



Environmental simulation chambers
MK | MKF | MKT | MKFT

THE BASIS FOR RELIABLE MATERIAL TESTING

Whether confirming standards like IEC 60068, MIL-STD 331, MIL-STD 810 or an individual specification, a BINDER dynamic climate chamber performs demanding temperature and climate profiles with ease. The patented APT.line™ airflow technology ensures perfect test conditions. This guarantees reliable testing in the entire temperature range from -70 °C to $+180\text{ °C}$, with temperature change rates of about 5 °C per minute. This is the ideal basis for reliable material testing.



MK | MKF | MKT | MKFT SERIES

PRODUCT SELECTION

| Temperature range | Climate range | Application | 53 l | 115 l | 240 l | 720 l | BINDER model | Excerpt from applicable industry standards |
|---------------------------------|------------------------------|--|------|-------|-------|-------|--------------|---|
| $-40\text{ °C} - 180\text{ °C}$ | – | Dynamic temperature profiles | ● | ● | ● | ● | MK | IEC 60068-2-14:2009 |
| $-70\text{ °C} - 180\text{ °C}$ | – | Dynamic temperature profiles with extended low temperature | | ● | ● | ● | MKT | IEC 60068-2-30:2005 IEC 104/523/CD:2010 |
| $-40\text{ °C} - 180\text{ °C}$ | 10 – 95 °C / 10 – 98 % RH | Dynamic climatic profiles | | ● | ● | ● | MKF | IEC 60068-2-2:2007 IEC 61215:2005 MIL STD 810:2000-01 |
| $-70\text{ °C} - 180\text{ °C}$ | 10 – 95 °C / 10 – 98 % RH | Dynamic climatic conditions with extended low temperature | | ● | ● | ● | MKFT | MIL STD 331:2005-01 IEC 61646:2008 IEC 61215:2005 |

A NUMBER OF FUNCTIONAL ADVANTAGES

Precise and reproduceable testing

- APT.line™ Advanced preheating technology
- Homogeneous climate conditions even in a fully charged chamber
- Steam humidification guarantees short response times

Programming and data acquisition

- Color LCD display
- Numerous possibilities for the visualization of process parameters
- APT.COM™ Software for remote programming access via PC



User friendly

- Heated viewing window with LED
- Easy mounting of large test objects due to a wide chamber

