Model MKF 56 | Dynamic climate chambers for rapid temperature changes with humidity control

A BINDER MKF series environmental simulation chamber is ideally suited for any cold and heat testing based on current temperature and climate testing methods according to DIN and IEC standards. The comprehensive standard equipment for this environmental simulation chamber ensures ease of operation.

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 56



Model 56

IMPORTANT FEATURES

- Temperature range: -40 °C to +180 °C
- Humidity range: 10 % to 98 % RH
- 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 capacitative humidity sensor and vapor humidification
- BINDER Multi Management Software APT-COM™ Basic Edition
- Troubleshooting system with visual and audible alarms
- Intuitive touchscreen controller with time-segment and real-time programming
- Internal data logger, measured values can be read out in open format via USB
- Unit self-test for comprehensive status analysis
- Access port with silicone plug: 50 mm, left
- 4 castors, two with brakes
- Computer interface: Ethernet
- Adjustable ramp function
- Integrated chart recorder
- Real-time clock
- Door heating
- 1 stainless steel rack
- Complete safety connection kit for water supply and drainage, up to 1 m height
- BINDER test confirmation
- Inner chamber made of stainless steel
- Pt 100 temperature sensor
- Thermal insulation using PUR foam
- CFC-free refrigerant R-452A
- Cooling with compressor cooling unit
- Fin evaporator

OPTIONAL EQUIPMENT

- APT-COM Multi Management Software – for managing, recording, and documenting unit parameters
- Racks – option of stainless steel racks, depending on test requirements
- Systems for water treatment and compressed air supply
- Services – wide range of services to ensure that the unit functions correctly

ORDERING INFORMATION

Interior volume [L]	Power supply - unit fuse	Plug*	Version	Model version	Art.-No.
Model MKF 56					
60	230 V 1~ 50 Hz -16,0 A	CEE 7/7	Standard	MKF056-230V	9020-0378
	240 V 1~ 60 Hz -16,0 A	NEMA 6-20	Standard	MKF056-240V	9020-0389

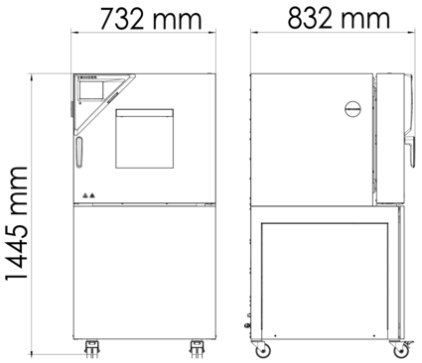
TECHNICAL DATA

Data		
Article Number	9020-0378	9020-0389
Designation	MKF056-230V	MKF056-240V
Option model	Standard	Standard
Performance Data Temperature		
Temperature range	-40...180 °C	-40...180 °C
Temperature uniformity dependent on set value	0.5...1.5 ± K	0.5...1.5 ± K
Temperature fluctuation dependent on set value	0.1...0.5 ± K	0.1...0.5 ± K
Average heating-up rate according to IEC 60068-3-5 between -40°C and 180°C	5.0 K/min	5.0 K/min
Average cooling down time according to IEC 60068-3-5 between 180°C and -40°C	5.0 K/min	5.0 K/min
Cooling down time from 180°C to -40°C	90 min	90 min
Performance Data Climate		
Temperature range with humidity	10...95 °C	10...95 °C
Humidity range	10...98 % RH	10...98 % RH
Temperature fluctuation with humidity dependent on set value	0.1...0.5 ± K	0.1...0.5 ± K
Humidity fluctuation with humidity dependent on set value	≤2,5 ± % r.F.	≤2,5 ± % r.F.
Max. heat compensation at 25°C and 90% RH	250 W	250 W
Electrical data		
Rated Voltage	230 V	240 V
Power frequency	50 Hz	60 Hz
Nominal power	2,8 kW	2,8 kW
Unit fuse	16,0 A	16,0 A
Phase (Nominal voltage)	1~	1~
Dimensions and weights		
Interior volume	60 L	60 L
Net weight of the unit (empty)	175 kg	175 kg
Load per rack	15 kg	15 kg
Permitted load	60 kg	60 kg

