

# Model M 400 | 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<sup>™</sup> technology
- · Identical test conditions throughout the chamber interior independent of sample size and quantity
- · Outstanding thermal insulation saves operation costs
- · Advanced programming options



Model 400



Model 400

#### MAIN FEATURES

- Temperature range: room temperature plus 5 °C to 300 °C
- APT.line<sup>™</sup> 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.
400	400 V 3~ ph 50/60 Hz	Standard	M400-400V	9010-0204

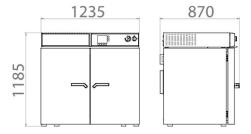


#### **TECHNICAL DATA**

Article Number         9010-0204           Performance Data Temperature         Temperature arong 5°C above ambient temperature to         300°C           Temperature variation at 150°C [x K]         1.5           Temperature bluculation at 150°C [x K]         3.3           Heating-up time to 150°C [x K]         18           Recovery time after 30 seconds door open at 150°C [min]         3.4           Air change data         ***           Air change (approx) at 150°C [x M]         40           Power frequency [ktz]         5060           Nominal power [kW]         40           Power frequency [ktz]         60           Nominal power [kW]         50           Power frequency [ktz]         60           Power frequency [ktz]         60           Nominal power [kW]         50           Power frequency [ktz]         60           Power frequency [ktz]         60           Not weight of the unit (empty) [ktz]         60	Description	M400-400V <sup>1</sup>
Temperature range 5 °C above ambient temperature to         300 °C           Temperature variation at 150 °C [± K]         1.5           Temperature fluctuation at 150 °C [± K]         0.3           Reactive fluctuation at 150 °C [± K]         18           Reactive fluctuation at 150 °C [min]         3           Recovery time after 30 seconds door open at 150 °C [min]         3           Air change (approx 5) at 150 °C [xh]         54           Electrical data         ***           Reted Voltage [V]         400           Power fequency [½]         5060           Nominal power [kW]         3           Phase Nominal voltage)         3           Phase Nominal voltage)         400           Net weight of the unit (empty) [kg]         173           Net weight of the unit (empty) [kg]         173           Permitted load [kg]         90           Lead per rack [kg]         35           Wall clearance sedwise [min]         100           Internal Dimensions         100           Helphi [min]         80           Height [min]         80           Lousing dimensions not incl. fittings and connections         123           Width net [min]         1235           Height net [min]         725 </th <th>Article Number</th> <th>9010-0204</th>	Article Number	9010-0204
Temperature variation at 150 °C [± K]         1.5           Temperature fluctuation at 150 °C [± K]         0.3           Heating-up time to 150 °C [min]         3           Accovery time after 30 seconds door open at 150 °C [min]         3           Air change (approx.) at 150 °C [xh]         54           Electrical data	Performance Data Temperature	
Temperature fluctuation at 150 °C [k k]         0.3           Heating-up time to 150 °C [min]         18           Recovery time after 30 seconds door open at 150 °C [min]         3           Air change data	Temperature range 5 °C above ambient temperature to	300 °C
Heating-up time to 150 °C [min]         18           Recovery time after 30 seconds door open at 150 °C [min]         3           Air change data         54           Air change (approx.) at 150 °C [wh]         54           Electrical data         Televation of the unit (approx.) at 150 °C [wh]         400           Power frequency [Hz]         50/60           Nominal power [kW]         3.4           Phase (Nominal toltage)         3-4           Net weight of the unit (empty) [kg]         173           Permited load [kg]         90           Load per rack [kg]         35           Wall clearance back [mm]         160           Wall clearance back [mm]         100           Internal Dimensions         Width [nm]           Height [mm]         80           Depth [mm]         100           Height [mm]         100 <td>Temperature variation at 150 °C [± K]</td> <td>1.5</td>	Temperature variation at 150 °C [± K]	1.5
