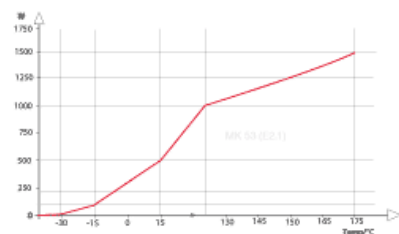
## Heating up rate



## Cooling down rate



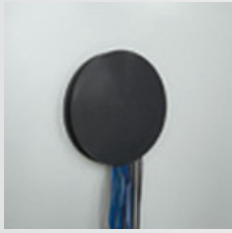
## Heat compensation



1) These energy consumption values can be used upon calculation of air conditioning systems

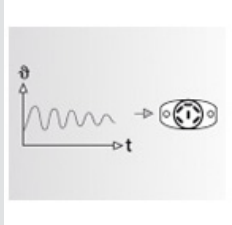
2) to 98% of the set value

All technical specification are specified for units with standard equipment at an ambient temperature of 25 °C (77 °F) and a voltage fluctuation of ±10 %. All data are determined at 100 % fan speed. 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 values have been specified at a fan speed of 100 %. All indications are average values, typical for units produced in series. We reserve the right to alter technical specifications at all times.



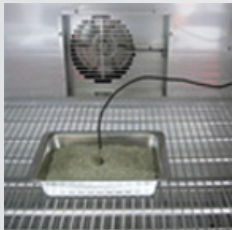
▶ Access port

With silicon plugs for inserting external measuring devices into the chamber. Access port with 80 mm (3.1 inch) diameter.



▶ Analog output

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



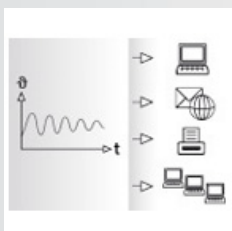
▶ Specimen temperature measurement

Additional measuring channel for digital display of specimen temperature, with flexible PT 100 temperature sensor. Measuring data recorded through device interface.



▶ Calibration certificates

Measurement in the center at specified values. Additional measuring points or test values according to your specification.



▶ APT-COM™ DataControlSystem

Software for easy control, programming, and documentation.

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Access port with silicone plugs, 80 mm (3.14 inch)	<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"/>
Analog temperature output, 4 - 20 mA, with 6 - pin DIN socket (output not adjustable)	<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"/>
Rack, stainless steel	<input type="radio"/>
Shelf, perforated, stainless steel	<input type="radio"/>
Securing elements for additional fastening of racks (1 set of 4)	<input type="radio"/>
Lockable door	<input type="radio"/>