

# 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



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## 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 that can be activated via MCS controller
- APT.line™ preheating chamber technology
- Programmable condensation protection for test material
- Heated viewing window with LED interior lighting
- Humidity regulation with capacitive humidity sensor and vapor humidification
- BINDER APT-COM™ 3 Basic Edition communication software
- Troubleshooting system with visual and audible alarms
- Controller with time-segment programming
- Class 2 independent adjustable temperature safety device (DIN 12880) with visual alarm
- 2 access ports with silicone plugs: 80 mm, left and right
- 4 castors, two with brakes
- Computer interface: Ethernet
- 230 V power socket on the right-side control panel
- Display via color LCD monitor
- 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
- Pt 100 temperature sensor
- Thermal insulation using PUR foam
- CFC-free refrigerants R-404A and R-23
- Cooling with cascade compressor cooling unit
- Fin evaporator

## ORDERING INFORMATION

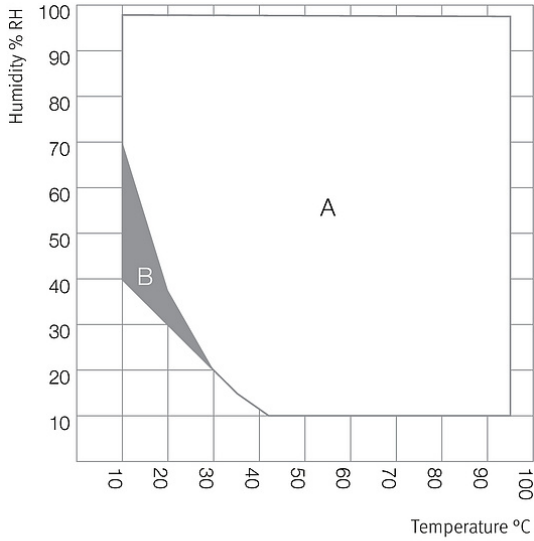
Interior volume [cu.ft.]	Voltage	Option model	Version	Art.-No.
Model MKFT 720				
25.9	400 V 3 ph 50 Hz	Standard	MKFT720-400V	9020-0288
	480 V 3 ph 60 Hz	with voltage and frequency converter	MKFT720-400V-C	9020-0301

## TECHNICAL DATA

Description	MKFT720-400V <sup>1</sup>	MKFT720-400V-C <sup>1</sup>
Article Number	9020-0288	9020-0301
<b>Performance Data Temperature</b>		
Temperature range [°C]	-70...180	-70...180
Temperature variation depending on setpoint [± K]	0.3...2	0.3...2
Temperature fluctuation depending on setpoint [± K]	0.1...0.5	0.1...0.5
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]	5000	5000
Max. heat compensation at 25 °C at 90 % RH [W]	800	800
<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]	5...94	5...94
<b>Electrical data</b>		
Rated Voltage [V]	400	480
Power frequency [Hz]	50	60
Nominal power [kW]	13	13
Unit fuse [A]	32	32
Phase (Nominal voltage) [ph]	3	3
<b>Measures - Outer dimensions</b>		
Width net [mm]	1580	1580
Height net [mm]	2005	2005
Depth net [mm]	1140	1140
Wall clearance back [mm]	335	335
Wall clearance sidewise [mm]	300	300
Viewing window width [mm]	508	508
Viewing window height [mm]	300	300
<b>Measures - Doors</b>		
Unit doors	1	1
<b>Measures - Internal Dimensions</b>		
Width [mm]	1200	1200
Height [mm]	1020	1020
Depth [mm]	600	600
<b>Measures</b>		
Interior volume [L]	734	734
Net weight of the unit (empty) [kg]	635	635
permitted load [kg]	160	160
Load per rack [kg]	40	40
<b>Environment-specific data</b>		
Sound-pressure level [dB(A)]	69	69
<b>Fixtures</b>		
Number of shelves (std./max.)	1/11	1/11

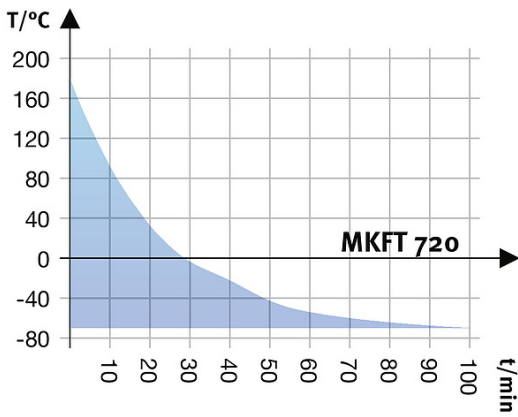
<sup>1</sup> All technical data is specified for unloaded units with standard equipment at an ambient temperature of +22 °C ±3 °C and a power supply voltage fluctuation of ±10 %. The temperature data is determined in accordance to BINDER factory standard following DIN 12880, observing the recommended 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.