Recovery time after 30 seconds door open at 150 °C (min)         3           Air change data         54           Electrical data         Wood (Cry)           Rated Voltage (V)         400           Power frequency (Hz)         5060           Nominal power (kW)         3.4           Phase (Nominal voltage)         3-           Measures         101           Interior volume [L]         400           Net veight of the unit (empty) (kg)         173           Permitted load (kg)         90           Vall clearance back (mg)         160           Vall clearance sidewise (mm)         100           Vall clearance sidewise (mm)         100           Vall clearance sidewise (mm)         90           Vall clearance sidewise (mm)         100           Vall clearance sidewise (mm)         100           Vall clearance sidewise (mm)         800           Peth (mg)         80           Depth (mm)         80           Vall (mm)         100           Height (mm)         100           Height (mm)         200           Height (mm)         123           Height net (rm)         79           Environment-specific data         1200 <td>Temperature fluctuation at 150 °C [± K]</td> <td>0.3</td>	Temperature fluctuation at 150 °C [± K]	0.3
Air change data Air change (approx.) at 150 °C [wh] 54  Electrical data  Rated Voltage [V] 400  Power frequency [Hz] 50/60  Nominal power [kW] 3.4  Phase (Nominal voltage) 3-  Measures  Interior volume [L] 400  Net weight of the unit (empty) [kg] 713  Permitted load [kg] 90  Load per rack [kg] 35  Wall clearance back [mm] 100  Internal Dimensions  Wall clearance sidewise [mm] 100  Internal Dimensions  Width [mm] 800  Depth [mm] 800  Height [mm] 810  Height ferm] 1235  Height ferm] 1235  Height ferm] 190  Height ferm] 190  Permitted [mm] 190  Permitted [mm] 190  Floring dimensions not incl. fittings and connections  Width [mm] 190  Permitted [mm] 190  Permitt	Heating-up time to 150 °C [min]	18
Air change (approx.) at 150 °C [wh]         54           Electrical data         400           Power frequency [Hz]         50/60           Nominal power [kW]         3.4           Phase (Nominal voltage)         3-2           Measures         Interior volume [L]         400           Net weight of the unit (empty) [kg]         173           Permitted load [kg]         90           Load per rack [kg]         35           Wall clearance back [mm]         100           Vall clearance sidewise [mm]         100           Height [mm]         800           Depth [mm]         50           Hought [mm]         100           Height [mm]         203           Hought [mm]         123           Hought [mm]         123           Height net [mm]         190           Poth net [mm]         190           Depth net [mm]         795           Environment-specific data         120           Environment-specific data         120           Environment-specific data         120           Environment-specific data         120	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]         3.4           Phase (Nominal voltage)         3~           Measures         Interior volume [L]         400           Net weight of the unit (empty) [kg]         173           Permitted load [kg]         90           Load per rack [kg]         35           Wall clearance back [mm]         100           Internal Dimensions         Wild [mm]           Width [mm]         1000           Height [mm]         800           Depth [mm]         510           Housing dimensions not incl. fittings and connections         Width net [mm]           Width net [mm]         1235           Height net [mm]         190           Depth net [mm]         795           Environment-specific data         1200           Environment-specific data         1200           Fixtures         1200	Air change data	
Rated Voltage [V]         400           Power frequency [Hz]         50/80           Nominal power [kW]         3.4           Phase (Nominal voltage)         3~           Measures           Interior volume [L]         400           Net weight of the unit (empty) [kg]         173           Permitted load [kg]         90           Load per rack [kg]         35           Wall clearance back [mm]         100           Math [mm]         1000           Height [mm]         800           Depth [mm]         50           Housing dimensions not incl. fittings and connections         50           Width net [mm]         1235           Height net [mm]         150           Depth net [mm]         150           Height net [mm]         150           Popth net [mm]         150           Height net [mm]         150           Depth net [mm]         150           Height net [mm]         150           Ferry consumption at 150 °C [Whh]         150           Energy consumption at 150 °C [Whh]         200	Air change (approx.) at 150 °C [x/h]	54
