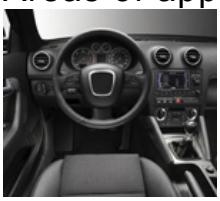
Environmental simulation chamber for low temperature alternating climate profiles

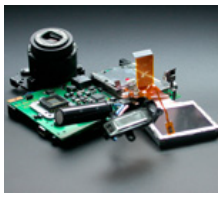
The BINDER Environmental simulation chamber for low temperature alternating climate profiles MKFT series is the specialist for dynamic alternating climate change between -70 °C and 180 °C. Large performance reserves and in particular, rapid cooling make the MKFT the high-end product for complex standards-based climate tests.

Advantages:

- State-of-the-art reliability
- User-friendly chamber interior
- Comprehensive standard equipment

Areas of application:


Automotive


Electronics / Semiconductor Industry


Aerospace, Defense Industry

Features	Customer benefits	Characteristics
APT.line™ climate technology	• Same test conditions throughout the chamber interior • Independent of specimen size and quantity	**APT.line™** • Uniform circulation even under full load • Homogeneous climate conditions throughout test specimens
Humidification system and water supply	• Minimal maintenance requirements • Simple, clean handling • Independent of water quality • Fast response times	**Vapor pressure humidification** • Drift-free, capacitive humidity sensor for very accurately measured values • Suitable for any water quality • Sewage pump for discharges up to 1 m in height
Standard equipment	• Very good price/performance ratio	**Well equipped** • Capacitive humidity sensor • Heated viewing window • LED illumination • Rugged chassis with rollers from 115 liters • Ethernet interface
Unit design	• Minimum space requirements • Convenient, safe access • Easy assembly	**Good use of space** • Optimal ratio of usable space and footprint • All operator controls accessible from the front • Wide construction
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 system from one source	**Comprehensive product portfolio** • Additional production lines with drying and vacuum chambers • Control and documentation software APT-COM™ • BINDER Data Logger Kits • Water treatment with BINDER PURE AQUA SERVICE • Years of proven and recognized validation and documentation materials

- Electronically controlled APT.line™ preheating chamber assuring temperature accuracy and reproducible results
- Temperature range without humidity: -70 °C to 180 °C
- Temperature range with humidity: 10 °C to 95 °C
- Humidity range 10 % to 98 % 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 and vapor pressure humidification
- Integrated water storage tank
- Heated viewing window with LED interior lighting
- Programmable condensation protection for test material
- Adjustable ramp function via program editor
- 230 V power socket on the right-side operating panel
- Independent adjustable temperature safety device Class 2
- 4 potential-free relay outputs that can be activated via MCS controller
- Ethernet interface for use with optional GMP/GLP and FDA guideline 21 CFR Part 11 compliant APT-COM™ DataControlSystem software
- Access port Ø 50 mm, left side
- 4 casters (2 with brakes)
- Stainless steel rack included
- BINDER test confirmation

MKFT 240 (E3.1)

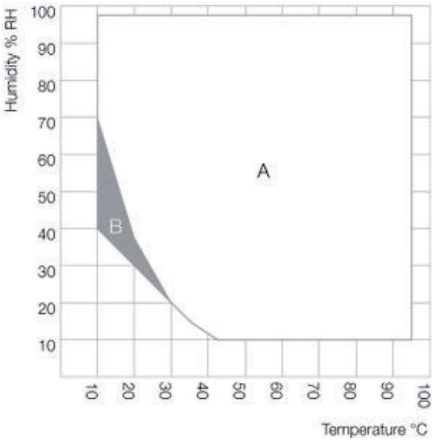
Exterior dimensions	
Width (mm)	1135
Height (incl. castors) (mm)	1940
Depth (incl. cable and door handle) (mm)	1000
Wall clearance rear (mm)	300
Wall clearance side (mm)	260
Viewing window width (mm)	508
Viewing window height (mm)	300
Number of doors (ea.)	1

Interior dimensions	
Width (mm)	735
Height (mm)	700
Depth (mm)	443
Interior volume (l)	228
Racks (number standard/max.)	1 / 6
Load per shelf (kg)	30
Permitted total load (kg)	70
Weight (empty) (kg)	415

Temperature data	
Temperature range (°C)	-70 - 180
Temperature fluctuation (±K)	0,1 - 0,5
Temperature variation (±K)	0,2 - 1,8
Mean warm-up rate acc. to IEC 60068-3-5 (K/min.)	5,0
Mean cooling rate acc. to IEC 60068-3-5 (K/min.)	4,2
Max. heat compensation up to 25 °C (W)	3000