Maximum flexibility

- Castors with brakes
- Water supply independent of location up to 1 m in height



Compressed air dryer

- Allows simulation of a cold and dry climate

OPTION



BINDER Pure Aqua Service

- Flexible water treatment system to provide deionized water

OPTION

MK | MKT SERIES

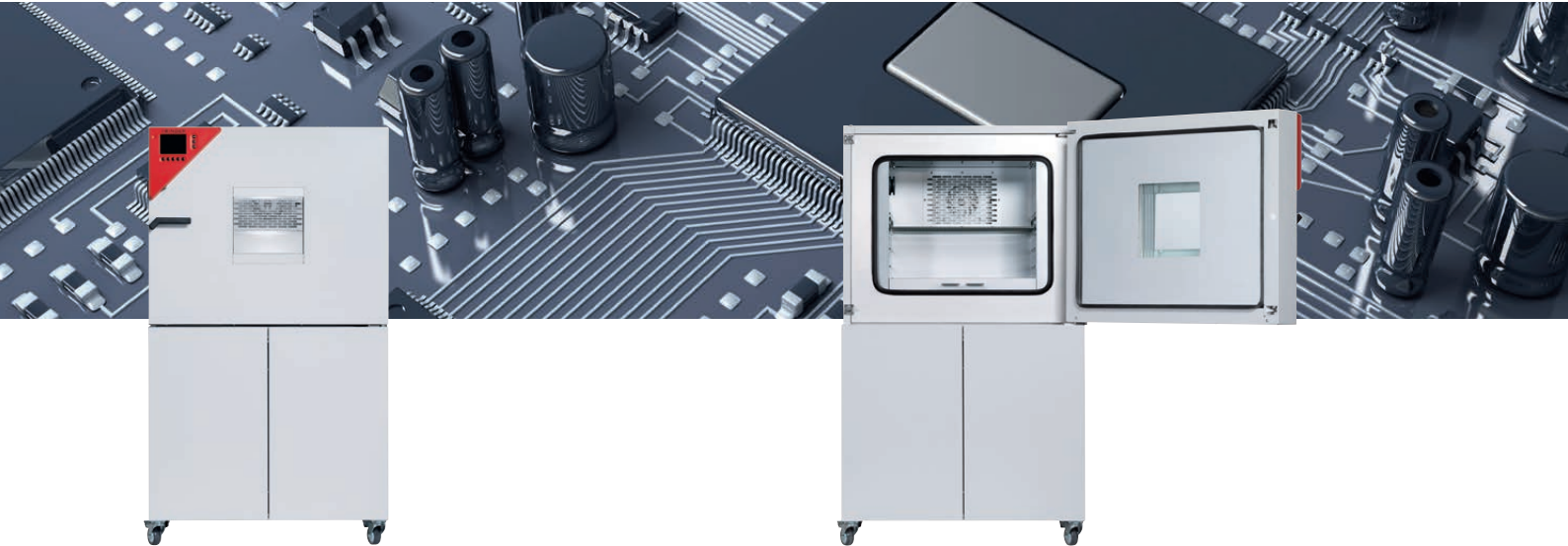
TECHNICAL DATA



| | MK 53 | MK 115 | MKT 115 | MK 240 | MKT 240 | MK 720 | MKT 720 |
|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Exterior dimensions (mm) | | | | | | | |
| Width | 745 | 1000 | 1000 | 1135 | 1135 | 1615 | 1615 |
| Height (incl. feet/castors) | 1245 | 1725 | 1725 | 1715 | 1940 | 2005 | 2005 |
| Depth (excl. 50 mm for door handle) | 795 | 915 | 915 | 1000 | 1000 | 1230 | 1230 |
| Interior dimensions (mm) | | | | | | | |
| Width | 402 | 600 | 600 | 735 | 735 | 1200 | 1200 |
| Height | 402 | 480 | 480 | 700 | 700 | 1020 | 1020 |
| Depth | 330 | 400 | 400 | 443 | 443 | 600 | 600 |
| Interior volume (l) | 53 | 115 | 115 | 228 | 228 | 734 | 734 |
| Weight (empty) kg | 150 | 260 | 305 | 340 | 380 | 570 | 610 |
| Temperature data | | | | | | | |
| Temperature range (°C) ¹⁾ | -40 – 180 | -40 – 180 | -70 – 180 | -40 – 180 | -70 – 180 | -40 – 180 | -70 – 180 |
| Temperature fluctuation (± K) ²⁾ | 0.1 – 0.5 | 0.1 – 0.5 | 0.1 – 0.6 | 0.1 – 0.5 | 0.1 – 0.4 | 0.1 – 0.5 | 0.1 – 0.5 |
| Temperature uniformity ± K) ²⁾ | 0.4 – 2.0 | 0.1 – 2.0 | 0.2 – 1.8 | 0.1 – 1.2 | 0.1 – 1.0 | 0.3 – 2.0 | 0.3 – 2.0 |
| Average heating rate acc. IEC 60068-3-5 (K/min) | 4.6 | 5.3 | 5.3 | 5.0 | 5.0 | 4.0 | 4.5 |
| Average cooling rate acc. IEC 60068-3-5 (K/min) | 4.1 | 5.0 | 4.2 | 4.5 | 4.2 | 4.5 | 4.2 |
| Heat Compensation, max. (W) | 500 | 2000 | 1800 | 2000 | 3000 | 6500 | 5500 |
| Electrical data | | | | | | | |
| Nominal voltage (±10 %) 50 Hz (V) | 230 1N~ | 400 3N~ | 400 3N~ | 400 3N~ | 400 3N~ | 400 3N~ | 400 3N~ |
| Nominal power (kW) | 2.6 | 3.5 | 5.5 | 4.2 | 6.5 | 7.2 | 13.0 |
| Energy consumption at 20 °C (kW) ³⁾ | 1.02 | 0.65 | 0.80 | 1.30 | 1.40 | 1.90 | 2.20 |
| Noise Level (ca. dB(A)) | 59 | 62 | 64 | 62 | 64 | 65 | 65 |
| Order number | 9020-0006 | 9020-0175 | 9020-0151 | 9020-0181 | 9020-0196 | 9020-0197 | 9020-0082 |

¹⁾ Lower values are valid up to an ambient temperature of max. 25 °C / 77 °F // ²⁾ Depending on the set point // ³⁾ Use this value for dimensioning air conditioning systems /// The temperature data are determined in accordance with 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 change technical specifications at any time.