Power frequency [Hz]         50/60           Nominal power [kW]         3.4           Phase (Nominal voltage)         3-           Measures         Interior volume [L]         400           Net weight of the unit (empty) [kg]         173           Permitted load [kg]         90           Load per rack [kg]         35           Wall clearance back [mm]         100           Vall clearance sidewise [mm]         100           Internal Dimensions         90           Width [mm]         800           Depth [mm]         510           Housing dimensions not incl. fittings and connections         1235           Width net [mm]         1235           Height net [mm]         795           Environment-specific data         1200           Environment-specific data         1200           Fixtures         1200	Electrical data	
Nominal power [kW]         3.4           Phase (Nominal voltage)         3~           Measures         400           Net weight of the unit (empty) [kg]         173           Permitted load [kg]         90           Load per rack [kg]         35           Wall clearance back [km]         160           Wall clearance sidewise [mm]         100           Internal Dimensions         1000           Height [mm]         800           Depth [mm]         510           Housing dimensions not incl. fittings and connections         510           Width net [mm]         1235           Height net [mm]         190           Depth net [mm]         795           Environment-specific data         1200           Energy consumption at 150 °C [Wh/h]         1200	Rated Voltage [V]	400
Phase (Nominal voltage)         3~           Measures         400           Net weight of the unit (empty) [kg]         173           Permitted load [kg]         90           Load per rack [kg]         35           Wall clearance back [mm]         160           Wall clearance sidewise [mm]         100           Internal Dimensions         Width [mm]           Height [mm]         800           Depth [mm]         510           Housing dimensions not incl. fittings and connections         Width net [mm]           Width net [mm]         1235           Height net [mm]         795           Environment-specific data         1200           Environment-specific data         1200           Fixtures         1200	Power frequency [Hz]	50/60
Measures           Interior volume [L]         400           Net weight of the unit (empty) [kg]         173           Permitted load [kg]         90           Load per rack [kg]         35           Wall clearance back [mm]         160           Wall clearance sidewise [mm]         100           Internal Dimensions         Width [mm]           Weight [mm]         800           Depth [mm]         510           Housing dimensions not incl. fittings and connections         Width net [mm]           Width net [mm]         1235           Height net [mm]         795           Environment-specific data         Encry consumption at 150 °C [Wh/h]         1200           Fixtures         Fixtures	Nominal power [kW]	3.4
Interior volume [L]         400           Net weight of the unit (empty) [kg]         173           Permitted load [kg]         90           Load per rack [kg]         35           Wall clearance back [mm]         160           Wall clearance sidewise [mm]         100           Internal Dimensions         Width [mm]           Weight [mm]         800           Depth [mm]         510           Housing dimensions not incl. fittings and connections         1235           Width net [mm]         1235           Height net [mm]         795           Environment-specific data         1200           Environment-specific data         1200           Fixtures         1200	Phase (Nominal voltage)	3~
Net weight of the unit (empty) [kg]         173           Permitted load [kg]         90           Load per rack [kg]         35           Wall clearance back [mm]         160           Wall clearance sidewise [mm]         100           Internal Dimensions         1000           Height [mm]         800           Depth [mm]         510           Housing dimensions not incl. fittings and connections         1235           Width net [mm]         190           Depth net [mm]         795           Environment-specific data         1200           Energy consumption at 150 °C [Wh/h]         1200	Measures	
