

# Model M 720 | Drying and heating chambers with forced convection and advanced program functions

With a maximum of 300 °C and various programming options the M series material test chambers are ideal for material and aging tests. With a high air flow, the powerful fans ensure rapid heating.

## **BENEFITS**

- Uniform drying conditions thanks to APT.line™ technology
- Identical test conditions throughout the chamber interior independent of sample size and quantity
- · Outstanding thermal insulation saves operation costs
- · Advanced programming options



Model 720



Model 720

## **MAIN FEATURES**

- $\bullet\,$  Temperature range: +5 °C above ambient temperature to +300 °C
- APT.line™ preheating chamber technology
- Adjustable fan speed
- Program-controlled ventilation flap
- · Color LCD controller with time-segment programming
- 2 chrome-plated racks
- Class 2 independent adjustable temperature safety device (DIN 12880) with visual alarm
- Computer interface: RS 422

#### **ORDERING INFORMATION**

Interior volume [L]	Voltage	Option model	Version	ArtNo.
720	400 V 3~ ph 50/60 Hz	Standard	M720-400V	9010-0205

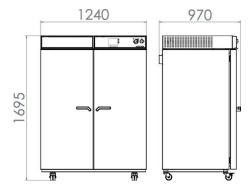


#### **TECHNICAL DATA**

### Performance Data Temperature  Temperature range +5 °C above ambient temperature to °C   300  Temperature variation at 150 °C {E K   1.9  Temperature butcustion at 250 °C {E K   2.3  Recovery time after 30 seconds door open at 150 °C [min] 3  Air change data Air change (approx.) at 150 °C {E /h   3.6  Electrical data  Rated Voltage [V] 400  Power frequency [tt2] 50/60  Nominal power [kW] 5  Phase (Nominal voltage) 3-  Measures  Interior volume [I] 720  Net weight of the unit (empty) [kg] 203  Permitted load [kg] 120  Load per rack [kg] 45  Wall clearance slock [mm] 160  Wall clearance slock [mm] 1600  Wall clearance slock [mm] 1000  Height [mm] 1000  Height [mm] 1000  Height [mm] 1200  Depth [mm] 1235  Height net [mm] 1235	Description	M720-400V¹
Temperature range + 5°C above ambient temperature to 1°C)         300           Temperature variation at 150°C [ k K]         1.9           Temperature fluctuation at 150°C [ k K]         0.3           Recovery time after 50 seconds door open at 150°C [min]         3           Air change data            Air change (approx.) at 150°C [x/h]         36           Electrical data            Rated Voltage [V]         400           Power frequency [Hz]         50/60           Nominal power [kW]         5           Phase (Rominal voltage)         3           Net weight of the unit (empty) [kg]         203           Permitted load [kg]         120           Load per rack [kg]         45           Wall clearance back [mm]         100           Internal Dimensions         100           Height [mm]         1000           Height [mm]         1000           Height net [mm]         1200           Depth (mm]         160           Housing dimensions not incl. fittings and connections         1235           Height net [mm]         1690           Depth net [mm]         660           Environment-specific data         1500           Environment-specific data	Article Number	9010-0205
Temperature variation at 150 °C [k K]         1.9           Temperature fluctuation at 150 °C [k K]         0.3           Heating-up time to 150 °C [min]         2           Recovery time after 30 seconds door open at 150 °C [min]         3           Air change data            Air change (approx.) at 150 °C [x/h]         36           Electrical data            Rated Voltage [V]         400           Power frequency [Hz]         50/60           Nominal power [kW]         5           Phase (Nominal voltage)         3           Resures            Interior volume [L]         72           Net weight of the unit (empty) [kg]         203           Permitted load [kg]         203           Vall clearance back [mm]         100           Vall clearance back [mm]         100           Vall clearance sidewise [mm]         100           Height [mm]         120           Height [mm]         120           Housing dimensions not incl. fittings and connections         1235           Height net [mm]         1600           Depth (mm]         1600           Levivonment-specific data         1820           Environment-specific data         182	Performance Data Temperature	
