

MK series

Environmental test chambers 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.



Leistungsmerkmale/Ausstattung:

- Electronically controlled APT.line™ preheating chamber technology (MK 240)
- 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
- Heated viewing window with interior lighting
- Variable adjustable high-performance fan (MK 720)
- Programmable condensation protection for test material
- Adjustable ramp function via program editor
- Independent adjustable temperature safety device, Class 2 (DIN 12880), with optical and acoustic temperature alarm
- Environmentally friendly refrigerant R 404a
- RS 422 interface for communication software APT-COM™ DataControlSystem
- Access port, Ø 80 mm (3.1 inch), top (MK 53), right side (MK 240), and right and left sides (MK 720)
- 2 stainless steel shelves
- BINDER test certificate

	MK 53	MK 240	MK 720
Exterior dimensions			
Width (mm/inch)	740 / 29.1	1130 / 44.5	1381 / 54.4
Height (incl. feet/castors) (mm/inch)	1242 / 48.9	1713 / 67.4	1997 / 78.6
Depth, excl. 55 mm (2.2 inch) for door handle (mm/inch)	794 / 31.3	946 / 37.2	988 / 38.9
Wall clearance rear (mm/inch)	100 / 3.9	100 / 3.9	100 / 3.9
Wall clearance (mm/inch)	160 / 6.3	160 / 6.3	160 / 6.3
Viewing window width (mm/inch)	280 / 11.0	508 / 20.0	360 / 14.2
Viewing window height (mm/inch)	280 / 11.0	300 / 11.8	760 / 29.9
Number of doors	1	1	1
Interior dimensions			
Width (mm/inch)	402 / 15.8	735 / 28.9	1000 / 39.4
Height (mm/inch)	402 / 15.8	700 / 27.6	1168 / 46.0
Depth (mm/inch)	330 / 13.0	443 / 17.4	600 / 23.6
Interior volume (l/cu.ft.)	53 / 1.9	228 / 8.0	720 / 25.1
Racks (number standard/max.)	2 / 5	2 / 6	2 / 14
Load per rack (kg/lbs.)	15 / 33	30 / 66	40 / 88
Permitted total load (kg/lbs.)	40 / 88	70 / 155	120 / 265
Weight (empty) (kg/lbs.)	150 / 331	340 / 772	360 / 795
Temperature data			
Temperature range (°C/°F)	-40 to 180 / -40 to 356	-40 to 180 / -40 to 356	-40 to 180 / -40 to 356
Temperature variation			
-40 °C (-40 °F) (± °C)	0.8	0.9	1
-10 °C (14 °F) (± °C)	0.7	0.8	1
0 °C (32 °F) (± °C)	0.4	0.7	1
20 °C (68 °F) (± °C)	0.8	1	1.9
70 °C (158 °F) (± °C)	1.2	0.9	1
150 °C (302 °F) (± °C)	2	1	2.5
Temperature fluctuation (± °C)2)	0.3	0.1 - 0.5	0.3
Recovery time after 30 sec door open			
at -10 °C (14 °F) (Min.)	5	8	11
at 70 °C (158 °F) (Min.)	1	2	3
at 150 °C (302 °F) (Min.)	5	7	9
Mean heating rate acc. IEC 60068-3-5 (K/min.)	5.2	5	5
Mean cooling rate acc. IEC 60068-3-5 (K/min.)	2.4	5	2.1
Heating up time from -40 °C up to 180 °C (Min.)***	47	45	85
Cooling down time from 180 °C up to -40 °C (Min.)***	93	98	180
Electrical data			
Housing protection acc. to EN 50529	IP 20	IP 20	IP 20
Nominal voltage (±10 %) 50/60 Hz (V)	230 V / 1N~	400 V / 3N~	400 V / 3N~
Nominal power (W)	2600	4200	6000
Energy consumption 1) at 20 °C (68 °F) (W)	1020	1750	2100
Noise level (ca. dB(A))	59	62	65
Individually tested in compliance with VDE 0113	X	X	X

- 1) These energy consumption values can be used upon calculation of air conditioning systems
- 2) to 98% of the set value

All technical specifications 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**

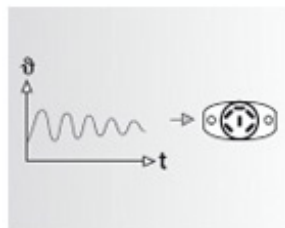
With silicon plugs for inserting external measuring devices into the chamber. Access ports with 30, 50, 80, 100 and 125 mm (1.2, 2, 3.1, 4 and 4.9 inches) diameter.

**Notch-type access port in door**

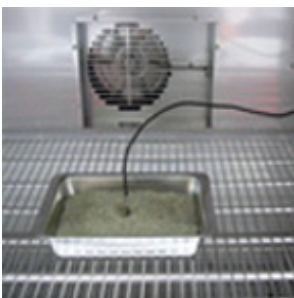
Provide easy connection of cables to test specimens and facilitate loading and unloading of the chamber. Doors have access ports measuring 100 x 35 mm (4 x 1.4 inches), which can be sealed with the included silicon plugs.

**Reinforced shelf**

To ensure safe and stable storage of heavy test specimens.

**Analogue output**

Analogue output for temperature or temperature and humidity 4 to 20 mA with DIN bushing 6 poles (Output not adjustable).

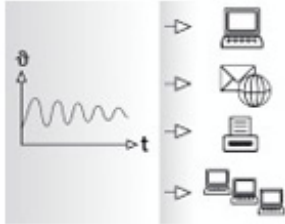
**Specimen temperature measurement**

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.



Calibration certificates

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



APT-COM™ DataControlSystem STANDARD Edition

Software for easy control, programming, and documentation.

	MK 53	MK 240	MK 720
Access port with silicone plug	O	O	O
Notch-type access port in the door, 100 x 35 mm (3.9 x 1.4 inch)	O	O	O
Vertically adjustable castors	O	O	O
Safety kit for water connection. Pre-mounted assembly of reflux prevention device and horse burst reflection device.	-	O	O
Shelf, stainless steel	O	O	O
Shelf, perforated, stainless steel	O	O	O
Reinforced shelf, stainless steel, with 1 set of shelf securings (4 pieces) (Max. load 70 kg / 154 lbs.)	-	O	O
One set of shelf secures (4 pieces) for additional fixation of the perforated shelves	O	O	O
Locking of controller keyboard	O	O	O
Lockable door	O	O	O
Safety device for over and under temperature (DIN 12880)	O	O*	O*
Analog outputs 4 to 20 mA for temp. 1) and humidity 2) (actual and set values) with two DIN bushing 6 poles.	O ²	O ²	O ²
Additional measuring channel for specimen temperature display with flexible PT 100 sensor. Documentation of measuring data through interface RS 422	O	O	O
Temperature measurement acc. to DIN 12880-2 and 9 point humidity measurement/factory standard with measuring protocol and certificate at 25 °C/60% r.H. 1) or at 150 °C 2) or at specified values	O	O	O
Qualification folder. Supporting documents for the validation at customer's site, consisting of: IQ/OQ check list, unit wiring and refrigeration circuit diagrams, QM certificate acc. to ISO 9001, maintenance recommendation	O	O	O
Calibration certificate for temperature and humidity.	O ²	O ²	O ²
Extension for calibration certificate (additional values)	O	O	O

O Option - not available

Technical specifications subject to change

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