CHARTS

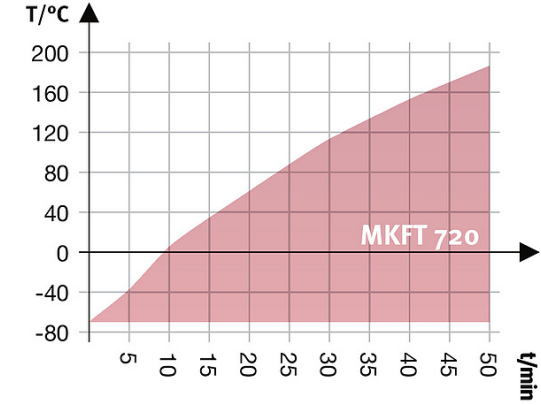


A: Standard Climate range  
 B: Time-limited operation (max. 24 hours)

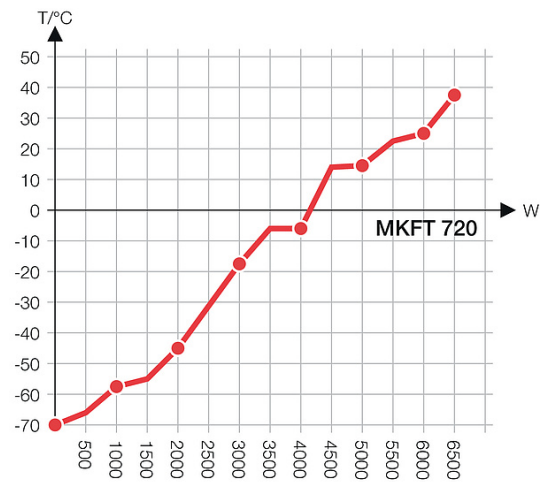
Climate chart



Cooling down rate



Heating up rate



Heat compensation chart

## OPTIONS AND ACCESSORIES

Designation	Description	*	Art.-No.
Access port	notch-type access port in door, 100 x 35 mm	-	8012-0683
	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		
Access port with silicone plug	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
Analog output, 4 – 20 mA	for temperature and humidity values (output not adjustable)	-	8012-0516
BINDER Pure Aqua Service	system for preparation or complete desalination of tap water, containing single-use cartridge, hoses and measuring device	-	8012-0759
BINDER Pure Aqua Service, accessories	Single-use, replacement cartridge for BINDER Pure Aqua System	-	6011-0165
Calibration certificate, expanded	for temperature and humidity; for extending the measurement in center of chamber to include another test value	-	8012-1193
	temperature measurement incl. certificate and 27 measuring points at specified temperature	-	8012-1608
Calibration certificate, temperature	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
Calibration certificate, temperature and humidity	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
Converter, voltage and frequency	to operate the device at a nominal voltage of 480 V 3 ph 60 Hz, 32 A	-	8009-0807
Door lock	lockable door handle	-	8012-0606
	RS 422 cable set and RS 232 / RS 422 interface converter for connection to 10-way plug distributor or for connection to a unit		
	120 V, 60 Hz option model	-	8012-0557
	230 V, 50/60 Hz option model	-	8012-0556
Interface converter	RS 422 cable set and RS 422 / Ethernet interface converter for connection to 10-way plug distributor or for connection to a unit		
	120 V, 60 Hz option model	-	8012-0405
	230 V, 50/60 Hz option model	-	8012-0380
Interface converter, USB / RS422	RS 422 cable set and RS 422 / USB interface converter for connection to 10-way plug distributor or for connection to a unit (USB-powered converter)	-	8012-0665
Lockable controller keyboard	Lockable controller keyboard with key-operated switch	-	8012-0530
pH-neutral detergent	concentrated, for gentle remove of residual contaminants; 1 kg	-	1002-0016
Pt 100 temperature sensor	additional flexible Pt 100, interior, for displaying the temperature on the unit display	-	8012-0447
Rack	stainless steel	-	6004-0102
Rack accessories	Rack accessories – fasteners (1 set of 4) for additional security of racks	-	8012-0620
Rack, reinforced	stainless steel, with 1 set of 4 fasteners, max. load 70 kg	-	8012-0684

