

# Model MKFT 720 | Dynamic climate chambers for rapid temperature changes with humidity control and extended low temperature range

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

## BENEFITS

- Homogeneous climate conditions thanks to APT.line™ technology
- Automatic water and wastewater management
- Pressure humidification with fast response times
- Comprehensive programming and data acquisition
- Large heated viewing window



Model 720



Model 720

## MAIN FEATURES

- Temperature range: -70 °C to 180 °C
- Humidity range: 10 % to 98 % RH
- Integrated water-storage tank, 20 liters
- 4 zero-voltage relay contacts
- APT.line™ preheating chamber technology
- Programmable condensation protection for test material
- Intuitive touchscreen controller with time-segment and real-time programming
- Internal data logger, measured values can be read out in open format via USB
- Heated viewing window with LED interior lighting
- Humidity regulation with capacitive humidity sensor and vapor humidification
- BINDER Multi Management Software APT-COM™ Basic Edition
- Troubleshooting system with visual and audible alarms
- 2 access ports with silicone plugs: 80 mm, left and right
- Class 2 independent adjustable temperature safety device (DIN 12880) with visual alarm
- 4 castors, two with brakes
- Computer interface: Ethernet
- 230 V power socket on the right-side control panel
- Adjustable ramp function
- Integrated chart recorder
- Real-time clock
- Door heating
- Alarm notification in the event of insufficient water in fresh water tank
- 1 stainless steel rack
- Complete safety connection kit for water supply and drainage, up to 1 m in height
- Inner chamber made of stainless steel
- CFC-free refrigerants R-452A and R-23
- Cooling with cascade compressor cooling unit

## ORDERING INFORMATION

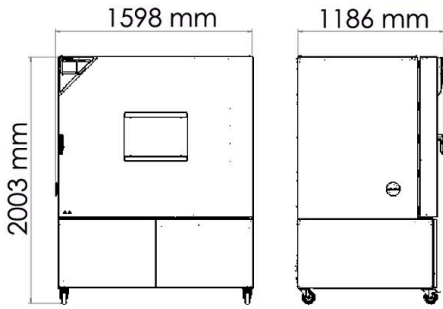
Interior volume [L]	Voltage	Option model	Version	Art.-No.
734	400 V 3~ ph 50 Hz	Standard	MKFT720-400V	9020-0384
	480 V 3~ ph 60 Hz	with voltage and frequency converter	MKFT720-480V-C	9020-0360

**TECHNICAL DATA**

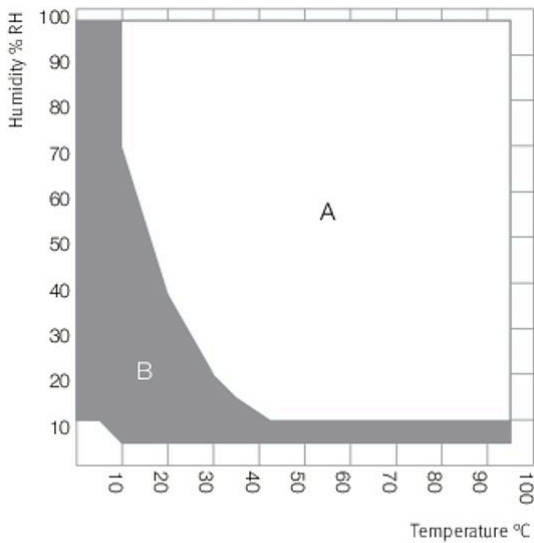
Description	MKFT720-400V <sup>1</sup>	MKFT720-480V-C <sup>1</sup>
<b>Article Number</b>	<b>9020-0384</b>	<b>9020-0360</b>
<b>Performance Data Temperature</b>		
Temperature range	-70...180	-70...180
Temperature variation depending on setpoint [± K]	0.3...2.0	0.3...2.0
Temperature fluctuation depending on setpoint [± K]	0.1...0.1	0.1...0.1
Average heating-up rate according to IEC 60068-3-5 [K/min]	4.8	4.8
Average cooling down time according to IEC 60068-3-5 [K/min]	4	4
Max. heat compensation at 25 °C [W]	4500	4500
<b>Performance Data Climate</b>		
Temperature range [°C]	10...95	10...95
Temperature fluctuation depending on setpoint [± K]	0.1...1	0.1...1
Humidity range [% RH]	10...98	10...98
Humidity fluctuation depending on setpoint	≤2,5 ± % RH	≤2,5 ± % RH
Dew point temperature range [°C]	50...94	50...94
<b>Electrical data</b>		
Rated Voltage [V]	400	480
Power frequency [Hz]	50	60
Nominal power [kW]	11	11
Unit fuse [A]	32	32
Phase (Nominal voltage)	3~	3~
<b>Measures</b>		
Interior volume [L]	734	734
Net weight of the unit (empty) [kg]	635	887
Permitted load [kg]	160	160
Load per rack [kg]	40	40
Viewing window width [mm]	508	508
Viewing window height [mm]	300	300
Wall clearance back [mm]	300	300
Wall clearance sidewise [mm]	200	200
<b>Internal Dimensions</b>		
Width [mm]	1200	1200
Height [mm]	1020	1020
Depth [mm]	600	600
<b>Doors</b>		
Unit doors	1	1
<b>Housing dimensions not incl. fittings and connections</b>		
Width net [mm]	1580	1580
Height net [mm]	2005	2005
Depth net [mm]	1140	1140
<b>Environment-specific data</b>		
Sound-pressure level [dB(A)]	69	72
<b>Fixtures</b>		
Number of shelves (std./max.)	1/11	1/11