Pemitted load [kg]         90           Load per rack [kg]         35           Wall clearance back [mm]         160           Wall clearance sidewise [mm]         100           Internal Dimensions         Width [mm]           Width [mm]         800           Depth [mm]         510           Housing dimensions not incl. fittings and connections         Width net [mm]           Width net [mm]         1235           Height net [mm]         190           Depth net [mm]         795           Environment-specific data         Energy consumption at 150 °C [Wh/h]           Fixtures         1200	Interior volume [L]	400
Load per rack [kg]         35           Wall clearance back [mm]         160           Wall clearance sidewise [mm]         100           Internal Dimensions         1000           Height [mm]         800           Depth [mm]         510           Housing dimensions not incl. fittings and connections         1235           Width net [mm]         1235           Height net [mm]         190           Depth net [mm]         795           Environment-specific data         1200           Fixtures         Fixtures	Net weight of the unit (empty) [kg]	173
Wall clearance back [mm]       160         Wall clearance sidewise [mm]       100         Internal Dimensions       Width [mm]         Width [mm]       800         Depth [mm]       510         Housing dimensions not incl. fittings and connections       1235         Width net [mm]       190         Depth net [mm]       795         Environment-specific data       1200         Fixtures	Permitted load [kg]	90
Wall clearance sidewise [mm]         100           Internal Dimensions         1000           Width [mm]         800           Depth [mm]         510           Housing dimensions not incl. fittings and connections         1235           Width net [mm]         1235           Height net [mm]         190           Depth net [mm]         795           Environment-specific data         Energy consumption at 150 °C [Wh/h]         1200           Fixtures	Load per rack [kg]	35
Internal Dimensions           Width [mm]         1000           Height [mm]         800           Depth [mm]         510           Housing dimensions not incl. fittings and connections         Width net [mm]           Width net [mm]         1235           Height net [mm]         1190           Depth net [mm]         795           Environment-specific data         Energy consumption at 150 °C [Wh/h]           Fixtures         1200	Wall clearance back [mm]	160
Width [mm]       1000         Height [mm]       800         Depth [mm]       510         Housing dimensions not incl. fittings and connections       1235         Width net [mm]       1190         Depth net [mm]       795         Environment-specific data       1200         Fixtures       Fixtures	Wall clearance sidewise [mm]	100
Height [mm]       800         Depth [mm]       510         Housing dimensions not incl. fittings and connections       1235         Width net [mm]       1190         Depth net [mm]       795         Environment-specific data       1200         Fixtures       1200	Internal Dimensions	
Depth [mm]         510           Housing dimensions not incl. fittings and connections         1235           Width net [mm]         1190           Depth net [mm]         795           Environment-specific data         1200           Fixtures         Fixtures	Width [mm]	1000
Housing dimensions not incl. fittings and connections  Width net [mm] 1235  Height net [mm] 1190  Depth net [mm] 795  Environment-specific data  Energy consumption at 150 °C [Wh/h] 1200  Fixtures	Height [mm]	800
Width net [mm]       1235         Height net [mm]       1190         Depth net [mm]       795         Environment-specific data       Energy consumption at 150 °C [Wh/h]         Fixtures       1200	Depth [mm]	510
Height net [mm] 1190 Depth net [mm] 795 Environment-specific data Energy consumption at 150 °C [Wh/h] 1200 Fixtures	Housing dimensions not incl. fittings and connections	
Depth net [mm] 795  Environment-specific data  Energy consumption at 150 °C [Wh/h] 1200  Fixtures	Width net [mm]	1235
Environment-specific data  Energy consumption at 150 °C [Wh/h] 1200  Fixtures	Height net [mm]	1190
Energy consumption at 150 °C [Wh/h] 1200 Fixtures	Depth net [mm]	795
Fixtures	Environment-specific data	
	Energy consumption at 150 °C [Wh/h]	1200
Number of shelves (std./max.) 2/10	Fixtures	
	Number of shelves (std./max.)	2/10

