

# Model MKT 240 | Dynamic climate chambers for rapid temperature changes with extended low temperature range

Temperature ranges between -70 °C and 180 °C, with the added benefit of natural simulation, are what make the BINDER MKT series so unique. At the same time, this environmental simulation chamber fulfills the very highest precision and performance requirements for cyclical temperature tests.

#### **BENEFITS**

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



Model 240



Model 240

#### IMPORTANT FEATURES

- Temperature range: -70 °C to +180 °C
- 4 zero-voltage relay contacts
- 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  $\, ullet \,$
- 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
- Door heating
- 1 stainless steel rack
- 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]	Power supply - unit fuse	Plug*	Version	Model version	ArtNo.
Model MKT 240					
229	400 V 3~ 50 Hz -16,0 A	CEE 16 / 6 H plug 5- pin	Standard	MKT240-400V	9020-0386
228	480 V 3~ 60 Hz -16,0 A	CEE 16 / 6 H plug 5- pin	with voltage and frequency converter	MKT240-480V-C	9020-0364



# TECHNICAL DATA

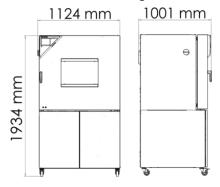
	Data						
Standard	Designation	MKT240-400V	MKT240-480V-C				
Reformance Data Temperature         70 - 180 ° °C         70 - 180 ° °C           Temperature range         70 - 180 ° °C         0 - 1.10 ° °C           Temperature fluctuation dependent on set value         0 - 1.0 ° °C         0 - 1.0 ° °C           Temperature fluctuation dependent on set value         0 - 1.0 ° °C         0 - 1.0 ° °C           Severage heating-up rate according to EC 60068-75         50 °C/min         50 °C/min           Average cooling down time according to EC 60068-75         42 °C/min         42 °C/min           Average cooling down time according to EC 60068-75         42 °C/min         42 °C/min           Average cooling down time according to EC 60068-75         42 °C/min         42 °C/min           Average cooling down time according to EC 60068-75         42 °C/min         42 °C/min           Average cooling down time according to EC 60068-75         42 °C/min         42 °C/min           Average cooling down time according to EC 60068-75         42 °C/min         42 °C/min           Average cooling down time according to EC 60068-75         42 °C/min         480 °C           Average cooling down time according to EC 60068-75         42 °C/min         480 °C           Average cooling down time according to EC 60068-75         42 °C/min         480 °C           Average (Poring down time according to EC 60068-75         50 °C/min	Article Number	9020-0386	9020-0364				
Propertition tange	Option model	Standard	with voltage and frequency converter				
	Performance Data Temperature	Performance Data Temperature					
Comparation	Temperature range	-70180 °C	-70180 °C				
NewTrage heating-up rate according to EC 66068-3-5         5,0 K/min         5,0 K/min           Cooling down time from 180°C to 70°C         95 min         4.1 K/min           Neverage cooling down time according to EC 66068-3-5         4.1 K/min         4.2 K/min           Reteriod data         Wester of the Cooling down time according to EC 66068-3-5         4.1 K/min         4.80 V           Power frequency         50 Hz         6.5 kW         6.5 kW           Nominal power         6.5 kW         6.5 kW           Wester frequency         3-         3-           Nominal power         3-6,0 A         3-           Wester frequency         3-         3-           New series         1.20 K         2.28 L           New series         2.28 L         2.28 L           New series         30 kg         30 kg           New series frequency         30 kg         30 kg           New series frequency         30 kg         30 kg           New series frequency         30 kg         70 kg           New series frequency         30 kg         30 kg           New series frequency         30 kg         70 kg           New series frequency         30 mm         30 mm           New series frequency <t< td=""><td>Temperature uniformity dependent on set value</td><td>0.11.0 ± K</td><td>0.11.0 ± K</td></t<>	Temperature uniformity dependent on set value	0.11.0 ± K	0.11.0 ± K				
