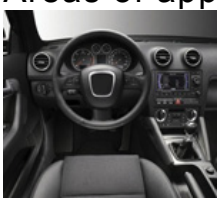
Constant climate chamber for stress testing from -10 °C to 100 °C

The BINDER KMF ensures absolutely constant test conditions throughout the testing area. A big advantage of this constant climate chamber is its low space requirement and flexibility in terms of water supply. The wide temperature and humidity range make this constant climate chamber ideally suited for stress testing series.

Advantages:

- The only one in its class
- Stable test conditions up to 85 °C / 85% RH
- Optimal ratio of usable space and footprint

Areas of application:


Automotive


Plastics Industry


Packaging Industry

Features	Customer benefits	Characteristics
APT.line™ climate technology	• Same test conditions throughout the chamber interior • Independent of specimen size and quantity • No drying out of specimens	**APT.line™** • Constant and gentle circulation of air through large-surface side walls even under a full load • Homogeneous climate conditions throughout test specimens
Water supply	• Flexible solution independent of water supply and installation site • Easy plug-and-play handling	• Direct connection to the domestic water system • Convenient water treatment with BINDER PURE AQUA SERVICE • Sewage pump for discharges up to 1 m in height
Humidification system	• Minimal maintenance requirements • Simple, clean handling	• Vapor pressure humidification for fast response times • Drift-free, capacitive humidity sensor • Short recovery time after door opening
Cooling system	• Reliable test results even under extreme climate and site conditions • Stable, long-term tests according to GLP/GMP	• Powerful compressor cooling system for ambient temperatures up to 32 °C • No freezing thanks to double evaporator plate
Standard equipment	• Optimal price/performance ratio	**Comprehensive standards** • Ethernet interface • Access port diameter 30 mm • Casters from 240 l volume • Inner glass door with seal and double outer door seal • Door heated against condensation
Unit design	• Minimum space requirements • Convenient, safe access • Easy assembly	• Optimal ratio of usable space and footprint • All operator controls accessible from the front • Large access area thanks to wide design
Production	• Reliable devices with long service lives • Short delivery times	• Premium quality made in Germany • Highly automated series production (20,000 units per year) • High-quality materials, state-of-the-art production technology
Accessories and Services	• Complete solution • Everything from one source • BINDER Service is always nearby	**Comprehensive product portfolio** • Additional product lines: Drying chambers, vacuum drying chambers, environmental simulation chambers • Various options: BINDER Data Logger Kits, GLP compliance, access ports in various sizes and positions, object temperature measurement • Years of proven and recognized validation and documentation materials • Worldwide service network

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- Electronically controlled APT.line™ preheating chamber and refrigerating system assuring temperature accuracy and long term stable reproducible results
- Temperature range -10 °C to 100 °C (without humidity)
- Temperature range 10 °C to 90 °C (with humidity)
- Humidity range 10 % to 90 % RH
- 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
- Electronically controlled humidification and dehumidification system with capacitive humidity sensor
- Heated door
- Inner glass door with sealing
- Independent adjustable temperature safety device class 3.1, providing full protection against chamber over-temperature, with visual and audible temperature alarm
- Access port with silicone plug Ø 30 mm, left side
- Safety connection kit for water supply and drainage, including water hose, total length 6 m
- Ethernet interface for use with optional GMP/GLP and FDA guideline 21 CFR Part 11 compliant APT-COM™ DataControlSystem software
- BINDER Communication software APT-COM™ 3 Basic Edition
- Stainless steel rack
- BINDER test confirmation

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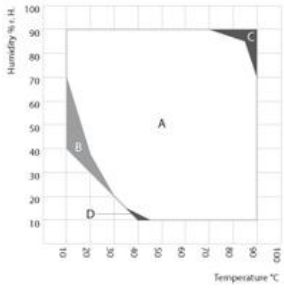
KMF 720 (E5.2)

Exterior dimensions	
Width (mm)	1255
Height (incl. casters) (mm)	1925
Depth (plus 80 mm door handle, I-panel, connection) (mm)	890
Wall clearance, rear (mm)	100
Wall clearance, side (mm)	100
Steam space volume (l)	918
Number of doors (ea.)	2
Inner glass door(s) (ea.)	2

Interior dimensions	
Width (mm)	973
Height (mm)	1250
Depth (mm)	576
Interior volume (l)	700
Racks (number standard/max.)	1 / 15
Load per rack (kg)	45
Permitted total load (kg)	150
Weight (empty) (kg)	309

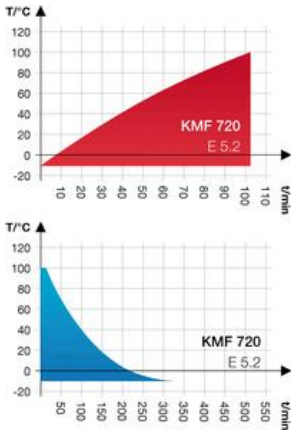
Technical data in temperature mode (without humidity)	
Temperature range (°C)	-10 - 100
Mean warm-up rate acc. to IEC 60068-3-5 (K/min.)	1,0
Mean cooling rate acc. to IEC 60068-3-5 (K/min.)	0,4
Warm-up time from -10 °C to 100 °C (min.)	110
Cooling down time from 100 °C to -10 °C (min.)	350
Max. heat compensation up to 25 °C (W)	400

