M series

Environmental simulation chambers for complex temperature profiles

Because of its individual programming options and ability to operate at maximum temperatures up to 300 °C (572°F), the M series is ideally suited for materials testing and aging tests. The heavy-duty air turbine and a programmable exhaust ventilation flap provide rapid heating-up and ensure that the test temperature is maintained absolutely precise at all levels, with minimal spatial fluctuations; performance as never before.

Leistungsmerkmale/Ausstattung:

- Electronically controlled APT.line™ preheating chamber technology
- Temperature range of 5 °C (9 °F) above ambient temperature up to 300 °C (572 °F)
- MCS controller with 25 storable programs of 100 sections each for a maximum of 500 program segments
  - User-friendly LCD screen
  - Easy-to-read menu guide
  - Integrated electronic chart recorder
  - Variety of options for the graphic display of process parameters
  - Real-time clock
- Adjustable ramp function via program editor
- Program-controlled ventilation flap
- High air-exchange rate through high-performance fan
- Adjustable fan speed (0 to 100 %)
- Rear exhaust duct Ø 50 mm (2 inch)
- Independent adjustable temperature safety device, Class 2 (DIN 12880), with optical temperature alarm
- RS 422 interface for communication software APT-COM™ DataControlSystem
- 2 chrome-plated shelves
- BINDER test certificate

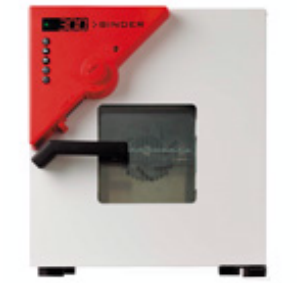
	M 53	M 115	M 240	M 400	M 720
Exterior dimensions					
Width (mm/inch)	634 / 25.0	834 / 32.8	1034 / 40.7	1234 / 48.6	1234 / 48.6
Height (inclusive feet/castors) (mm/inch)	779 / 30.7	863 / 34.0	984 / 38.7	1184 / 46.6	1692 / 66.6
Depth (mm/inch)	575 / 22.6	645 / 25.4	745 / 29.3	765 / 30.1	865 / 34.1
Plus door handle (mm/inch)	150 / 5.9	150 / 5.9	150 / 5.9	150 / 5.9	150 / 5.9
Wall clearance rear (mm/inch)	100 / 3.9	100 / 3.9	100 / 3.9	100 / 3.9	100 / 3.9
Wall clearance side (mm/inch)	160 / 6.3	160 / 6.3	160 / 6.3	160 / 6.3	160 / 6.3
Exhaust duct outer- Ø (mm/inch)	52 / 2.1	52 / 2.1	52 / 2.1	52 / 2.1	52 / 2.1
Steam space volume (l/cu.ft.)	77 / 2.7	158 / 5.6	308 / 10.9	498 / 17.6	869 / 30.7
Number of doors	1	1	2	2	2
Interior dimensions					
Width (mm/inch)	400 / 15.8	600 / 23.6	800 / 31.5	1000 / 39.4	1000 / 39.4
Height (mm/inch)	400 / 15.8	480 / 18.9	600 / 23.6	800 / 31.5	1200 / 47.2
Depth (mm/inch)	330 / 13.0	400 / 15.8	500 / 19.7	500 / 19.7	600 / 23.6
Interior volume (l/cu.ft.)	53 / 1.9	115 / 4.1	240 / 8.6	400 / 14.3	720 / 25.7
Shelves, chrome-plated (number standard/max.)	2/5	2/6	2/7	2/10	2/16
Load per rack (kg/lbs.)	15 / 33	20 / 44	30 / 66	35 / 77	45 / 99
Permitted total load (kg/lbs.)	40 / 88	50 / 110	70 / 155	90 / 199	120 / 265
Weight of the unit (empty) (kg/lbs.)	61 / 135	89 / 196	131 / 289	173 / 382	203 / 448
Temperature data					
Temperature range, 5°C (9°F) above ambient up to (°C/°F)	300 / 572	300 / 572	300 / 572	300 / 572	300 / 572
Temperature variation 1)					
at 70 °C (158 °F) (± °C)	0,5	0,6	0,8	0,7	0,7
at 150 °C (302 °F) (± °C)	1,3	1,5	1,5	1,5	1,9
at 300 °C (572 °F) (± °C)	2,8	2,8	2,8	5	4,6
Temperature fluctuation (± °C)	0,3	0,3	0,3	0,3	0,3
Heating-up time 2)					
to 70 °C (158 °F) (Min.)	5	5	6	6	7
to 150 °C (302 °F) (Min.)	15	16	19	18	21
to 250 °C (482 °F) (Min.)	35	36	42	44	51
Recov. time after door was opened for 30 sec. 2)					
at 70 °C (158 °F) (Min.)	1	1	1	1	1
at 150 °C (302 °F) (Min.)	3	3	3	3	3
at 300 °C (572 °F) (Min.)	5	5	5	5	5
Electrical data					
Housing protection acc. to EN 50529	IP 20	IP 20	IP 20	IP 20	IP 20
Nominal voltage (±10 %) 50/60 Hz (V)	230 / 1 N~	230 / 1 N~	230 / 1 N~	400 / 3N~	400 / 3 N~
Nominal power (W)	1200	1600	2700	3400	5000
Energy consumption					
at 70 °C (158°F) (W)	145	230	370	520	570
at 150 °C (302°F)(W)	300	544	850	1200	1320
at 300 °C (572°F) (W)	720	1100	1400	2340	2600