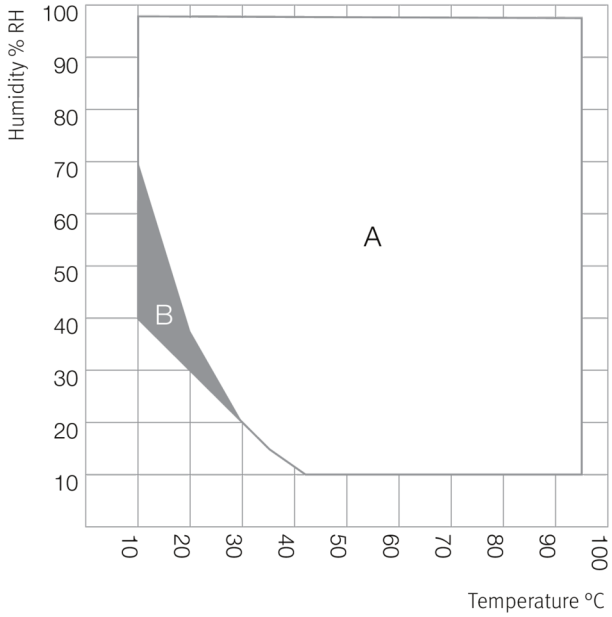
Wall clearance back	300 mm	300 mm
Wall clearance sidewise	200 mm	200 mm
Housing dimensions not incl. fittings and connections		
Width net	720 mm	720 mm
Height net	1,445 mm	1,445 mm
Depth net	780 mm	780 mm
Internal Dimensions		
Interior width	400 mm	400 mm
Interior height	420 mm	420 mm
Interior depth	348 mm	348 mm
Unit doors	1	1
Environment-specific data		
Sound-pressure level	59 dB(A)	59 dB(A)
Energy consumption at 25°C and 60% RH	800 Wh/h	800 Wh/h
Fixtures		
Number of shelves (std./max.)	1/4	1/4

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]

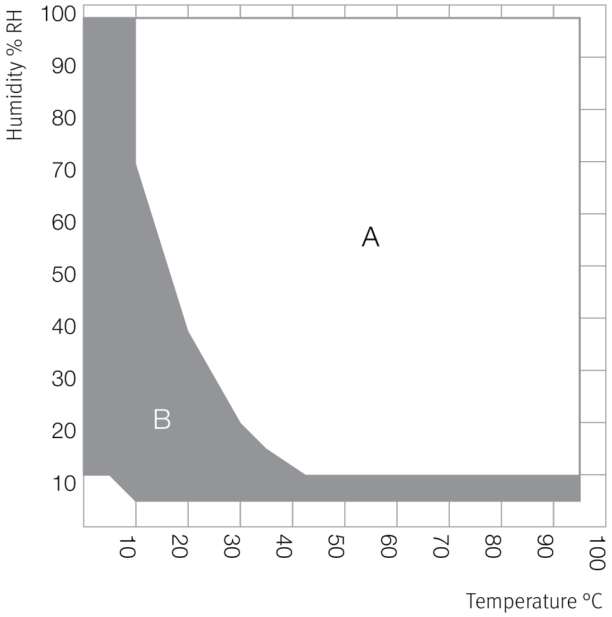


DIAGRAMS



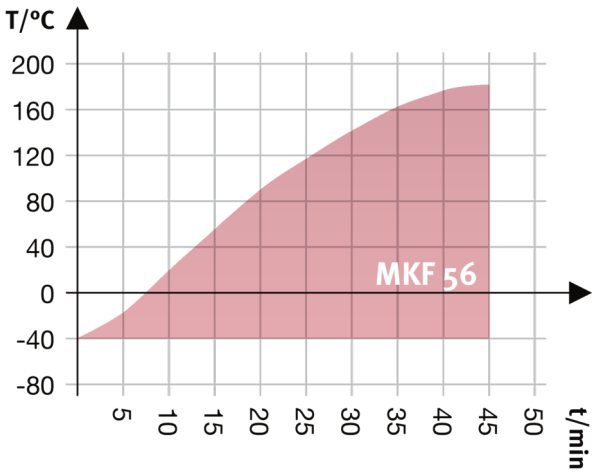
A: Standard Climate range
B: Time-limited operation (max. 24 hours)

