

# Model MK 56 | Dynamic climate chambers for rapid temperature changes

The BINDER MK series chamber is suitable for all heat and cold tests between  $-40\text{ °C}$  and  $180\text{ °C}$ . The MK is a clever alternative to complex individual solutions for cyclical temperature tests.

## BENEFITS

- Homogeneous climate conditions thanks to APT.line™ technology
- Comprehensive programming and data acquisition
- Large heated viewing window



Model 56



Model 56

## IMPORTANT FEATURES

- Temperature range:  $-40\text{ °C}$  to  $+180\text{ °C}$
- APT.line™ preheating chamber technology
- Programmable condensation protection for test material
- Heated viewing window with LED interior lighting
- 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
- Class 2 independent adjustable temperature safety device (DIN 12880) with visual alarm
- 4 castors, two with brakes
- Computer interface: Ethernet
- Adjustable ramp function
- Integrated chart recorder
- Real-time clock
- 1 stainless steel rack
- Inner chamber made of stainless steel
- CFC-free refrigerant R-452A
- Cooling with compressor cooling unit

## ORDERING INFORMATION

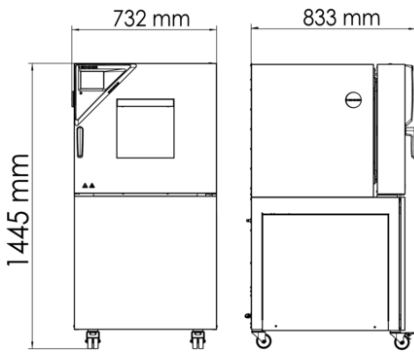
Interior volume [L]	Power supply - unit fuse	Plug*	Version	Model version	Art.-No.
Model MK 56					
60	230 V 1~ 50 Hz -16,0 A	CEE 7/7	Standard	MK056-230V	9020-0374
	240 V 1~ 60 Hz -16,0 A	NEMA 6-20	Standard	MK056-240V	9020-0388

## TECHNICAL DATA

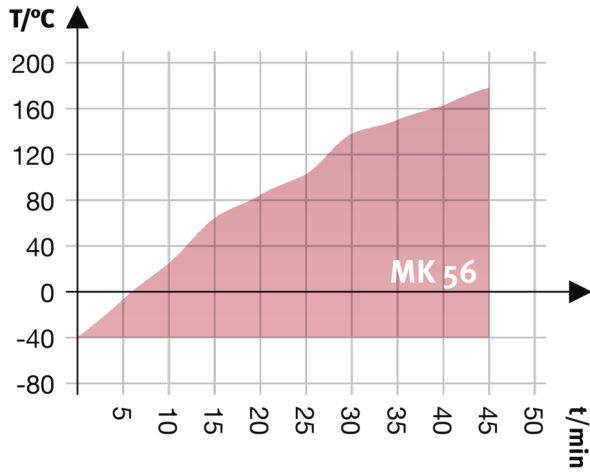
Data		
Designation	MK056-230V	MK056-240V
Article Number	9020-0374	9020-0388
Option model	Standard	Standard
Performance Data Temperature		
Temperature range	-40...180 °C	-40...180 °C
Temperature uniformity dependent on set value	0.5...1.5 ± K	0.5...1.5 ± K
Temperature fluctuation dependent on set value	0.1...0.5 ± K	0.1...0.5 ± K
Average heating-up rate according to IEC 60068-3-5	5.0 K/min	5.0 K/min
Cooling down time from 180°C to -40°C	90 min	90 min
Average cooling down time according to IEC 60068-3-5	5.0 K/min	5.0 K/min
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~
Measures		
Interior volume	60 L	60 L
Net weight of the unit (empty)	165 kg	165 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	778 mm	778 mm
Internal Dimensions		
Interior width	400 mm	400 mm
Interior height	420 mm	420 mm
Interior depth	350 mm	350 mm
Viewing window width	288 mm	288 mm
Viewing window height	255 mm	255 mm
Unit doors	1	1
Environment-specific data		
Sound-pressure level	59 dB(A)	59 dB(A)
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.

