Material testing
FP | M series

Proven experts: BINDER Material test chambers

- Proven level of performance
  - Fan with increased airflow rate
  - Adjustable rapid air exchange rate
- Proven precision
  - High standard according to DIN 12880 (27-point measurement)
  - The specialists for demanding heating profiles
  - Uniform test conditions throughout the chamber interior
- Proven versatility
  - Communication interface
  - Digital multi-program controller
  - Adjustable ventilation, program-controlled (M series)

For demanding heating profiles, these chambers show what they‘re made of: Best APT.line™ preheating chamber for maximum precision, wide temperature range and comprehensive programming options, with which you can customize ramps, profiles and processes.

Tempering of seals

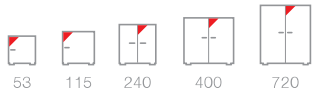
Drying of electronic components

Plastics testing

Material test chambers with mechanical convection
FP series

The FP series carries out the most demanding tests and scores particularly well with its comprehensive programming options. The mechanical (forced) convection provides reliably short drying and extremely fast heating times – even and especially for chambers under full loads.

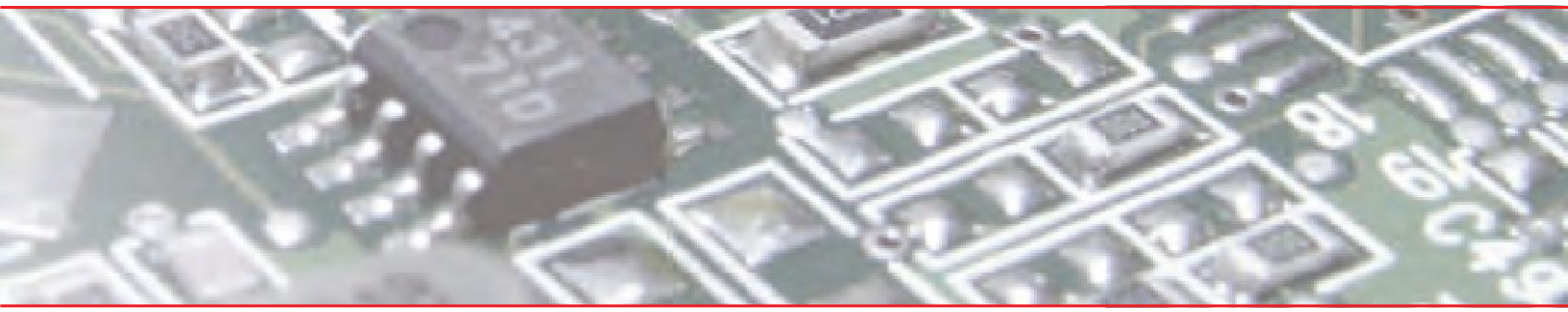
▶ FP 115 model



Available sizes (liters)

▶ **EQUIPMENT**

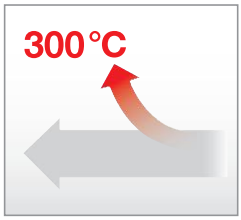
- Temperature range from 5 °C above ambient temperature to 300 °C
- MP controller with 2 programs with 10 sections each, alternatively switchable to program with 20 segments
- The time of an individual program step can be set to max. 999 hours and 59 minutes.
- Adjustable ramp function via program editor
- Integrated weekly program timer with real-time function
- Digital temperature setting accurate to tenths of a degree or to one degree
- Adjustable fan speed
- Adjustable ventilation by means of front ventilation flap slide and rear exhaust Ø 50 mm
- Elapsed time indicator
- Independent adjustable temperature safety device class 2 (DIN 12880), with visual temperature alarm
- RS 422 interface for APT-COM™ DataControlSystem communication software
- Units up to 115 liters are stackable
- Two chrome-plated racks included



FP SERIES | BEST TEST RESULTS:

Uniform test conditions

- APT.line™ preheating chamber
  - Homogeneous temperature distribution
  - Identical test conditions throughout the chamber interior independent of sample size and quantity



Broad range of applications

- Rapid air exchange rate and large capacity reserves
- Adjustable fan speed
- Short heating up times

Best quality and precision guaranteed

- High standard according to DIN 12880 (27-point measurement)
- Short delivery times
- Minimal maintenance and operating costs