\* Notes › See last page

Designation	Description	*	Art.-No.
RS 422 interface	in place of Ethernet, for communication software	-	8012-0788
	modular plug distributor for 10 RS 422 interfaces	-	8012-0295
RS 422 interface, cable (15 m)	RS 422 connection cable (15 m) between plug distributor and RS 422 interface	-	5023-0036
RS 422 interface, cable (50 m)	RS 422 extension cable (50 m) between interface converter and unit or RS 232 / RS 422 plug distributor	-	5023-0117
Shelf, perforated	stainless steel	-	8009-0511
Software	APT-COM™ communications software		
	version 2 to 3, GLP edition	19	9053-0016
	version 3, BASIC edition	19	9053-0014
	version 3, GLP edition	19	9053-0015
	version 3, STANDARD edition	19	9053-0013
	APT-COM™ communications software, price: for free		
	version 3, GLP DEMO Edition	19	9053-0008
Water circuit	allows condensed water to be reused	-	8012-0785
Water cooling	for reduced heat loss to ambient air	-	8012-0758

\* Notes › See last page

## SERVICES

Designation	Description	*	Art.-No.
<b>Installation services</b>			
Data Logger Kit installation service	and set up of unit at operating location, connect to existing connections	13, 18	DL100300
	unit function instructions for operation and programming of the controller	18	DL100700
<b>Preventive maintenance</b>			
Preventive maintenance	Execution of equipment inspection according to maintenance plan	14, 18	DL200600
<b>Calibration services</b>			
Calibration temperature and humidity	including certificate, one measuring point in center of chamber at 25 °C / 60 % RH or at specified values	14, 16, 17, 18	DL300301
Data Logger Kit calibration service	including certificate, one measuring point in center of chamber at specified temperature	14, 16, 17, 18	DL300101
Temperature and humidity measurement according to DIN12880	including certificate (27 temperature measuring points and 1 humidity measuring point, at 25 °C / 60 % RH or at specified values)	14, 16, 17, 18	DL300427
Temperature measurement 18 temperature measuring points and 1 humidity measuring point	including certificate, 18 temperature measuring points and 1 humidity measuring point in center of chamber, at 25 °C / 60 % RH or at specified values	14, 16, 17, 18	DL300318
Temperature measurement 27 temperature measuring points and 1 humidity measuring point	including certificate, 27 temperature measuring points and 1 humidity measuring point in center of chamber, at 25 °C / 60 % RH or at specified values	14, 16, 17, 18	DL300327
Temperature measurement 9 temperature measuring points and 1 humidity measuring point	including certificate, 9 temperature measuring points and 1 humidity measuring point in center of chamber, at 25 °C / 60 % RH or at specified values	14, 16, 17, 18	DL300309
<b>Validation services</b>			
Data Logger Kit validation service	in accordance with qualification folder	15, 18, 20	DL420300
Execution of IQ/OQ/PQ	in accordance with customer's requirement, price: on request	15, 18	DL440500
Qualification folder IQ/OQ	supporting documents for validation performed by customer, consisting of: IQ/OQ checklists, unit schematics, QM certificate in accordance with ISO 9001	15, 18, 20	8012-0866
Qualification folder IQ/OQ/PQ	supporting documents for validation performed by customer, in accordance with customer's requirement, extension of Qualification folder IQ/OQ by chapter PQ	15, 18	8012-0954
<b>Warranty service</b>			
Extension of the warranty from 2 to 3 years	beginning with the date of delivery, wearing parts are not included	-	DL029041
Extension of the warranty from 2 to 5 years	beginning with the date of delivery, wearing parts are not included	-	DL029042

\* 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.
- 06 Heating-up time may increase as a result of the lower heat conductivity.
- 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 (see the chapter on BINDER Service) 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.
- 20 When ordering IQ/OQ qualification folders and associated IQ/OQ execution on one order, we offer a 15 % discount for both items.  
When ordering IQ/OQ/PQ qualification folders and associated IQ/OQ/PQ execution on one order, we offer a 15 % discount for the item of the IQ/OQ/PQ folder.