Temperature fluctuation at 150 °C [sk]         0.3           Heating-up time to 150 °C [min]         21           Recovery time after 30 seconds door open at 150 °C [min]         3           Air change data         ***           Air change data         ***           Air change (approx.) at 150 °C [k/h]         36           Electrical data         ***           Rated Voltage [V]         400           Power frequency [It2]         50/60           Nominal power [kW]         5           Phase (Moninal voltage)         3-           Measures         ***           Interior volume [L]         720           Net weight of the unit (empty) [kg]         203           Permitted load [kg]         120           Wall clearance back [mm]         160           Wall clearance sidewise [mm]         100           Vidth [mm]         1000           Height [mm]         60           Depth [mm]         610           Housing dimensions not incl. fittings and connections         ***           Width net [mm]         1295           Height net [mm]         690           Depth net [mm]         690           Depth net [mm]         690           Environment-specif	Temperature range +5 °C above ambient temperature to [°C]	300
Heating-up time to 150 °C [min]         21           Recovery time after 30 seconds door open at 150 °C [min]         3           Air change data         36           Air change (approx.) at 150 °C [x/h]         36           Electrical data         V           Rated Voltage [V]         400           Power frequency [Hz]         50/60           Nominal power [kW]         5           Phase (Wominal voltage)         3-           Net weight of the unit (empty) [kg]         203           Net weight of the unit (empty) [kg]         203           Permitted load [kg]         120           Load per rack [kg]         45           Wall clearance back [mm]         100           Vall clearance sidewise [mm]         100           Internal Dimensions         V           Width [nm]         1000           Height [mm]         1000           Housing dimensions not incl. fittings and connections         V           Width net [mm]         1235           Height net [mm]         1690           Depth net [mm]         865           Environment-specific data         150           Environment-specific data         150           Environment-specific data         150 </td <td>Temperature variation at 150 °C [± K]</td> <td>1.9</td>	Temperature variation at 150 °C [± K]	1.9
Recovery time after 30 seconds door open at 150 °C [min]         3           Air change data         36           Air change (approx.) at 150 °C [x/h]         36           Electrical data	Temperature fluctuation at 150 °C [± K]	0.3
Air change data Air change (approx.) at 150 °C [x/h] 36  Electrical data  Rated Voltage [V] 400  Power frequency [Iz] 50/60  Nominal power [kW] 5 5  Phase (Nominal voltage) 3-  Measures  Interior volume [L] 720  Net weight of the unit (empty) [kg] 203  Permited load [kg] 120  Load per rack [kg] 45  Wall clearance back [mm] 160  Wall clearance sidewise [mm] 1600  Height [mm] 1000  Height [mm] 1000  Height [mm] 1000  Height [mm] 1000  Depth [mm] 1200  Depth [mm] 1205  Depth [mm] 1690  Depth net [mm] 1690	Heating-up time to 150 °C [min]	21
Air change (approx.) at 150°C (x/h]         36           Electrical data         400           Power frequency [Hz]         50/60           Nominal power [kW]         5           Phase (Nominal voltage)         3~           Measures         120           Net weight of the unit (empty) [kg]         203           Permitted load [kg]         120           Load per rack [kg]         45           Wall clearance back [mm]         160           Wall clearance sidewise [mm]         100           Internal Dimensions         1200           Height [mm]         1000           Height [mm]         1200           Depth [mm]         60           Housing dimensions not incl. fittings and connections         1235           Width num         1235           Height num         365           Depth num         365           Depth num         365           Environment-specific data         1235           Environment-specific data         1290           Environment-specific data         1290           Environment-specific data         1290	Recovery time after 30 seconds door open at 150 °C [min]	3