Cooling down time from 180°C to 70°C         95 min         95 min           Average cooling down time according to IEC 60068-35         4,2 K/min         4,2 K/min           Electrical data         Cooling down time according to IEC 60068-35         4,00 V         480 V           Power frequency         50 Hz         60 Hz           Nominal power         6,5 kW         6,5 kW           Nominal power         16,0 A         16,0 A           Phase (Nominal voltage)         3-	Temperature fluctuation dependent on set value	0.10.4 ± K	0.10.4 ± K				
Average cooling down time according to IEC 60068-3-5         4,2 K/min         4,2 K/min           Electrial data         4,20 V         4,80 V           Power frequency         50 H7         65 H2           Nominal power         6,5 kW         6,5 kW           Measures         16,0 A         16,0 A           Measures         1,28 H         2,28 H           Net weight of the unit (empty)         380 kg         380 kg           Load per rack         30 kg         30 kg           Valid clearance back         30 mm         30 mm           Wall clearance back         300 mm         300 mm           Housing dimensions not ind. fittings and connections         4,115 mm         4,115 mm           Height net         1,235 mm         1,235 mm         2,25 mm           Depth net         925 mm         925 mm	Average heating-up rate according to IEC 60068-3-5	5.0 K/min	5.0 K/min				
Retertical data         Accord Voltage         4co V         4co V           Power frequency         50 Hz         6co Hz           Nominal power         6co KW         6co KW           Unit fuse         16co A         16co A           Phase (Nominal voltage)         3co         3co           Measures         3co         3co           Net weight of the unit (empty)         3co kg         3co           Net weight of the unit (empty)         3co kg         3co           Load per rack         3co kg         3co           Permitted load         7co kg         7co kg           Wall clearance back         3co mm         3co mm           Wall clearance sidewise         2co mm         2co mm           Housing dimensions not incl. fittings and connections         1.115 mm         1.115 mm           Weight net         1.935 mm         1.935 mm         1.935 mm           Depth net         925 mm         925 mm         925 mm	Cooling down time from 180°C to -70°C	95 min	95 min				
Rated Voltage         400 V         480 V           Power frequency         50 Hz         60 Hz           Nominal power         6,5 kW         6,5 kW           Unit fuse         16,0 A         16,0 A           Phase (Nominal voltage)         3~           Measures           Interior volume         228 L         228 L           Net weight of the unit (empty)         380 kg         300 kg           Load per rack         30 kg         30 kg           Wall clearance back         300 mm         300 mm           Wall clearance sidewise         200 mm         200 mm           Housing dimensions not incl. fittings and connections         1,115 mm         1,115 mm           Width net         1,115 mm         1,935 mm         925 mm           Depth net         925 mm         925 mm	Average cooling down time according to IEC 60068-3-5	4.2 K/min	4.2 K/min				