Climate chart

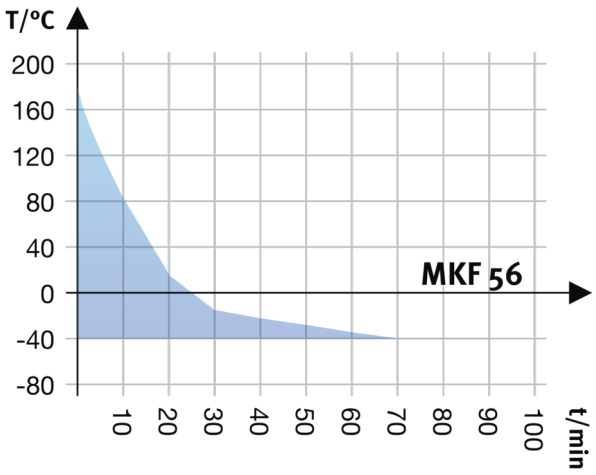


A: Standard Climate range
B: Extended range with dry-air purge

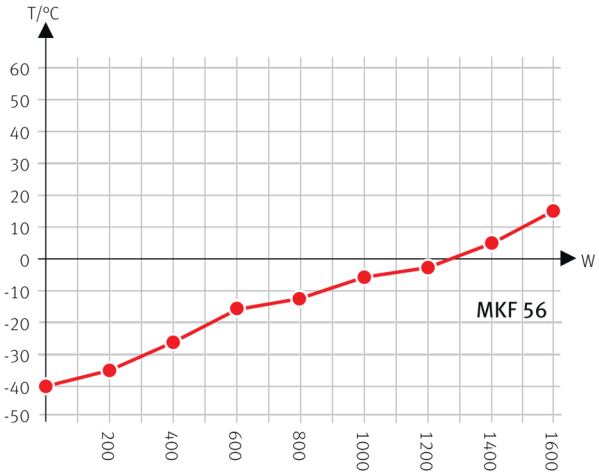
Climate chart



Heating up rate



Cooling down rate



Heat compensation with a set value of -40°C

Heat compensation chart

OPTIONS

Designation	Description	MKF 56	*	Art.-No.
Access port with silicone plug	left			
	30 mm	•	01	8012-1323
	50 mm	•	01	8012-1329
	80 mm	•	01	8012-1335
	right			
	30 mm	•	01	8012-1320
	50 mm	•	01	8012-1326
	80 mm	•	01	8012-1332
	top			
	80 mm	•	01	8012-1537
Analog output 4-20 mA	for temperature and humidity values (output not adjustable)	•	-	8012-1085
Calibration certificate, expanded	for temperature and humidity; for extending the measurement in center of chamber to include another test value	•	-	8012-1194
Calibration certificate, temperature	temperature measurement incl. certificate, 9 measuring points at specified temperature	•	-	8012-1568
	temperature measurement incl. certificate, 15- 18 measuring points at specified temperature	•	-	8012-1589
	temperature measurement incl. certificate and 27 measuring points at specified temperature	•	-	8012-1609
Calibration certificate, temperature and humidity	Measurement in center of chamber at 25°C / 60% RH or at specified test values	•	-	8012-1188

Designation	Description	MKF 56	*	Art.-No.
	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	•	-	8012-1615
Compressed air connection	for the connection to an existing pressurized air network	•	-	8012-1796
Door lock	lockable door handle	•	-	8012-1096
Dry-air purge	controlled, incl. connection; suitable for the simulation of current automobile industry standards	•	-	8012-1088
Pt 100 temperature sensor	additional flexible Pt 100, interior, for displaying the temperature on the unit display	•	-	8012-1094
RS 485 interface, 2-wire	Additional serial interface can be used parallel to Ethernet, for Multi Management Software APT-COM™	•	-	8012-1769
Temperature safety device class 2	with visual alarm (DIN 12880)	•	-	8012-1097
Water cooling	for reduced heat loss to ambient air	•	-	8012-1098