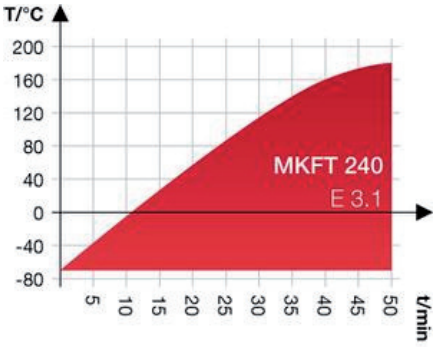
Climate data	
Temperature range (°C)	10 - 95
Temperature fluctuation (± K)	0,1 - 1,5
Humidity range (% RH)	10 - 98
Humidity fluctuation (± % RH)	≤ 2,5
Dew point temperature range (°C)	5 - 94
Max. heat compensation to 25 °C / 90 % RH (W)	400

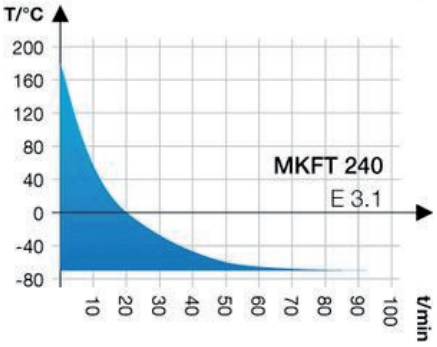
Temperature-humidity chart



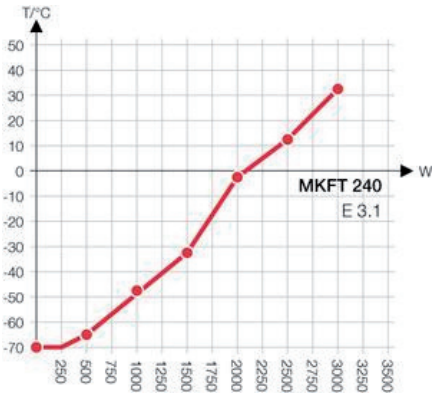
A: Standard Climate range / B: Discontinuous range

Heating up and cooling down rate





Heat compensation



MKFT 240 (E3.1)

Electrical data	
IP protection class acc. to EN 60529	IP 20
Voltage (± 10%) 50 Hz (V)	400 3N~
Nominal power (kW)	7,5
Energy consumption 25 °C / 60 % RH (Wh/h) 1)	1500
Noise level approx. (dB (A))	65

1) These values can be used for dimensioning air condition systems.

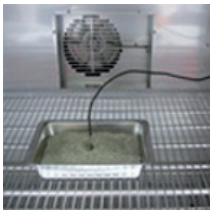
All technical data are specified for units with standard equipment at an ambient temperature of 25 °C and a line voltage fluctuation of ±10%. The temperature data is determined in accordance to factory standard following DIN 12880, respecting the recommended wall clearances of 10% of the height, width and depth of the inner chamber. All figures are typical average values for series devices. We reserve the right to alter technical specifications at any time.

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.

Notch-type access port in door

Provides easy connection of cables to test specimens and facilitates loading and unloading of the chamber. Doors have access ports measuring 100 x 35 mm, which can be sealed with the included silicone plugs.



Temperature measurement of the specimen

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

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.

Reinforced racks

To ensure safe and stable storage of heavy test specimens.

MKFT 240 (E3.1)

Access ports with silicone plug, 30, 50, 80, 100, 125 mm	O
Securing elements for additional fastening of racks (1 set of 4)	O
Analog output for temperature 4 - 20 mA with 6-pin DIN socket (output not adjustable)	O
Door lock	O
Additional measuring channel for digital display of specimen temperature with flexible PT 100 temperature sensor. Measuring data recorded through device interface	O
Temperature safety device for over and under temperature, Class 2	O
RS 422 interface	O
Temperature measurement acc. to DIN 12880-2 and 9-point humidity measurement/factory standard with protocol and certificate at 25 °C / 60% RH or at specified values	O
Calibration certificate for temperature and humidity. Measurement in center of chamber at 25 °C / 60% RH or at specified values	O
Extension to calibration certificate for temperature and humidity. Each additional measurement at an additional measuring point or set of values	O
BINDER PURE AQUA SERVICE containing single-use cartridge, cabling, and pump	O
Single-use cartridge for BINDER PURE AQUA SERVICE	O
Water circle, possibility to reuse water	O
Data Logger Kit TH 100/70: With two attachable combined sensors for temperature and humidity recording	O
Data Logger Kit TH 100: With one attachable combined sensor for temperature and humidity recording	O
Data Logger Kit TH 220: With PT 100 sensor for temperature recording	O
Data Logger Software	O
Data Logger converter cable (RS 232 to USB 2.0)	O
Rack, stainless steel	O
Reinforced rack, stainless steel, with 1 set of fasteners (4 pieces), max. load 70 kg	O
Shelf perforated, stainless steel	O
Notch-type access port in door, 100 x 35 mm	O