Power frequency         50 Hz         60 Hz           Nominal power         6,5 kW         6,5 kW           Unit fuse         16,0 A         16,0 A           Phase (Nominal voltage)         3"         3"           Measures         Interior volume         228 L         228 L           Net weight of the unit (empty)         380 kg         380 kg           Load per rack         30 kg         30 kg           Permitted load         70 kg         70 kg           Wall clearance back         300 mm         300 mm           Wall clearance sidewise         200 mm         200 mm           Housing dimensions not incl. fittings and connections         1.115 mm         1.125 mm           Height net         1.935 mm         1.935 mm         2925 mm	Electrical data						
Nominal power         6.5 kW         6.5 kW           Unit fuse         16.0 Λ         16.0 Λ           Phase (Nominal voltage)         3~         3~           Measures         ***********************************	Rated Voltage	400 V	480 V				
Unit fuse 16,0 A	Power frequency	50 Hz	60 Hz				
Phase (Nominal voltage) 3- 3-  Measures  Interior volume 228 L 228 L  Net weight of the unit (empty) 380 kg 380 kg  Load per rack 30 kg 30 kg  Permitted load 70 kg 70 kg  Wall clearance back 300 mm 300 mm  Wall clearance sidewise 200 mm 200 mm  Housing dimensions not incl. fittings and connections  Width net 1,115 mm 1,115 mm  List 5 mm  Leight net 9,25 mm 925 mm  Interial Dimensions	Nominal power	6,5 kW	6,5 kW				
Measures Interior volume  228 L  228 L  228 L  Net weight of the unit (empty)  380 kg  380 kg  380 kg  20 kg  70 kg  70 kg  70 kg  Wall clearance back  300 mm  300 mm  200 mm  Housing dimensions not incl. fittings and connections  Width net  1,115 mm  1,115 mm  1,935 mm  1,935 mm  1,935 mm  Interial Dimensions	Unit fuse	16,0 A	16,0 A				
Net weight of the unit (empty)  380 kg  380 kg  380 kg  300 kg  70 kg  Wall clearance back  Wall clearance sidewise  200 mm  200 mm  Wall clearance sidewise  400 mm  1.115 mm  1.115 mm  1.935 mm  925 mm  925 mm  1.935 mm  1.935 mm	Phase (Nominal voltage)	3~	3~				
Net weight of the unit (empty)  380 kg  30 kg  200 kg  70 kg  Wall clearance back  300 mm  300 mm  Wall clearance sidewise  200 mm  40using dimensions not incl. fittings and connections  Width net  1,115 mm  1,115 mm  1,935 mm  202 mm  402 mm  403 mm  404 metal Dimensions  405 mm  406 mm  407 mm  408 mm  409	Measures						
Load per rack 30 kg 70 kg  Permitted load 70 kg 70 kg  Wall clearance back 300 mm 300 mm  Wall clearance sidewise 200 mm 200 mm  Housing dimensions not incl. fittings and connections  Width net 1,115 mm 1,115 mm  Leight net 1,935 mm 925 mm  Internal Dimensions	Interior volume	228 L	228 L				
Permitted load 70 kg 70 kg  Wall clearance back 300 mm 300 mm  Wall clearance sidewise 200 mm 200 mm  Housing dimensions not incl. fittings and connections  Width net 1,115 mm 1,115 mm  Depth net 925 mm 925 mm	Net weight of the unit (empty)	380 kg	380 kg				
Wall clearance back 300 mm 300 mm  Wall clearance sidewise 200 mm 200 mm  Housing dimensions not incl. fittings and connections  Width net 1,115 mm 1,115 mm  Height net 1,935 mm 925 mm  Depth net 925 mm 925 mm	Load per rack	30 kg	30 kg				
Wall clearance sidewise 200 mm 200 mm  Housing dimensions not incl. fittings and connections  Width net 1,115 mm 1,115 mm  Leight net 1,935 mm 925 mm  Internal Dimensions	Permitted load	70 kg	70 kg				
Housing dimensions not incl. fittings and connections  Width net  1,115 mm  1,115 mm  1,935 mm  Depth net  925 mm  925 mm	Wall clearance back	300 mm	300 mm				
Width net 1,115 mm 1,115 mm  Height net 1,935 mm 1,935 mm  Depth net 925 mm 925 mm	Wall clearance sidewise	200 mm	200 mm				
Height net 1,935 mm 1,935 mm  Depth net 925 mm 925 mm	Housing dimensions not incl. fittings and connections						
Depth net 925 mm 925 mm	Width net	1,115 mm	1,115 mm				
Internal Dimensions	Height net	1,935 mm	1,935 mm				
	Depth net	925 mm	925 mm				
nterior width 735 mm 735 mm	Internal Dimensions						
	Interior width	735 mm	735 mm				