ACCESSORIES

Designation	Description	MKF 56	*	Art.-No.
APT-COM™ 4 GLP-Edition	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	•	-	9053-0042
APT-COM™ 4 PROFESSIONAL-Edition	convenient unit and user management built on the BASIC edition. Suitable for networking up to 100 units.			
	version 4, PROFESSIONAL edition	•	-	9053-0040
BINDER PURE AQUA SERVICE	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
BINDER PURE AQUA SERVICE, accessories	Single-use, replacement cartridge for BINDER PURE AQUA System	•	-	6011-0165
pH-neutral detergent	concentrated, for gentle remove of residual contaminants; 1 kg	•	-	8012-2250
Qualification documents	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
	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

Designation	Description	MKF 56	*	Art.-No.
Rack	max. load per rack 30 kg			
	stainless steel	•	-	8012-2085
Rack, reinforced	stainless steel	•	-	8012-1091
Rack accessories	fasteners (1 set of 4) for additional security of racks	•	-	8012-2280
RS 485 / RS 422 interface converter	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
Shelf, perforated	max. load per rack 30 kg			
	Stainless steel	•	-	8012-2175
Water supply set	consisting of fresh- and waste-water containers (20 liters each), cabling and pump			
	external, free-standing	•	-	8012-1846

SERVICES

Designation	Description	*	Art.-No.
Calibration services			
Temperature and humidity calibration	Expansion –Temperature and humidity calibration with 1 measuring point in center of chamber with 1 specified pair of values, including certificate	05	DL30-0302
	Temperature and humidity calibration with 1 measuring point in center of chamber with 1 specified pair of values, including certificate	05	DL30-0330
Temperature and humidity measurement, 9-1 measuring points	Temperature measurement with 9 temperature measuring points and 1 humidity measuring point in center of chamber with a pair of values specified by the user, including certificate	05	DL30-0309
Temperature and humidity measurement, 18-1 measuring points	Temperature measurement with 18 temperature measuring points and 1 humidity measuring point in center of chamber with a pair of values specified by the user, including certificate	05	DL30-0318
Temperature and humidity measurement, 27-1 measuring points	Temperature measurement with 27 temperature measuring points and 1 humidity measuring point in center of chamber with a pair of values specified by the user, including certificate	05	DL30-0327
Temperature and humidity measurement according to DIN12880	Temperature measurement in accordance with DIN 12880 with 27 temperature measuring points and 1 humidity measuring point in center of chamber with a pair of values specified by the user, including certificate	05	DL30-0427
Installation services			
Unit commissioning	Connect the unit to the customer-side connections (electricity, water, wastewater, gas), basic functions check, brief operating instructions. (excl.: unpacking, setup, controller instructions, programming, installation work)	05	DL10-0180
Unit instructions	Instruction regarding operating principle and basic functions of the unit, operation of the control electronics including programming	05	DL10-0560
Maintenance contracts			

Designation	Description	*	Art.-No.
BRONZE 3-year maintenance contract	Maintenance service as contractually agreed, visual inspection of mechanical and electrical components, check of control response, 20% discount on spare parts	05	DL20-0710
GOLD 3-year maintenance contract	Maintenance service as contractually agreed, visual inspection of mechanical and electrical components, check of control response, 20% discount on spare parts, testing of all key functions, replacement of wear parts, calibration of one test temperature specified by the user in the center of the usable space, including certificate	05	DL20-0935
SILVER 3-year maintenance contract	Maintenance service as contractually agreed, visual inspection of mechanical and electrical components, check of control response, 20% discount on spare parts, testing of all key functions, calibration of one test temperature specified by the user in the center of the usable space, without certificate	05	DL20-0835
Maintenance services			
Leakage test	Testing and logging of the leak-tightness of systems containing hydrofluorocarbons in accordance with Regulation EC842/2006, incl. test book	05	DL00-0034
Maintenance	One-off maintenance service in accordance with maintenance schedule. Visual inspection of mechanical and electrical components, testing of all key functions. Calibration of a test temperature specified by the user in center of usable space without certificate	05	DL20-0610
Validation services			
Execution of IQ/OQ	Execution of IQ/OQ in accordance with qualification folder	05	DL42-0300
Execution of IQ/OQ/PQ	Execution of IQ/OQ/PQ in accordance with qualification folder	05	DL44-0500
Warranty service			
1-year warranty extension	The warranty is extended by 1 year from the delivery date, wear parts are excluded	05	DL50-0040

NOTES

01 Condensation may occur in the area around the access port. Access ports may be placed in custom locations for an additional charge.

05 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).

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