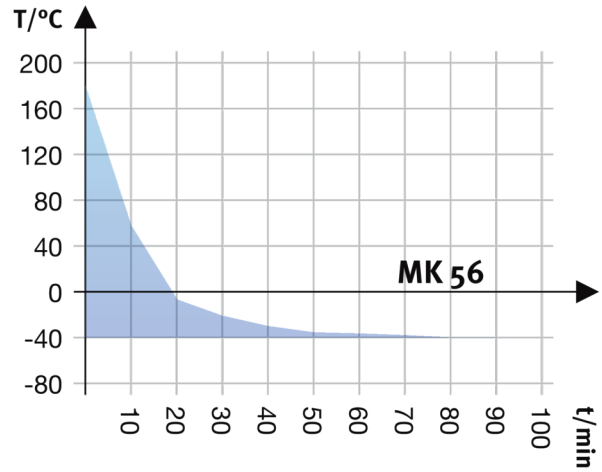
**DIMENSIONS** Incl. fittings and connections [mm]



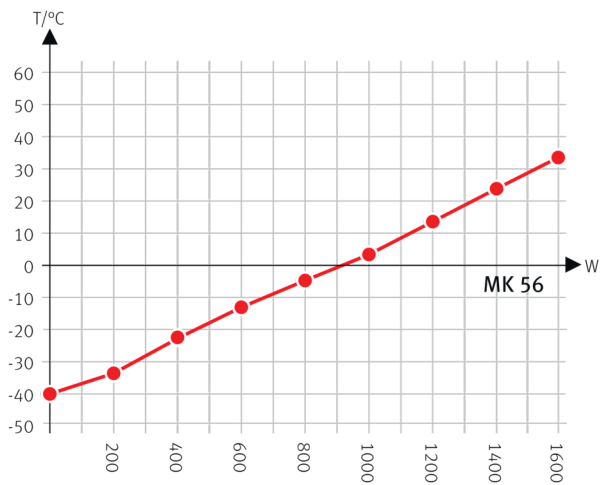
**DIAGRAMS**



Heating up rate



Cooling down rate



Heat compensation with a set value of -40°C

Heat compensation chart

## OPTIONS

Designation	Description	MK 56	*	Art.-No.
Access port with silicone plug	left			
	30 mm	•	01	8012-1322
	50 mm	•	01	8012-1328
	80 mm	•	01	8012-1334
	right			
	30 mm	•	01	8012-1319
	50 mm	•	01	8012-1325
	80 mm	•	01	8012-1331
	top			
	80 mm	•	01	8012-1536
Analog output 4-20 mA	for temperature values (output not adjustable)	•	-	8012-1084
Calibration certificate, expanded	for temperature; for extending the measurement in center of chamber to include another test temperature	•	-	8012-1124
Calibration certificate, temperature	for temperature, measurement in center of chamber at specified temperature	•	-	8012-1143
	temperature measurement incl. certificate, 9 measuring points at specified temperature	•	-	8012-1560
	temperature measurement incl. certificate, 15- 18 measuring points at specified temperature	•	-	8012-1581
	temperature measurement incl. certificate and 27 measuring points at specified temperature	•	-	8012-1602
Compressed air connection	for the connection to an existing pressurized air network	•	-	8012-1795
Door lock	lockable door handle	•	-	8012-1782
Dry-air purge	uncontrolled, incl. connection; for preventing condensation	•	-	8012-1806
Pt 100 temperature sensor	additional flexible Pt 100, interior, for displaying the temperature on the unit display	•	-	8012-1093
RS 485 interface, 2-wire	Additional serial interface can be used parallel to Ethernet, for Multi Management Software APT-COM™	•	-	8012-1768
Temperature safety device class 2	with visual alarm (DIN 12880)	•	-	8012-1792
Water cooling	for reduced heat loss to ambient air	•	-	8012-1815
Zero voltage relay contacts	for controlling 3 relay contacts via program regulators, accessible via 6-pin DIN socket (max. 24 V - 2.5 A)	•	-	8012-1095

