



# Environmental simulation chambers

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MK | MKF | MKT | MKFT



## Perfectly matched to testing standards. Optimally designed for reliability.

We were the first to realize that climate chambers nowadays have to do so much more than just testing. They are part of a process in which absolute reliability is paramount. Climate chambers from BINDER for industrial use are perfectly matched to the standards or individual requirements of quality assurance and development.

MK | MKF | MKT | MKFT series

### The basis for reliable materials testing

Whether EN, IEC, MIL standards or an individual specification – with a BINDER environmental simulation chamber, you also have complex alternating climate profiles safely under control. The vapor pressure humidification system and our patented APT.line™ airflow design ensure perfect test conditions. This guarantees exact measurements over the entire temperature range of  $-70\text{ °C}$  und  $+180\text{ °C}$  at a temperature dynamic of 5K per minute. The ideal basis for reliable materials testing and the success of your work.



Automotive industry



Electronics testing



Air and space travel



Materials testing

# MK | MKF | MKT | MKFT series

## A number of advantages standard:



**Reliable test results**



**Convenient work environment**



**Absolute control**



**Maximum flexibility**



- ▶ APT.line™ for homogeneous climate conditions even under a full load
- ▶ Same test conditions throughout the chamber interior
- ▶ Fast response times thanks to vapor pressure humidification
- ▶ Drift-free, capacitive humidity sensor for accurate measured values

- ▶ Large access area for convenient assembly
- ▶ Convenient operation thanks to controls accessible from the front
- ▶ Minimal maintenance requirements thanks to capacitive humidity sensor
- ▶ Optimum use of space

- ▶ Continuous logging thanks to years of proven validation and documentation materials
- ▶ Standard viewing window allows visual control without interrupting the test procedure

- ▶ Rugged chassis with rollers from 115 l
- ▶ Water supply independent of location
- ▶ Sewage pump for discharges up to 1 m in height
- ▶ Generous standard equipment



## MK series— for cyclic temperature testing

The smart alternative to expensive individual solutions for cyclic temperature testing: The MK series masters all heating and cooling testing between  $-40\text{ }^{\circ}\text{C}$  and  $180\text{ }^{\circ}\text{C}$ . It distinguishes itself through precision and performance. The APT.line™ pre-heating chamber technology ensures natural simulation – and thus reliable test results.

### ► STANDARD EQUIPMENT

- Electronically controlled APT.line™ preheating chamber technology
- 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
- Programmable condensation protection for test material
- 230 V power socket on the right-side operating panel (except MK 53)
- Adjustable ramp function via program editor
- Access port  $\varnothing$  80 mm top (MK 53),  $\varnothing$  50 mm, left side (MK 115, 240),
- 2 access ports  $\varnothing$  80 mm right and left side (MK 720)
- Temperature safety device class 2 (DIN 12880) with visual and acoustic temperature alarm
- Heated viewing window with LED interior lighting
- Ethernet or RS 422 interface for GLP/GMP and FDA guideline 21 CFR Part 11 compliant APT-COM™ DataControlSystem software
- 4 castors (2 with brakes)
- Stainless steel rack included
- BINDER test confirmation



### ► OPTIONS / ACCESSORIES



- **Notch-type access port in door** provides easy connection of measuring instruments to test specimens



- **Reinforced shelf** to ensure safe and stable storage of heavy test specimens



- **BINDER INDIVIDUAL** MK with manual access openings, which is convenient when working with test specimens without disturbing the climatic conditions



## MKF series – for complex alternating climate profiles

Ideally suited for all testing based on current temperature and climate testing standards: The MKF series meets the requirements based on EN, IEC, MIL standards and several tests derived from these standards. The required temperature and humidity values are quickly achieved and accurately maintained thanks to high dynamics. This guarantees exact measurement results at any time.

### ► STANDARD EQUIPMENT

- Electronically controlled APT.line™ preheating chamber technology
- 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
- Electronically controlled humidification and dehumidification system with capacitive humidity sensor and pressurized steam
- Integrated water storage tank
- Heated viewing window with interior illumination
- Programable condensation protection for test material
- Adjustable ramp functions via program editor
- 230 V power socket on the right-side operating panel
- Temperature safety device, Class 2 (DIN 12880) with visual and acoustic temperature alarm
- 4 potential-free relay outputs that can be activated via MCS controller
- Ethernet interface for use with APT-COM™ DataControlSystem software
- 1 access port Ø 50 mm , left side
- 4 castors (2 with brakes)
- Stainless steel rack include
- BINDER test confirmation



### ► OPTIONS / ACCESSORIES



- **Notch-type access port in door** provides easy connection of measuring instruments to test specimens



- **Various access ports with silicone plug** for introducing external measuring instruments into the chamber



- **BINDER PURE AQUA Service** Flexible water treatment system extends maintenance intervals



- **BINDER INDIVIDUAL** MKF with a larger viewing window

## MKT series – for complex temperature profiles

The specialists for extreme testing: The MKT meets all requirements for complex test cycles between  $-70\text{ }^{\circ}\text{C}$  and  $180\text{ }^{\circ}\text{C}$ . Their advantages include fast heating and cooling, as well as homogeneous airflow. The chamber interior offers perfect test conditions – even under a full load.