Electrical data           Rated Voltage [V]         400           Power frequency [Hz]         50/60           Nominal power [kW]         5           Phase (Rominal voltage)         3~           Measures            Interior volume [L]         720           Net weight of the unit (empty) [kg]         203           Permitted load [kg]         120           Load per rack [kg]         45           Wall clearance back [mm]         160           Wall clearance sidewise [mm]         100           Height [mm]         1200           Depth [mm]         60           Housing dimensions not incl. fittings and connections         Width net [mm]           Width net [mm]         1235           Height net [mm]         1690           Depth net [mm]         865           Environment-specific data         1520	Air change data	
Rated Voltage [V]         400           Power frequency [Hz]         50/60           Nominal power [kW]         5           Phase (Nominal voltage)         3~           Measures         Interior volume [L]         720           Net weight of the unit (empty) [kg]         203           Permitted load [kg]         120           Load per rack [kg]         45           Wall clearance back [mm]         100           Internal Dimensions         1000           Height [mm]         1000           Hebight [mm]         610           Housing dimensions not incl. fittings and connections         1235           Width net [mm]         1690           Depth net [mm]         865           Entironment-specific data         1220           Entironment-specific data         1235           Entironment-specific data         1235           Entironment-specific data         1230	Air change (approx.) at 150 °C [x/h]	36
Power frequency [Hz]         50/60           Nominal power [kW]         5           Phase (Nominal voltage)         3~           Measures	Electrical data	
Nominal power [kW]         5           Phase (Nominal voltage)         3~           Measures         720           Net weight of the unit (empty) [kg]         293           Permitted load [kg]         120           Load per rack [kg]         45           Wall clearance back [mm]         160           Wall clearance sidewise [mm]         100           Internal Dimensions         1000           Height [mm]         100           Housing dimensions not incl. fittings and connections         1235           Height nem[mm]         1235           Height net [mm]         1690           Deth net [mm]         865           Environment-specific data         1220           Environment-specific data         1232           Environment-specific data         1232           Environment-specific data         1232           Environment-specific data         1232	Rated Voltage [V]	400
Phase (Nominal voltage)         3~           Measures         720           Net weight of the unit (empty) [kg]         203           Permitted load [kg]         120           Load per rack [kg]         45           Wall clearance back [mm]         160           Wall clearance sidewise [mm]         100           Internal Dimensions         1200           Height [mm]         1200           Depth [mm]         610           Housing dimensions not incl. fittings and connections         1235           Width net [mm]         1690           Depth net [mm]         865           Environment-specific data         1820	Power frequency [Hz]	50/60
Measures           Interior volume [L]         720           Net weight of the unit (empty) [kg]         203           Permitted load [kg]         120           Load per rack [kg]         45           Wall clearance back [mm]         160           Wall clearance sidewise [mm]         100           Internal Dimensions         1200           Height [mm]         1200           Depth [mm]         610           Housing dimensions not incl. fittings and connections         1235           Height net [mm]         1690           Depth net [mm]         865           Environment-specific data         1500           Environment-specific data         1500           Environment specific data         1500           Enviro	Nominal power [kW]	5
Interior volume [L]         720           Net weight of the unit (empty) [kg]         203           Permitted load [kg]         120           Load per rack [kg]         45           Wall clearance back [mm]         160           Wall clearance sidewise [mm]         100           Internal Dimensions         1000           Height [mm]         1200           Depth [mm]         610           Housing dimensions not incl. fittings and connections         1235           Height net [mm]         1690           Depth net [mm]         865           Environment-specific data         1320           Fixtures         1320	Phase (Nominal voltage)	3~