## ACCESSORIES

Designation	Description	MK 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
	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, CO <sub>2</sub> , O <sub>2</sub> – or pressure, depending on unit			
	Digital in PDF format	•	-	7057-0005
Qualification documents	Hard copy inside folder	•	-	7007-0005
	IQ/OQ documents – supporting documents for validation performed by customers, consisting of: IQ/OQ checklists incl. calibration guide and comprehensive unit documentation; parameters: temperature, CO <sub>2</sub> , O <sub>2</sub> , pressure, depending on unit			
	Digital in PDF format	•	-	7057-0001
	Hard copy inside folder	•	-	7007-0001
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
Rack	max. load per rack 30 kg			
	stainless steel	•	-	8012-2085

Designation	Description	MK	*	Art.-No.
	Rack, stainless steel, with reinforced fasteners (1 set of 4)	56	-	8012-1091
	Rack fasteners (1 set of 4) for accessories additional security of racks		-	8012-2280
	Stainless steel		-	8012-2175
Shelves	WLAN kit		-	8012-2262

The kit contains a client bridge that establishes a wireless connection between BINDER units and APT-COM4, LIMS, or customer-specific software via an Ethernet interface. It provides an alternative solution in situations where units need to be positioned in locations without an on-site Ethernet connection. In secured networks, installation and configuration must be performed by the customer's IT service.

Designation	Description	MK	*	Art.-No.
pH-neutral detergent	concentrated, for gentle remove of residual contaminants; 1 kg	56	-	8012-2250

## SERVICES

Designation	Description	*	Art.-No.
<b>Calibration services</b>			
Calibration certificate, temperature	Calibration of one (1) test temperature specified by the user in center of chamber, including certificate	-	DL30-0101
	Extension of calibration of one (1) additional test temperature specified by the user in the center of the usable space, including certificate	-	DL30-0102
Temperature measurement, 9 measuring points	Temperature measurement with 9 measuring points with a set value specified by the user, including certificate	-	DL30-0109
Temperature measurement, 18 measuring points	Temperature measurement with 18 measuring points with a set value specified by the user, including certificate	-	DL30-0118
Temperature measurement, 27 measuring points	Temperature measurement with 27 measuring points with a set value specified by the user, including certificate	-	DL30-0127
<b>Installation services</b>			
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)	-	DL10-0300
Unit instructions	Instruction regarding operating principle and basic functions of the unit, operation of the control electronics including programming	05	DL10-0700
<b>Maintenance contracts</b>			
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	-	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 temperature and CO <sub>2</sub> value, including certificate	-	DL20-0940
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	-	DL20-0830
<b>Maintenance services</b>			
Leakage test	Testing and logging of the leak-tightness of systems containing hydrofluorocarbons in accordance with Regulation EC842/2006, incl. test book	-	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	-	DL20-0500
<b>Validation services</b>			
Execution of IQ/OQ	Execution of IQ/OQ in accordance with qualification folder	-	DL41-0200

Designation	Description	*	Art.-No.
Execution of IQ/OQ/PQ	Execution of IQ/OQ/PQ in accordance with qualification folder	-	DL44-0500
Warranty service			
1-year warranty extension	The warranty is extended by 1 year from the delivery date, wear parts are excluded	-	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).

**BINDER GmbH**

Tuttlingen, Germany  
TEL +49 7462 2005 0  
FAX +49 7462 2005 100  
info@binder-world.com  
www.binder-world.com

**BINDER Inc.**

Bohemia, NY, USA  
TEL +1 631 224 4340  
FAX +1 631 224 4354  
usa@binder-world.com  
www.binder-world.us

**BINDER Environmental Testing  
Equipment (Shanghai) Co., Ltd.**

Shanghai, P.R. China  
TEL +86 21 685 808 25  
FAX +86 21 685 808 29  
china@binder-world.com  
www.binder-world.com

**BINDER Asia Pacific (Hong Kong) Ltd.**

Kowloon, Hong Kong, P.R. China  
TEL +852 39070500  
FAX +852 39070507  
asia@binder-world.com  
www.binder-world.com