Convenient work environment

- Hermetic door closure with 2-points door closure
- Low heat dissipation due to 60 mm insulation
- Rack with tilt protection for easy loading and unloading
- Complete stainless steel inner chamber
- No permanent fixtures

OPTIONS

- Access ports with silicone plugs
- Racks, chrome-plated or stainless steel
- Perforated shelf, stainless steel
- Reinforced rack, stainless steel
- Reinforced inner chamber with 2 reinforced racks
- Independent temperature safety device class 3.1 according to DIN 12880
- Door with window and interior lighting
- Door lock
- Analog output for temperature 4 - 20 mA with 6-pin DIN socket including DIN connector
- Additional measuring channel for display of specimen temperature (PT 100 sensor)
- Temperature measurement according to DIN 12880
- HEPA fresh-air filter, class EU 14
- Increased air exchange rate through high-performance fan
- Measurement of air exchange rate according to ASTM D5374
- Isolated switching outputs (6-pin DIN socket)
- Calibration certificate
- Extension to calibration certificate
- Data Logger Kits and Logger software

Door with heated viewing window with interior lighting

Calibrations and validations

Access ports with silicone plugs

Test chamber with special racks and modified airflow

BINDER INDIVIDUAL
More information on page 133

Technical data
for your planning and installation
FP series

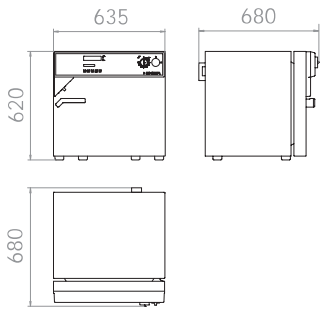
	FP 53	FP 115	FP 240	FP 400	FP 720
Exterior dimensions					
Width (mm/inch)	635 / 25.0	835 / 32.87	1035 / 40.75	1235 / 48.62	1235 / 48.62
Height (including feet/castors) (mm/inch)	620 / 24.41	705 / 27.76	825 / 32.48	1025 / 40.35	1530 / 60.24
Depth (mm/inch)	575 / 22.64	645 / 25.39	745 / 29.33	765 / 30.12	865 / 34.06
plus door handle, I-panel and exhaust duct (mm/inch)	105 / 4.13	105 / 4.13	105 / 4.13	105 / 4.13	105 / 4.13
Number of doors	1	1	2	2	2
Interior dimensions					
Width (mm/inch)	400 / 15.75	600 / 23.62	800 / 31.50	1000 / 39.37	1000 / 39.37
Height (mm/inch)	400 / 15.75	480 / 18.90	600 / 23.62	800 / 31.50	1200 / 47.24
Depth (mm/inch)	340 / 13.39	410 / 16.14	510 / 20.08	510 / 20.08	610 / 24.02
Interior volume (l/cu.ft.)	53 / 1.9	115 / 4.1	240 / 8.6	400 / 14.3	720 / 25.7
Number of racks (standard/max.)	2 / 5	2 / 6	2 / 7	2 / 10	2 / 15
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.)	45 / 99	62 / 137	98 / 216	145 / 320	184 / 406
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 uniformity [1] at 150 °C/302 °F (±K)	2.0	1.8	2.0	2.5	2.0
Temperature fluctuation (±K)	0.3	0.3	0.3	0.3	0.3
Heating-up time [2] to 150 °C/302 °F (min)	24	30	27	35	39
Recov. time after door was opened for 30 sec.[2] at 150 °C/302 °F (min)	5	8	10	17	20
Air change at 150 °C/302 °F (x/h)	64	32	20	18	12
Electrical data					
Housing protection acc. to EN 60529	IP 20	IP 20	IP 20	IP 20	IP 20
Nomial voltage (±10 %) 50/60 Hz (V)	230 1 N ~	230 1 N ~	230 1 N ~	400 3 N ~	400 3 N ~
Nominal power (kW)	1.2	1.6	2.7	3.4	5.0
Energy consumption at 150 °C/302 °F (Wh/h)	300	544	850	1200	1320
Model no.	9010-0153	9010-0255	9010-0263	9010-0265	9010-0267

[1] value without window // [2] to 98 % of the set value /// All technical data are specified for units with standard equipment at an ambient temperature of 25 °C and a voltage fluctuation of ±10 %.
The temperature data are determinated in accordance with factory standard following DIN 12880 respecting the recommended wall clearances of 10 % of the height, width and depth of the inner chamber.
All indications are average values, typical for units produced in series. We reserve the right to change technical specifications at any time.