Net weight of the unit (empty) [kg]         203           Permitted load [kg]         120           Load per rack [kg]         45           Wall clearance back [mm]         160           Wall clearance sidewise [mm]         100           Internal Dimensions         1000           Height [mm]         1200           Depth [mm]         610           Housing dimensions not incl. fittings and connections         1235           Width net [mm]         1690           Depth net [mm]         865           Environment-specific data         1320           Fixtures         1320	Measures	
Permitted load [kg]         120           Load per rack [kg]         45           Wall clearance back [mm]         160           Wall clearance sidewise [mm]         100           Internal Dimensions         Width [mm]           Weight [mm]         1200           Depth [mm]         610           Housing dimensions not incl. fittings and connections         Width net [mm]           Width net [mm]         1235           Height net [mm]         865           Environment-specific data         Energy consumption at 150 °C [Wh/h]           Fixtures         1320	Interior volume [L]	720
Load per rack [kg]         45           Wall clearance back [mm]         160           Wall clearance sidewise [mm]         100           Internal Dimensions         1000           Height [mm]         1200           Depth [mm]         610           Housing dimensions not incl. fittings and connections         1235           Width net [mm]         1690           Depth net [mm]         865           Environment-specific data         1320           Fixtures         1320	Net weight of the unit (empty) [kg]	203
Wall clearance back [mm]       160         Wall clearance sidewise [mm]       100         Internal Dimensions       1000         Width [mm]       1000         Height [mm]       1200         Depth [mm]       610         Housing dimensions not incl. fittings and connections       1235         Width net [mm]       1690         Depth net [mm]       865         Environment-specific data       Energy consumption at 150 °C [Wh/h]       1320         Fixtures       1320	Permitted load [kg]	120
Wall clearance sidewise [mm] 100 Internal Dimensions  Width [mm] 1000 Height [mm] 1200 Depth [mm] 610 Housing dimensions not incl. fittings and connections  Width net [mm] 1235 Height net [mm] 1690 Depth net [mm] 865 Environment-specific data Energy consumption at 150 °C [Wh/h] 1320 Fixtures	Load per rack [kg]	45
Niternal Dimensions Width [mm] 1000 Height [mm] 1200 Depth [mm] 610 Housing dimensions not incl. fittings and connections Width net [mm] 1235 Height net [mm] 1690 Depth net [mm] 865 Environment-specific data Energy consumption at 150 °C [Wh/h] 1320 Fixtures	Wall clearance back [mm]	160
Width [mm] 1000 Height [mm] 1200 Depth [mm] 610 Housing dimensions not incl. fittings and connections Width net [mm] 1235 Height net [mm] 1690 Depth net [mm] 865 Environment-specific data Energy consumption at 150 °C [Wh/h] 1320 Fixtures	Wall clearance sidewise [mm]	100
Height [mm] 1200  Depth [mm] 610  Housing dimensions not incl. fittings and connections  Width net [mm] 1235  Height net [mm] 1690  Depth net [mm] 865  Environment-specific data  Energy consumption at 150 °C [Wh/h] 1320  Fixtures	Internal Dimensions	
Depth [mm] 610 Housing dimensions not incl. fittings and connections Width net [mm] 1235 Height net [mm] 1690 Depth net [mm] 865 Environment-specific data Energy consumption at 150 °C [Wh/h] 1320 Fixtures	Width [mm]	1000
Housing dimensions not incl. fittings and connections  Width net [mm] 1235  Height net [mm] 1690  Depth net [mm] 865  Environment-specific data  Energy consumption at 150 °C [Wh/h] 1320  Fixtures	Height [mm]	1200
Width net [mm] 1235 Height net [mm] 1690 Depth net [mm] 865 Environment-specific data Energy consumption at 150 °C [Wh/h] 1320 Fixtures	Depth [mm]	610
Height net [mm] 1690  Depth net [mm] 865  Environment-specific data  Energy consumption at 150 °C [Wh/h] 1320  Fixtures	Housing dimensions not incl. fittings and connections	
Depth net [mm] 865  Environment-specific data  Energy consumption at 150 °C [Wh/h] 1320  Fixtures	Width net [mm]	1235
Environment-specific data  Energy consumption at 150 °C [Wh/h] 1320  Fixtures	Height net [mm]	1690
Energy consumption at 150 °C [Wh/h] 1320 Fixtures	Depth net [mm]	865
Fixtures	Environment-specific data	
	Energy consumption at 150 °C [Wh/h]	1320
Number of shelves (std./max.) 2/16	Fixtures	
	Number of shelves (std./max.)	2/16