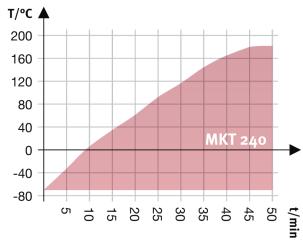
Interior height	700 mm	700 mm			
Interior depth	443 mm	443 mm			
Unit doors	1	1			
Environment-specific data	Environment-specific data				
Sound-pressure level	64 dB(A)	67 dB(A)			
Energy consumption at 20°C	500 Wh/h	500 Wh/h			
Fixtures					
Number of shelves (std./max.)	1/6	1/6			

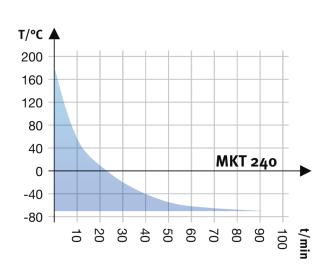
All technical data is specified for unloaded units with standard equipment at an ambient temperature of  $\pm 20^{\circ}$  C  $\pm 3^{\circ}$ C and a power supply voltage fluctuation of  $\pm 10^{\circ}$  %. The temperature data is determined in accordance to BINDER factory standard following DIN 12880, 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

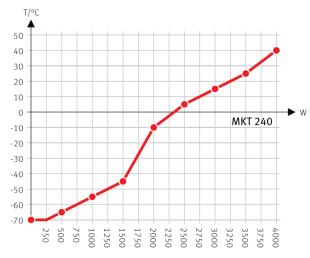




Heating up rate

Cooling down rate





Heat compensation with a set value of -70°C

Heat compensation chart

#### **OPTIONS**

Designation	Description	MKT 240	*	ArtNo.
	left			
	30 mm	•	01	8012-1324
	50 mm	•	01	8012-1330
	8o mm	•	01	8012-1336
	100 mm	•	01	8012-1544
	125 mm	•	01	8012-1353
	right			
ccess port with silicone plug	30 mm	•	01	8012-1321
iccess port with silicone plug	50 mm	•	01	8012-1327
	80 mm	•	01	8012-1333
	100 mm	•	01	8012-1541
	125 mm	•	01	8012-1350
	top			
	80 mm	•	01	8012-1538
	100 mm	•	01	8012-1532
	125 mm	•	01	8012-1535
nalog output 4-20 mA	for temperature values (output not adjustable)	•	-	8012-1785



Designation	Description	MKT 240	*	ArtNo.
Calibration certificate, expanded	for temperature; for extending the measurement in center of chamber to include another test temperature	•	-	8012-1125
	for temperature, measurement in center of chamber at specified temperature	•	-	8012-1144
Calibration certificate,	temperature measurement incl. certificate, 9 measuring points at specified temperature	•	-	8012-1561
temperature	temperature measurement incl. certificate, 15- 18 measuring points at specified temperature	•	-	8012-1582
	temperature measurement incl. certificate and 27 measuring points at specified temperature	•	-	8012-1603
Compressed air connection	for the connection to an existing pressurized air network	•	-	8012-1788
Door lock	lockable door handle	•	-	8012-1784
Dry-air purge	uncontrolled, incl. connection; for preventing condensation	•	-	8012-1867
Notch-type access port	notch-type access port in door, 100 x 35 mm	•	-	8012-1855
Pt 100 temperature sensor	additional flexible Pt 100, interior, for displaying the temperature on the unit display	•	-	8012-1790
RS 485 interface, 2-wire	Additional serial interface can be used parallel to Ethernet, for Multi Management Software APT-COM™	•	-	8012-1770
Temperature safety device class 2	with visual alarm (DIN 12880)	•	-	8012-1794

# **ACCESSORIES**

Designation	Description	MKT 240	*	ArtNo.
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-	convenient unit and user management built on the BASIC edition. Suitable for networking up to 100 units.			
Edition	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, $\mathrm{CO_2}$ , $\mathrm{O_2}$ – or pressure, depending on unit			
	Digital in PDF format	•	-	7057-0005
	Hard copy inside folder	•	-	7007-0005
Qualification documents	IQ/OQ documents – supporting documents for validation performed by customers, consisting of: IQ/OQ checklists incl. calibration guide and comprehensive unit documentation; parameters: temperature, $CO_2$ , $O_2$ , pressure, depending on unit			
	Digital in PDF format	•	-	7057-0001
	Hard copy inside folder	•	-	7007-0001



Designation	Description	MKT 240	*	ArtNo.
	RS 422 cable set and RS 485 / RS 422 interface converter for connection to 10-way plug distributor			
RS 485 / RS 422 interface converter	115 V option model	•	-	8012-0599
	230 V option model	•	-	8012-0589
Rack	stainless steel	•	-	8012-2053
Rack, reinforced	stainless steel, with fasteners (1 set of 4)	•	-	8012-0605
Rack accessories	fasteners (1 set of 4) for additional security of racks	•	-	8012-2280
Shelf, perforated	Stainless steel	•	-	8012-2251
pH-neutral detergent	concentrated, for gentle remove of residual contaminants; 1 kg	•	-	8012-2250

# **SERVICES**

Designation	Description	*	ArtNo.		
Calibration services					
Calibration cortificate temporature	Calibration of one (1) test temperature specified by the user in center of chamber, including certificate	-	DL30-0101		
Calibration certificate, temperature	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		
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)	-	DL10-0300		
Unit instructions	Instruction regarding operating principle and basic functions of the unit, operation of the control electronics including programming	-	DL10-0700		
Maintenance contracts					
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 $\mathrm{CO}_2$ 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		



Designation	Description	*	ArtNo.
Maintenance services			
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
Validation services			
Execution of IQ/OQ	Execution of IQ/OQ in accordance with qualification folder	-	DL41-0200
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

# BINDER Best conditions for your success

#### **NOTES**

O1 Condensation may occur in the area around the access port. Access ports may be placed in custom locations for an additional charge.

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