1 All technical data is specified for unloaded units with standard equipment at an ambient temperature of +22 °C ±3 °C and a power supply voltage fluctuation of ±10 %. The temperature data is determined in accordance to BINDER factory standard following DIN 12880, observing the recommended wall clearances of 10 % of the height, width, and depth of the inner chamber. Technical data refers to 100 % fan speed. All indications are average values, typical for units produced in series. We reserve the right to change technical specifications at any time.

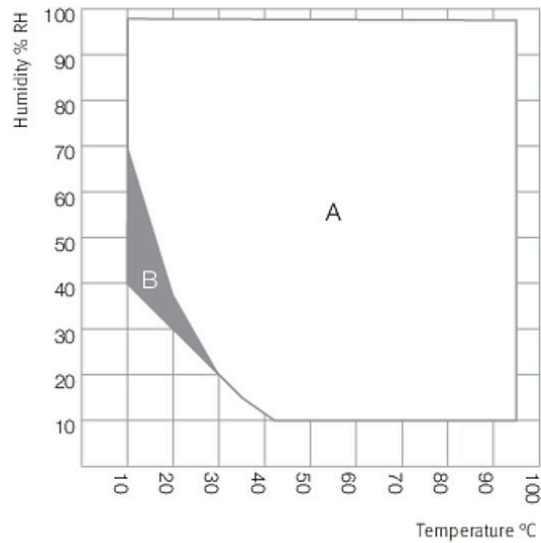
**DIMENSIONS incl. fittings and connections [mm]**



**CHARTS**

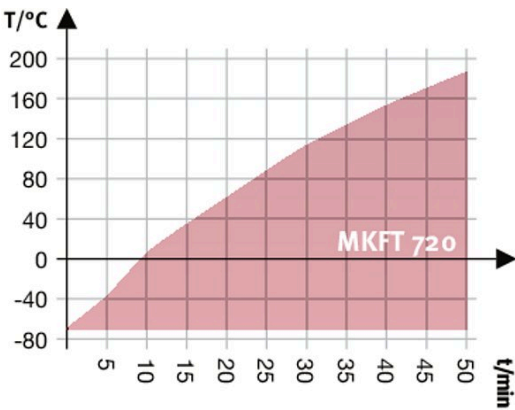


A: Standard Climate range  
B: Extended range with dry-air purge



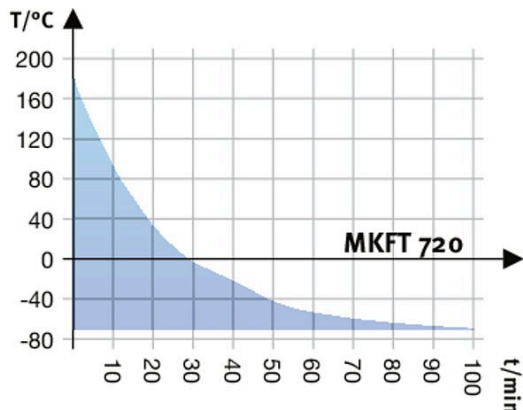
A: Standard Climate range  
B: Time-limited operation (max. 24 hours)