<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.

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





## **OPTIONS**

Designation	Description	*	ArtNo.
	back		
	10 mm	01	8012-1287
	30 mm	01	8012-1371
	50 mm	01	8012-1387
	left		
	10 mm	01	8012-1280
	30 mm	01	8012-1363
	50 mm	01	8012-1379
Access port with silicone	100 mm	01	8012-1511
lug	right		
	10 mm	01	8012-1273
	30 mm	01	8012-1358
	50 mm	01	8012-1375
	100 mm	01	8012-1508
	top		
	10 mm	01	8012-1266
	30 mm	01	8012-1367
	50 mm	01	8012-1383
Analog output 4-20 mA	for temperature values (output not adjustable)	-	8012-0480
Calibration certificate, expanded	for temperature; for extending the measurement in center of chamber to include another test temperature	-	8012-1123
	for temperature, measurement in center of chamber at specified temperature	-	8012-1142
Calibration certificate,	temperature measurement incl. certificate and 27 measuring points at specified temperature	-	8012-1601
emperature	temperature measurement incl. certificate, 15- 18 measuring points at specified temperature	-	8012-1580
	temperature measurement incl. certificate, 9 measuring points at specified temperature	-	8012-1559
Ooor gasket	made of FKM, silicone-free	-	8012-1315
Ooor lock	lockable door handle	-	8012-1256
HEPA air filter	On fresh air supply for unit; filter classification H14 (acc. to. EN 1822-1:2009, > 99.995% at 0.3 µm)	-	8012-0222
nner chamber,	including 2 reinforced racks		
reinforced	max. total load 250 kg	-	8012-0343
ockable controller ceyboard	Lockable controller keyboard with key-operated switch	-	8012-0529
Measurement of air exchange rate	in accordance with ASTM D5374, definition and protocol according to ambient temperature	-	8012-1199
Pt 100 temperature sensor	additional flexible Pt 100, interior, for displaying the temperature on the unit display	-	8012-0334
/iewing window and	viewing window in each door, 290 x 470 mm, and 30 W interior lighting		
interior lighting	400 V option model	_	8012-0063

Notes > See last page

# **ACCESSORIES**

Designation	Description	*	ArtNo.
APT-COM™ 4 BASIC- Edition	for simple logging and documentation requirements with up to 5 networked units.		
	version 4, BASIC edition	-	9053-0039
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
pH-neutral detergent	concentrated, for gentle remove of residual contaminants; 1 kg	-	1002-0016

<sup>\*</sup> Notes > See last page



Designation	Description	*	ArtNo.
	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
Qualification documents	Hard copy inside folder	-	7007-0001
	$IQ/OQ/PQ$ documents – supporting documents for validation performed by customers, according to customer requirements, PQ section added to qualification folder $IQ/OQ$ ; parameters: temperature, $CO_2$ , $O_2$ – or pressure, depending on unit		
	Digital in PDF format	-	7057-0005
	Hard copy inside folder	-	7007-0005
Rack	chrome plated	-	8012-2037
	stainless steel	-	8012-2082
Rack accessories	fasteners (1 set of 4) for additional security of racks	-	8012-0531
Rack, reinforced	stainless steel, with fasteners (1 set of 4)	-	8012-0374
Shelf, perforated	Stainless steel	-	8012-2081

<sup>\*</sup> Notes > See last page

#### **SERVICES**

Designation	Description	*	ArtNo.
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	DL10-0100
Unit instructions	Instruction regarding operating principle and basic functions of the unit, operation of the control electronics including programming	05	DL10-0500
Maintenance contracts			
Maintenance services			
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	DL20-0910
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	DL20-0200
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	DL20-0810
Calibration services			
Calibration certificate, temperature	Calibration of one (1) test temperature specified by the user in center of chamber, including certificate	03, 04, 05	DL30-0101
Cambration certificate, temperature	Extension of calibration of one (1) additional test temperature specified by the user in the center of the usable space, including certificate $\frac{1}{2}$	03, 04, 05	DL30-0102
Measurement of air exchange rate	including certificate (in accordance with ASTM D5374)	03, 04, 05	DL33-0000
Temperature measurement, 18 measuring points	Temperature measurement with 18 measuring points with a set value specified by the user, including certificate	03, 04, 05	DL30-0118
Temperature measurement, 27 measuring points	Temperature measurement with 27 measuring points with a set value specified by the user, including certificate	03, 04, 05	DL30-0127
Temperature measurement, 9 measuring points	Temperature measurement with 9 measuring points with a set value specified by the user, including certificate	03, 04, 05	DL30-0109
Validation services			
Execution of IQ/OQ	Execution of IQ/OQ in accordance with qualification folder	05	DL41-0200
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	-	DL50-0010
* Notes > See last nage			

<sup>\*</sup> Notes > See last page



#### **NOTES**

- Condensation may occur in the area around the access port. Access ports may be placed in custom locations for an additional charge. UL mark is not granted when this option is used.
- 02
- Sensor calibration is performed in an accredited calibration laboratory. 03
- Calibration is performed according to the BINDER factory standard.
- 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 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

**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

**Representative Office for CIS** 

Moscow, Russia TEL +7 495 988 15 16 FAX +7 495 988 15 17 russia@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