1) value without window
2) up to 98 % of the set value

All technical specification are specified for units with standard equipment at an ambient temperature of 25 ºC (77 ºF) and a voltage fluctuation of ±10 %. All data are determined at 100 % fan speed. The temperature data are determinated in accordance to factory standard following DIN 12880, respecting the recommended wall clearances of 10 % of the height, width and depth of the inner chamber. All values have been specified at a fan speed of 100 %. All indications are average values, typical for units produced in series. We reserve the right to alter technical specifications at all times.

Access ports

With silicon plugs for inserting external measuring devices into the chamber. Access ports with 10, 30, 50 mm (0.4, 1.2, 2 inch) diameter.



Door with window and interior lighting

For optimum process control in the interior, available for all equipment sizes.

Reinforced inner chamber

Includes two reinforced racks for heavy loads. (Total load maximum 250 kg / 551 lbs.)

Speciem temperature measurement

Additional flexible PT 100 temperature ensor for precise temperature measurement of the specimen with digital temperature display. Recording of measurement data possible via RS 422 interface.

Calibration certificates

Measurement in the center at specified values. Additional measuring points or test values according to your specification.

	M 53	M 115	M 240	M 400	M 720
Access port with silicone plug	O	O	O	O	O
Rack, chrome-plated or stainless steel	O	O	O	O	O
Rack, perforated, stainless steel	O	O	O	O	O
Reinforced rack, stainless steel, with 1 set of rack securings (max. 70kg/154lbs.)	-	-	O	O	O
Reinforced inner chamber, including 2 reinforced racks (max. total load 250kg/552lbs. Load per rack 70kg/154lbs.)	-	-	O	O	O
Independent adjustable temperature safety device, Class 3.1 (DIN 12880)	O	O	O	O	O
Door with window and interior lighting	O	O	O	O	O

Lockable door	O	O	O	O	O
Door gasket, FKM (temperature-resistant up to 200 °C / 392 °F)	O	O	O	O	O
Over-temperature alarm, acoustic, can be switched off	-	-	-	-	-
Analogue temperature output, 4–20mA, with DIN bushing 6 poles	O	O	O	O	O
Additional measuring channel for digital display of specimen temperature	O	O	O	O	O
Mostly gas-tight constructed chamber	O	O	O	-	-
Inert gas connection (gas inlet and outlet)	O	O	-	-	-
Temperature measurement according to DIN 12880-2 or with 9 measuring points with measurement protocol and certificate	O	O	O	O	O
HEPA Fresh-air filter, Class EU 14	O	O	O	O	O
Increased air change rate through stronger fan	X	X	X	X	X
Air change rate measurement according to ASTM D5374 with definition and measurement protocoll	O	O	O	O	O
Serial printer with interface converter for printing temperature logs. Connects to RS 232 printer interface. Includes set of connection cables for RS 422 interface and RS 232/RS 422 interface converter, 230 V	-	-	-	-	-
Potential-free relay outputs accessible with DIN bushing 6 poles	-	-	-	-	-
Calibration certificate	O	O	O	O	O
Extension for calibration certificate (additional values)	O	O	O	O	O
Stable table on castors with locking brakes	O	O	O	O	-
Evaporating dish with rim	O	O	O	O	-
Rubber pads for safe stacking	-	-	-	-	-
Neutral cleaning agent (liquid concentrate)	O	O	O	O	O

O Option - not available

Technical specifications subject to change

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