### ► STANDARD EQUIPMENT

- Electronically controlled APT.line™ preheating chamber technology
- 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
- Programmable condensation protection for test material
- 230 V power socket on the right-side operating panel (except MK 53)
- Adjustable ramp function via program editor
- Access port  $\varnothing 50\text{ mm}$ , left side
- Temperature safety device class 2 (DIN 12880) with visual and acoustic temperature alarm
- Heated viewing window with LED interior lighting
- Ethernet or RS 422 interface for GLP/GMP and FDA guideline 21 CFR Part 11 compliant APT-COM™ DataControlSystem software
- 4 castors (2 with brakes)
- Stainless steel rack included
- BINDER test confirmation



### ► OPTIONS / ACCESSORIES



- **Notch-type access port in door** provides easy connection of measuring instruments to test specimens



- **Reinforced shelf** to ensure safe and stable storage of heavy test specimens



- **BINDER INDIVIDUAL** MKT with various access ports for multiple instrument connection leads



## MKFT series – for low temperature alternating climate profiles

Dynamic alternating climate change between -70 °C and 180 °C/ 10% and 98% r.H. Large performance reserves and rapid cooling make the MKFT environmental simulation chamber the high-end product for complex standards-based climate tests such as PV 1200

### ► STANDARD EQUIPMENT

- Electronically controlled APT.line™ preheating chamber technology
- 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
- Electronically controlled humidification and dehumidification system with capacitive humidity sensor and pressurized steam
- Integrated water storage tank
- Heated viewing window with interior illumination
- Programmable condensation protection for test material
- Adjustable ramp functions via program editor
- 230 V power socket on the right-side operating panel
- Temperature safety device, Class 2 (DIN 12880) with visual and acoustic temperature alarm
- 4 potential-free relay outputs that can be activated via MCS controller
- Ethernet interface for use with APT-COM™ DataControlSystem software
- BINDER communication software APT-COM™ Basic Edition
- 1 access port Ø 50 mm , left side
- 4 castors (2 with brakes)
- Stainless steel rack included
- BINDER test confirmation



### ► OPTIONS / ACCESSORIES



- **BINDER PURE AQUA Service**  
Flexible water treatment system extends maintenance intervals



- **BINDER Data Logger kit**  
for independent recording of temperature and humidity data



- **BINDER INDIVIDUAL**  
MKFT with reinforced inner chamber and solidly mounted perforated shelves for very heavy test specimens

# Technical data at a glance

**NEW**



	MK 53	MK 115	MKF 115	MKT 115	MKFT 115	MK 240	MKF 240	MKT 240	MKFT 240	MK 720	MKF 720	MKT 720
<b>Exterior dimensions (mm)</b>												
Width	745	1000	1000	1000	1000	1135	1135	1135	1135	1615	1615	1615
Height (incl. feet/castors)	1245	1725	1725	1725	1725	1725	1725	1940	1940	2005	2005	2005
Depth (excl. 50 mm for door handle)	795	915	915	915	915	1000	1000	1000	1000	1230	1230	1230
<b>Interior dimensions (mm)</b>												
Width	402	600	600	600	600	735	735	735	735	1200	1200	1200
Height	402	480	480	480	480	700	700	700	700	1020	1020	1020
Depth	330	400	400	400	400	443	443	443	443	600	600	600
Interior volume (l)	53	115	115	115	115	228	228	228	228	734	734	734
Weight (empty) kg	150	260	280	300	330	340	360	380	400	590	590	610
<b>Temperature data</b>												
Temperature range (°C)	-40 – 180	-40 – 180	-40 – 180	-70 – 180	-70 – 180	-40 – 180	-40 – 180	-70 – 180	-70 – 180	-40 – 180	-40 – 180	-70 – 180
Temperature fluctuation (± K)	0,3	0,1 – 0,5	0,1 – 0,6	0,1 – 0,6	0,1 – 0,5	0,1 – 0,5	0,1 – 0,5	0,1 – 0,4	0,1 – 0,5	0,1 – 0,5	0,1 – 0,5	0,1 – 0,5
Temperature uniformity ± K)	2,0	0,1 – 2,0	0,1 – 1,3	0,2 – 1,8	0,1 – 1,3	0,1 – 1,2	0,1 – 1,5	0,1 – 1,0	0,2 – 1,8	0,3 – 2,0	0,1 – 1,8	0,3 – 2,0
Average heating rate acc. IEC 60068-3-5 (K/min)	4,6	5,3	5,5	5,3	5,5	5	5	5	5	4	4,8	4,5
Average cooling rate acc. IEC 60068-3-5 (K/min)	4,1	5,0	4,5	4,2	4,2	4,5	5	4,2	4,2	4,5	4,8	4,2
Heat Compensation, max. (W)	500	2000	2500	1800	1500	2000	2800	3000	3000	6500	6500	5500
<b>Climatical data</b>												
Temperature range (°C)	–	–	10 – 95	–	10 – 95	–	10 – 95	–	10 – 95	–	10 – 95	–
Humidity area (% RH)	–	–	10 – 98	–	10 – 98	–	10 – 98	–	10 – 98	–	10 – 98	–
Temperature fluctuation (± K)	–	–	0,1 – 1,3	–	0,1 – 1,0	–	0,1 – 1,3	–	0,1 – 1,5	–	0,2 – 1,5	–
Heat Compensation, max. (W)	–	–	400	–	400	–	400	–	400	–	1000	–
<b>Electrical data</b>												
Nominal voltage (±10 %) 50 Hz (V)	230 1N~	400 3N~	400 3N~	400 3N~	400 3N~	400 3N~	400 3N~	400 3N~	400 3N~	400 3N~	400 3N~	400 3N~
Nominal power (kW)	2,6	3,5	4,2	5,5	6,2	4,2	6,8	6,5	7,5	7,2	11	13
Noise Level (ca. dB(A))	59	62	62	64	62	62	65	64	65	64	65	65
<b>Order number</b>	9020-0006	9020-0175	9020-0107	9020-0151	9020-0152	9020-0181	9020-0132	9020-0196	9020-0080	9020-0197	9020-0198	9020-0082

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