MK series | for dynamic temperature profiles

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™ preheating chamber technology ensures natural simulation – and thus reliable test results.

► **PERFORMANCE FEATURES**

- Electronically controlled APT.line™ preheating chamber technology
- MCS controller with 25 storable programs of 100 sections each for a maximum of 500 program segments
- Adjustable ramp function via program editor
- 1 Access port \varnothing 80 mm top (MK 53)
- 1 Access port \varnothing 50 mm left side (MK 115, 240)
- 1 Access port \varnothing 80 mm left and right side (MK 720)
- Temperature safety device class 2 (DIN 12880) with visual and acoustic temperature alarm
- Heated viewing window with LED interior lighting
- Ethernet interface (MK 115, 240, 720)
- RS 422 interface (MK 53)
- 4 castors (2 with brakes) from 115 l
- 1 stainless steel rack included

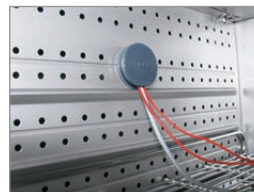
► **A VARIETY OF OPTIONS**



Notch-type access port in door



Reinforced shelves



Access ports



Manual access openings

MKT series | for dynamic temperature profiles with extended low temperature

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.

► **PERFORMANCE FEATURES**

- Electronically controlled APT.line™ preheating chamber technology
- MCS controller with 25 storable programs of 100 sections each for a maximum of 500 program segments
- Adjustable ramp function via program editor
- 1 Access port \varnothing 50 mm left side (MKT 115, 240)
- 1 Access port \varnothing 80 mm left and right side (MKF 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
- 4 castors (2 with brakes)
- 1 stainless steel rack included
- BINDER communication software APT-COM™ Basic Edition

► **BINDER INDIVIDUAL**



MKF series | for dynamic climatic profiles

Ideally suited for all testing based on current temperature and climate testing standards, between $-40\text{ }^{\circ}\text{C}$ and $180\text{ }^{\circ}\text{C}$ / 10% and 98% RH. The required temperature and humidity values are quickly achieved and accurately. This guarantees exact measurement results at any time.

► PERFORMANCE FEATURES

- Electronically controlled APT.line™ preheating chamber technology
- MCS controller with 25 storable programs of 100 sections each for a maximum of 500 program segments
- Adjustable ramp function via program editor
- 1 Access port \varnothing 50 mm left side (MKF 115, 240)
- 1 Access port \varnothing 80 mm left and right side (MKF 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
- 4 castors (2 with brakes)
- 1 stainless steel rack included
- BINDER communication software APT-COM™ Basic Edition
- Electronically controlled humidification and dehumidification system with pressurized steam
- Integrated water storage tank

► A VARIETY OF OPTIONS



BINDER PURE AQUA Service



Data Logger



Water cooling



Large viewing window



Serie MKFT | for dynamic climatic profiles with extended low temperature

Dynamic alternating climate change between $-70\text{ }^{\circ}\text{C}$ and $180\text{ }^{\circ}\text{C}$ / 10% and 98% RH. Large performance reserves and rapid cooling make the MKFT environmental simulation chamber the right choice for complex climate tests.