<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, 11	8012-1511
plug	right		
	10 mm	01	8012-1273
	30 mm	01	8012-1358
	50 mm	01	8012-1375
	100 mm	01, 11	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
temperature	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
Door gasket	made of FKM, silicone-free	03	8012-1312
Door 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
Inner chamber, reinforced	including 2 reinforced racks	-	8012-0342
Lockable controller keyboard	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
	viewing window in each door, 290 x 470 mm, and 30 W interior lighting		
Viewing window and			

# **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	19	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	19	9053-0042
APT-COM™ 4	convenient unit and user management built on the BASIC edition. Suitable for networking up to 100 units.		
PROFESSIONAL- Edition	version 4, PROFESSIONAL edition	19	9053-0040

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



Designation	Description	*	ArtNo.
Data Logger Kit	T 350: For continuous temperature logging from 0 °C to 350 °C; kit includes 1 data logger, Pt 100 sensor with 2 m extension cable and 1 magnetic fixture for mounting to the BINDER unit		8012-0714
Data Logger Software	LOG ANALYZE software kit, configuration and evaluation software for all BINDER Data Logger Kits (incl. USB data cable)		8012-082
pH-neutral detergent	concentrated, for gentle remove of residual contaminants; 1 kg	-	1002-001
	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	-	7057-000
O	Hard copy inside folder	-	7007-000
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, CO <sub>2</sub> , O <sub>2</sub> – or pressure, depending on unit		
	Digital in PDF format	-	7057-000
	Hard copy inside folder	-	7007-000
Rack	chrome plated	-	6004-000
	stainless steel	-	6004-001
Rack accessories	fasteners (1 set of 4) for additional security of racks	-	8012-053
Rack, reinforced	stainless steel, with fasteners (1 set of 4)	-	8012-034
Rubber pads	set anti-slip feet	-	8012-188
Shelf, perforated	Stainless steel	-	6004-003
Table on castors	stable cart, casters with locking brakes, dimensions: W 1,300 x D 800 x H 780 mm	-	9051-001

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

# **SERVICES**

Designation	Description	*	ArtNo.
Installation services			
Unit installation	Unpacking and setting up of unit, connecting to existing connections, and checking function	13, 18	DL10-0100
Unit instructions	Unit function instructions for operation and programming of the controller	18	DL10-0500
Preventive maintenance			
Maintenance	Functional testing of all electrical and mechanical components, short calibration, documentation in the maintenance schedule	14, 18	DL20-0200
Calibration services			
Measurement of air exchange rate	including certificate (in accordance with ASTM D5374)	14, 16, 17, 18	DL33-0000
	Expansion – including certificate, each additional measuring point in center of chamber at specified test temperature	14, 16, 17, 18	DL30-0102
Temperature calibration	Temperature calibration with 1 measuring point in center of chamber at a specified test temperature, including certificate	14, 16, 17, 18	DL30-0101
Temperature measurement, 18 measuring points	Temperature measurement with 18 measuring points at a specified test temperature, including certificate	14, 16, 17, 18	DL30-0118
Temperature measurement, 27 measuring points	Temperature measurement with 27 measuring points at a specified test temperature, including certificate	14, 16, 17, 18	DL30-0127
Temperature measurement, 9 measuring points	Temperature measurement with 9 measuring points at a specified test temperature, including certificate	14, 16, 17, 18	DL30-0109
Validation services			
Execution of IQ/OQ	Execution of IQ/OQ in accordance with qualification folder	15, 18	DL41-0200
Execution of IQ/OQ/PQ	Execution of IQ/OQ/PQ in accordance with qualification folder	15, 18	DL44-0500
Warranty service			
Warranty extension from 2 to 3 years	The warranty is extended from 2 to 3 years from the delivery date, wear parts are excluded	-	DL01-0041
Warranty extension from 2 to 5 years	The warranty is extended from 2 to 5 years from the delivery date, wear parts are excluded	-	DL01-0042

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



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Pricing on any accessories shown can be found by keying the part number into the search box on our website.

The specifications listed in this brochure are subject to change by the manufacturer and therefore cannot be guaranteed to be correct. If there are aspects of the specification that must be guaranteed, please provide these to our sales team so that details can be confirmed.