Climate chart

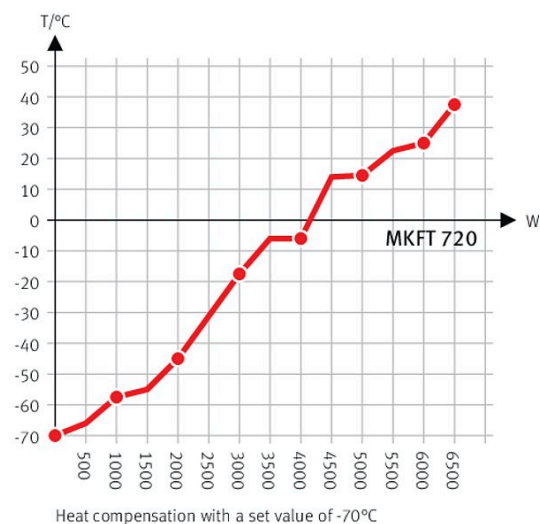


Heating up rate

Climate chart



Cooling down rate



Heat compensation chart

## OPTIONS

Designation	Description	*	Art.-No.
	left		
	30 mm	01	8012-0509
	50 mm	01	8012-0511
	80 mm	01	8012-0513
	100 mm	01, 11	8012-0836
	125 mm	01, 11	8012-0533
	right		
<b>Access port with silicone plug</b>	30 mm	01	8012-0508
	50 mm	01	8012-0510
	80 mm	01	8012-0512
	100 mm	01, 11	8012-0835
	125 mm	01, 11	8012-0532
	top		
	80 mm	01	8012-0834
	100 mm	01, 11	8012-0832
	125 mm	01, 11	8012-0833
<b>Analog output 4-20 mA</b>	for temperature and humidity values (output not adjustable)	-	8012-1786
<b>Calibration certificate, expanded</b>	for temperature and humidity; for extending the measurement in center of chamber to include another test value	-	8012-1193
<b>Calibration certificate, temperature</b>	temperature measurement incl. certificate and 27 measuring points at specified temperature	-	8012-1608
	temperature measurement incl. certificate, 15- 18 measuring points at specified temperature	-	8012-1588
	temperature measurement incl. certificate, 9 measuring points at specified temperature	-	8012-1567
<b>Calibration certificate, temperature and humidity</b>	Measurement in center of chamber at 25 °C / 60% RH or at specified test values	-	8012-1187
	temperature (according to DIN12880) and humidity measurement incl. certificate, 27 temperature measuring points and 1 humidity measuring point, at 25 °C / 60 % RH or at specified values	-	8012-1614
<b>Door lock</b>	lockable door handle	-	8012-1783
<b>Dry-air purge</b>	controlled, incl. connection; suitable for the simulation of current automobile industry standards	-	8012-1872
<b>Dry-air purge, connection</b>	for the connection to an existing pressurized air network	-	8012-1799
<b>Notch-type access port</b>	notch-type access port in door, 100 x 35 mm	-	8012-1860
<b>Pt 100 temperature sensor</b>	additional flexible Pt 100, interior, for displaying the temperature on the unit display	-	8012-1791

\* Notes › See last page

Designation	Description	*	Art.-No.
<b>RS 485 interface, 2-wire</b>	Additional serial interface can be used parallel to Ethernet, for Multi Management Software APT-COM™	-	8012-1767
<b>Temperature safety device class 2</b>	with visual alarm (DIN 12880)	-	8012-1793
<b>Water circuit</b>	allows condensed water to be reused	-	8012-0785
<b>Water cooling</b>	for reduced heat loss to ambient air	-	8012-0758

\* Notes › See last page

## ACCESSORIES

Designation	Description	*	Art.-No.
<b>APT-COM™ 4 GLP-Edition</b>	for working under GLP-compliant conditions. Measured values are documented in a tamper-proof way in line with the requirements of FDA Regulation 21 CFR 11. version 4, GLP edition	19	9053-0042
<b>APT-COM™ 4 PROFESSIONAL-Edition</b>	convenient unit and user management built on the BASIC edition. Suitable for networking up to 100 units. version 4, PROFESSIONAL edition	19	9053-0040
<b>BINDER PURE AQUA SERVICE</b>	System for preparation or complete desalination of tap water, complete set containing PURE AQUA 300 single-use cartridge, measuring device, and all necessary connecting parts	-	8012-0759
<b>BINDER PURE AQUA SERVICE, accessories</b>	Single-use, replacement cartridge for BINDER PURE AQUA System	-	6011-0165
<b>Data Logger Kit</b>	T 220: For continuous temperature logging from -90 °C to 220 °C. The kit includes 1 data logger, Pt 100 sensor with 2 m extension cable and 1 magnetic fixture for mounting to the BINDER unit	19	8012-0715
	TH 100/70: For continuous temperature and humidity logging from -40 °C to 100 °C / 0% to 100% RH and additional logging of ambient conditions. Kit includes 1 data logger, 2 attachable combined humidity/temperature sensors, 2 m extension cable and 1 fixture for mounting to the BINDER unit	19	8012-1838
	TH 100: For continuous temperature and humidity logging from -50 °C to 100 °C; 0% to 100% RH. Kit includes 1 data logger, Pt 100 sensor with 2 m extension cable, and 1 magnetic fixture for mounting to the BINDER unit	19	8012-1837
<b>pH-neutral detergent</b>	concentrated, for gentle remove of residual contaminants; 1 kg	-	1002-0016
<b>Qualification documents</b>	IQ/OQ documents – supporting documents for validation performed by customers, consisting of: IQ/OQ checklists incl. calibration guide and comprehensive unit documentation; parameters: temperature and humidity values Digital in PDF format	-	7057-0002
	Hard copy inside folder	-	7007-0002
	IQ/OQ/PQ documents – supporting documents for validation performed by customers, according to customer requirements, PQ section added to qualification folder IQ/OQ; parameters: temperature and humidity values Digital in PDF format	-	7057-0006
	Hard copy inside folder	-	7007-0006
<b>Rack</b>	stainless steel	-	6004-0102
<b>Rack accessories</b>	fasteners (1 set of 4) for additional security of racks	-	8012-0620
<b>Rack, reinforced</b>	stainless steel, with fasteners (1 set of 4)	-	8012-0684
<b>RS 485 / RS 422 interface converter</b>	RS 422 cable set and RS 485 / RS 422 interface converter for connection to 10-way plug distributor 115 V option model	-	8012-0599
	230 V option model	-	8012-0589
<b>Shelf, perforated</b>	Stainless steel	-	8009-0511