► PERFORMANCE FEATURES

- Electronically controlled APT.line™ preheating chamber technology
- MCS controller with 25 storable programs of 100 sections each for a maximum of 500 program segments
- Adjustable ramp function via program editor
- 1 Access port \varnothing 50 mm left side (MKFT 115, 240)
- 1 Access port \varnothing 80 mm left and right side (MKFT 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
- 4 castors (2 with brakes)
- 1 stainless steel rack included
- BINDER communication software APT-COM™ Basic Edition
- Electronically controlled humidification and dehumidification system with pressurized steam
- Integrated water storage tank

► BINDER INDIVIDUAL

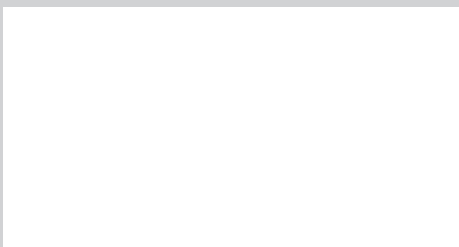
MKF | MKFT SERIES

TECHNICAL DATA



| | MKF 115 | MKFT 115 | MKF 240 | MKFT 240 | MKF 720 | MKFT 720 |
|---|------------------|------------------|------------------|------------------|------------------|------------------|
| Exterior dimensions (mm) | | | | | | |
| Width | 1000 | 1000 | 1135 | 1135 | 1615 | 1615 |
| Height (incl. feet/castors) | 1725 | 1725 | 1725 | 1940 | 2005 | 2005 |
| Depth (excl. 50 mm for door handle) | 915 | 915 | 1000 | 1000 | 1230 | 1230 |
| Interior dimensions (mm) | | | | | | |
| Width | 600 | 600 | 735 | 735 | 1200 | 1200 |
| Height | 480 | 480 | 700 | 700 | 1020 | 1020 |
| Depth | 400 | 400 | 443 | 443 | 600 | 600 |
| Interior volume (l) | 115 | 115 | 228 | 228 | 734 | 734 |
| Weight (empty) kg | 280 | 330 | 360 | 415 | 590 | 635 |
| Temperature data | | | | | | |
| Temperature range (°C) ¹⁾ | -40 – 180 | -70 – 180 | -40 – 180 | -70 – 180 | -40 – 180 | -70 – 180 |
| Temperature fluctuation (± K) ²⁾ | 0.1 – 0.6 | 0.1 – 0.5 | 0.1 – 0.5 | 0.1 – 0.5 | 0.1 – 0.5 | 0.1 – 0.5 |
| Temperature uniformity ± K) ²⁾ | 0.1 – 1.3 | 0.1 – 1.3 | 0.1 – 1.5 | 0.2 – 1.8 | 0.1 – 1.8 | 0.3 – 2.0 |
| Average heating rate acc. IEC 60068-3-5 (K/min) | 5.5 | 5.5 | 5.0 | 5.0 | 4.8 | 4.8 |
| Average cooling rate acc. IEC 60068-3-5 (K/min) | 4.5 | 4.2 | 5.0 | 4.2 | 4.8 | 4.0 |
| Heat Compensation, max. (W) | 2500 | 1500 | 2800 | 3000 | 6500 | 5000 |
| Climatical data | | | | | | |
| Temperature range (°C) | 10 – 95 | 10 – 95 | 10 – 95 | 10 – 95 | 10 – 95 | 10 – 95 |
| Humidity area (% RH) | 10 – 98 | 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 | 0.1 – 1.0 |
| Heat Compensation, max. (W) | 400 | 400 | 400 | 400 | 1000 | 800 |
| Electrical data | | | | | | |
| Nominal voltage (±10 %) 50 Hz (V) | 400 3N~ | 400 3N~ | 400 3N~ | 400 3N~ | 400 3N~ | 400 3N~ |
| Nominal power (kW) | 4.5 | 6.2 | 6.8 | 7.5 | 11.0 | 13.0 |
| Energy consumption at 20 °C (kW) ³⁾ | 1.25 | 1.25 | 1.50 | 1.50 | 3.90 | 2.20 |
| Noise Level (ca. dB(A)) | 62 | 62 | 67 | 65 | 65 | 69 |
| Order number | 9020-0107 | 9020-0152 | 9020-0183 | 9020-0080 | 9020-0198 | 9020-0083 |

¹⁾ Lower values are valid up to an ambient temperature of max. 25 °C / 77 °F // ²⁾ Depending on the set point // ³⁾ Use this value for dimensioning air conditioning systems /// The temperature data are determined in accordance with 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 change technical specifications at any time.



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