Temperature-humidity chart

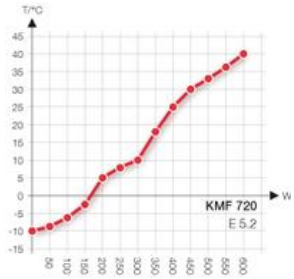


A: Guaranteed condensation free range / B: Temporary usable operation (up to 24 h) / C: In this range, condensation in the inner chamber is possible / D: In this range, deviations of the technical data are possible

Heating up rate / Cooling down rate



Heat compensation



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KMF 720 (E5.2)

Technical data in climate mode (with humidity)	
Temperature range (°C)	10 - 90
Temperature variation (±K)	0,2 - 1,0
Temperature fluctuation (±K)	0,1 - 0,5
Humidity range (% RH)	10 - 90
Humidity fluctuation (± % RH)	≤ 2
Dew point temperature range (°C)	5 - 80
Max. heat compensation at 25 °C / 90 % RH (W)	150
Recovery time after door was opened for 30 sec	
at 25 °C / 60 % RH (min.)	2
at 40 °C / 75 % RH (min.)	6

Electrical data	
IP protection class acc. to EN 60529	IP 20
Voltage (± 10 %) 50 Hz (V)	230, 1 N ~
Nominal power (kW)	3,1
Energy consumption at 85 °C / 85 % RH (W) 1)	1050
Noise level (dB (A))	53

1) 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 and a line voltage fluctuation of ±10%. The temperature data is 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. Technical data refers to 100% fan speed. All figures are typical average values for series devices. We reserve the right to alter technical specifications at any time.

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BINDER Pure Aqua Service

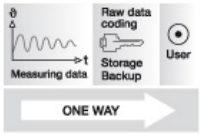
This convenient and flexible water treatment system extends maintenance intervals and is easily implemented independent of water quality.
The specific advantage: Point-of-use system with water quality display and replaceable filter cartridge

BINDER Data Logger Kits

The new BINDER Data Logger Kits – Makes independent recording of temperature and humidity data in the BINDER device possible. The tailored product solution contains helpful accessories: from mounting the logger to the BINDER device to cable access assistance to the sensor mount

External water supply set

External water supply set from fresh and waste water container, wiring and pump



APT-COM™ DataControlSystem GLP Edition

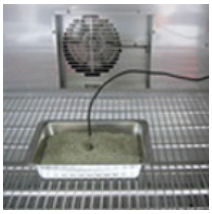
Software for GLP-compliant control, programming and documentation. Allows networking of up to 30 devices or controllers. Meets FDA 21 CFR Part 11 requirements

Access port

With silicone plugs for introducing external measuring instruments into the chamber, access ports with 30, 50 or 100 mm diameters

Calibration certificate & validation

BINDER can significantly reduce the workload in qualifying and validating devices. Nobody knows our devices as well and has as much experience in certifications as we do



Temperature measurement of the specimen

Additional PT 100 temperature sensor for accurate temperature measurement of the specimen and digital display of measured values. Recording of measured data via Ethernet or RS 422 interface optional

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KMF 720 (E5.2)

Access ports with silicone plug 30, 50, 100 mm	O
Securing elements for additional fastening of racks (1 set of 4)	O
Additional PT 100 temperature sensor, flexibly installed, with external connection, including LEMO connector (3-pin)	O
RS 422 interface	O
External fresh water supply set consits of fresh and waste water canister, cabling and pump	O
BINDER PURE AQUA SERVICE consisting of disposable cartridge, hose set and measuring unit	O
Disposable cartridge for BINDER PURE AQUA SERVICE	O
Keyboard lock	O
Temperature precision measurement according to DIN 12880 and 9-point humidity measurement / factory standard with measurement log and certificate, measured at 25 °C (77 °F) / 60 % RH or at specified values	O
Calibration certificate for temperature and humidity. Measurement in the center at 25 °C (77 °F) / 60 % RH or at specified values	O
Extension to factory calibration certificate for temperature and humidity. Each additional measurement at an additional measuring point or set of values	O
Data Logger Kit TH 100/70: With two attachable combined sensors. One for the continuous temperature and humidity recording of -40 °C to 100 °C / 0 % to 100 % RH. Second one at the data logger for recording the environmental conditions of -40 °C to 70 °C / 0 % to 100 % RH. Kit includes 1 data logger, 2 attachable combined humidity/temperature sensors with 2 m extension cable and 1 fixture for the connection at the BINDER unit	O
Data Logger Kit TH 100: For the continuous temperature and humidity recording of -40 °C to 100 °C / 0 % to 100 % RH. Kit includes 1 data logger, 1 attachable combined humidity/temperature sensor with 2 m extension cable and 1 fixture for the connection at the BINDER unit	O
Data Logger Kit T 220: For the continuous temperature recording of -90 °C to 220 °C. Kit includes 1 data logger, PT 100 sensor with 2 m Teflon extension cable and 1 fixture for the connection at the BINDER unit	O
Data Logger Software: Configuration und evaluation software for all BINDER Data Logger Kits, incl. data cable (RS 232)	O
Data Logger converter cable (RS 232 to USB 2.0)	O
Rack, stainless steel	O
Reinforced rack, stainless steel, with 1 set of securing elements (4 pieces) max. load 70 kg	O
Shelf, perforated, stainless steel	O
Interior lighting (30 W)	O
Reinforced inner chamber, including 2 reinforced racks, maximum total load 250 kg, max. load per rack 70 kg	O
Locking door handle with key	O
Temperature safety device, class 3.3 (DIN 12880) with visual alarm	O
4-20 mA analog output for temperature and humidity measurements (e.g. chart recorder connection), with 6-pin DIN socket. Outputs are adjusted automatically as the controller is adjusted	O

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