\* Notes › See last page

## SERVICES

Designation	Description	*	Art.-No.
<b>Installation services</b>			
Unit installation	Unpacking and setting up of unit, connecting to existing connections, and checking function	13, 18	DL10-0300
Unit instructions	Unit function instructions for operation and programming of the controller	18	DL10-0700
<b>Preventive maintenance</b>			
Maintenance	Functional testing of all electrical and mechanical components, short calibration, documentation in the maintenance schedule	14, 18	DL20-0500

\* Notes › See last page

Designation	Description	*	Art.-No.
<b>Calibration services</b>			
Temperature and humidity calibration	Expansion – including certificate, each additional measuring point in center of chamber at 25 °C / 60% RH or at specified values	14, 16, 17, 18	DL30-0302
	Temperature and humidity calibration with 1 measuring point in center of chamber with 1 specified pair of values, including certificate	14, 16, 17, 18	DL30-0301
Temperature measurement in accordance with DIN 12880, 27 temperature measuring points and 1 humidity measuring point	Temperature measurement in accordance with DIN 12880 with 27 temperature measuring points and 1 humidity measuring point in center of chamber at specified values, including certificate	14, 16, 17, 18	DL30-0427
Temperature measurement, 18 temperature measuring points and 1 humidity measuring point	Temperature measurement with 18 temperature measuring points and 1 humidity measuring point in center of chamber with 1 specified pair of values, including certificate	14, 16, 17, 18	DL30-0318
Temperature measurement, 27 temperature measuring points and 1 humidity measuring point	Temperature measurement with 27 temperature measuring points and 1 humidity measuring point in center of chamber with 1 specified pair of values, including certificate	14, 16, 17, 18	DL30-0327
Temperature measurement, 9 temperature measuring points and 1 humidity measuring point	Temperature measurement with 9 temperature measuring points and 1 humidity measuring point in center of chamber at specified values, including certificate	14, 16, 17, 18	DL30-0309
<b>Validation services</b>			
Execution of IQ/OQ	Execution of IQ/OQ in accordance with qualification folder	15, 18	DL42-0300
Execution of IQ/OQ/PQ	Execution of IQ/OQ/PQ in accordance with qualification folder	15, 18	DL44-0500
<b>Warranty service</b>			
Warranty extension from 2 to 3 years	The warranty is extended from 2 to 3 years from the delivery date, wear parts are excluded	–	DL02-9041
Warranty extension from 2 to 5 years	The warranty is extended from 2 to 5 years from the delivery date, wear parts are excluded	–	DL02-9042

\* Notes › See last page

**NOTES**

- 01 Condensation may occur in the area around the access port. Access ports may be placed in custom locations for an additional charge.
- 02 UL mark is not granted when this option is used.
- 03 Heat resistant only to max. 200 °C.
- 04 Only available on units rated for 230 V.
- 07 The additional heat input may affect the temperature behavior.
- 09 Not in conjunction with the optional access port, door with window and interior lighting.
- 10 Not available on 23-liter units.
- 11 Not available on 23- or 53-liter units.
- 12 Only available on units rated for 230 V or 400 V.
- 13 Installation and connections take place at unit location; transport within the company only upon consultation.
- 14 We recommend a BINDER service contract to cover unit inspections, calibrations and validations.
- 15 OQ according to Yellow Paper = completed factory validation documentation of all OQ checklists.
- 16 Sensor calibration is performed in an accredited calibration laboratory.
- 17 Calibration is performed according to the BINDER factory standard.
- 18 Quoted prices do not include travel costs. Please refer to the chapter on BINDER Service for travel costs for your region. Quoted prices for services performed in Switzerland do not include a country-specific added fee (available on request).
- 19 For additional accessories, refer to the Process documentation chapter.

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