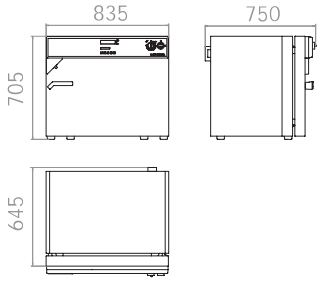
Current information and values are available at:
www.binder-world.com

DIMENSIONS

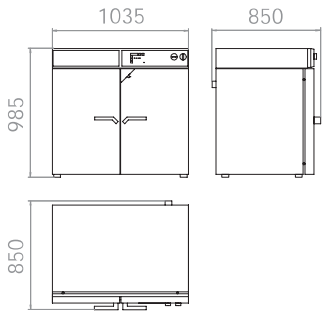
FP 53



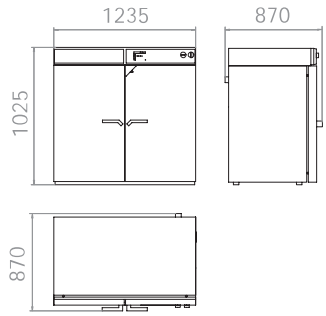
FP 115



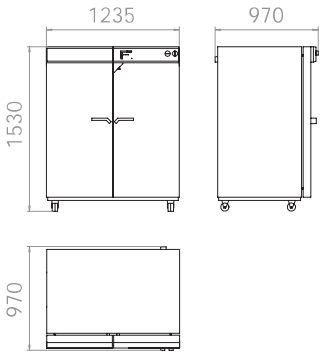
FP 240



FP 400



FP 720



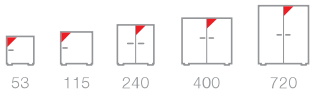
INSTALLATION REQUIREMENTS

	FP 53	FP 115	FP 240	FP 400	FP 720
Nominal voltage (±10 %) 50/60 Hz (V)	230 1N~	230 1N~	230 1N~	400 3N~	400 3N~
Nominal power (kW)	1.2	1.6	2.7	3.4	5.0

Temperature test chambers with individual programming
M series

With a maximum temperature of 300 °C and comprehensive programming options, the M series is ideally suited for material and accelerated aging testing. The particularly powerful airflow rate and programmable exhaust air valve ensure fast heating, and test temperatures are maintained at a level with minimal spatial fluctuations more accurately than ever before.

▶ M 720 model



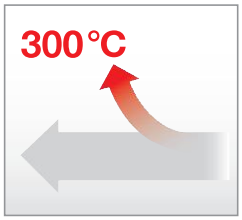
Available sizes (liters)

▶ **EQUIPMENT**

- Temperature range from 5 °C above ambient temperature to 300 °C
- MCS screen controller which can store 25 programs of 100 sections each for a maximum of 500 program segments:
  - User-friendly LCD screen
  - Easy-to-read menu guidance
  - 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
- Exhaust duct Ø 50 mm
- Independent adjustable temperature safety device class 2 (DIN 12880), with visual temperature alarm
- RS 422 interface for APT-COM™ DataControlSystem communication software
- Units up to 115 liters are stackable
- Two chrome-plated racks included

M SERIES | BEST TEST RESULTS:

Uniform test conditions
- APT.line™ preheating chamber
  - Homogeneous temperature distribution
  - Same test conditions throughout the chamber interior independent of sample size and quantity



Broad range of applications
- High air exchange rate and large power reserves
- Adjustable fan speed
- Short heating up times

Custom programming
- Controller with color display which can store 25 programs
- Integrated digital continuous-line recorder for monitoring limits and alarm function
- Convenient documentation
- All displayed values read at a glance

Best quality and precision guaranteed
- High standard according to DIN 12880 (27-point measurement)
- Short delivery times
- Minimal maintenance and operating costs

Convenient work environment
- Hermetic door closure with 2-points door closure
- Low heat dissipation due to 60 mm insulation
- Rack with tilt protection for easy loading and unloading
- Complete stainless steel inner chamber
- No permanent fixtures

OPTIONS

- Access ports with silicone plugs
- Racks, chrome-plated or stainless steel
- Perforated shelf, stainless steel
- Reinforced rack, stainless steel
- Reinforced inner chamber with 2 reinforced racks
- Door with window and interior lighting
- Door lock
- Analog output for temperature 4 - 20 mA with 6-pin DIN socket
- Additional measuring channel for display of specimen temperature (PT 100 sensor)
- Inert gas connection (gas inlet and outlet)
- Temperature measurement according to DIN 12880
- HEPA fresh-air filter, class EU 14
- Ventilation measurement according to ASTM D5374 with definition and protocol
- Calibration certificate
- Extension to calibration certificate
- Data Logger Kits and Logger software

Reinforced shelves

Various access ports

Data Logger Kits

Test chamber with electrical door lock

BINDER INDIVIDUAL
More information on page 133

Technical data
for your planning and installation
M series

	M 53	M 115	M 240	M 400	M 720
Exterior dimensions					
Width (mm/inch)	635 / 25.0	835 / 32.87	1035 / 40.75	1235 / 48.62	1235 / 48.62
Height (including feet/castors) (mm/inch)	780 / 30.71	865 / 34.06	985 / 38.78	1185 / 46.65	1695 / 66.73
Depth (mm/inch)	575 / 22.64	645 / 25.39	745 / 29.33	765 / 30.12	865 / 34.06
plus door handle, I-panel and exhaust duct (mm/inch)	105 / 4.13	105 / 4.13	105 / 4.13	105 / 4.13	105 / 4.13
Quantity of doors	1	1	2	2	2
Interior dimensions					
Width (mm/inch)	400 / 15.75	600 / 23.62	800 / 31.50	1000 / 39.37	1000 / 39.37
Height (mm/inch)	400 / 15.75	480 / 18.90	600 / 23.62	800 / 31.50	1200 / 47.24
Depth (mm/inch)	340 / 13.39	410 / 16.14	510 / 20.08	510 / 20.08	610 / 24.02
Interior volume (mm/inch)	53 / 1.9	115 / 4.1	240 / 8.6	400 / 14.3	720 / 25.7
Quantity of racks (standard/max.)	2 / 5	2 / 6	2 / 7	2 / 10	2 / 15
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 uniformity [1] at 150 °C/302 °F (±K)	1.3	1.5	1.5	1.5	1.9
Temperature fluctuation (±K)	0.3	0.3	0.3	0.3	0.3
Heating-up time [2] to 150 °C/302 °F (min)	15	16	19	18	21
Recov. time after door was opened for 30 sec.[1] [2] at 150 °C/302 °F (min)	3	3	3	3	3
Air change at 150 °C/302 °F (x/h)	192	96	60	54	36
Electrical data					
Housing protection acc. to EN 60529	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 3 N ~	400 3 N ~
Nominal power (kW)	1.2	1.6	2.7	3.4	5.0
Energy consumption at 150 °C/302 °F (Wh/h)	300	544	850	1200	1320
Model no.	9010-0201	9010-0202	9010-0203	9010-0204	9010-0205

[1] without glass door // [2] to 98 % of the set value /// All technical data are specified for units with standard equipment at an ambient temperature of 25 °C and a voltage fluctuation of ±10 %.
The temperature data are determinated in accordance with factory standard following DIN 12880 respecting the recommended wall clearances of 10 % of the height, width and depth of the inner chamber.
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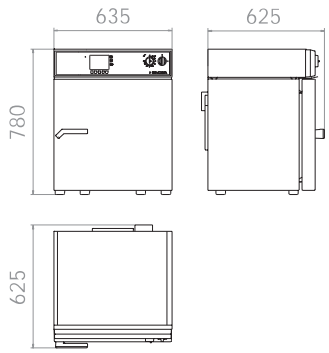
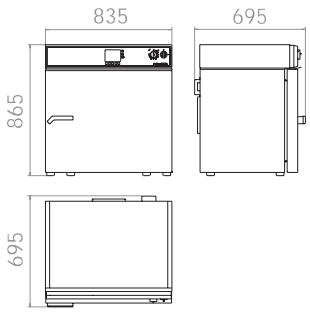
DIMENSIONS

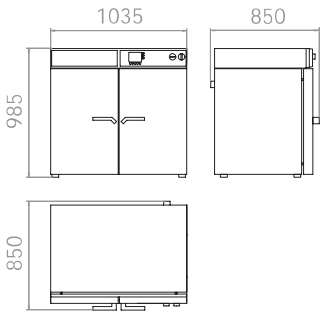
M 53



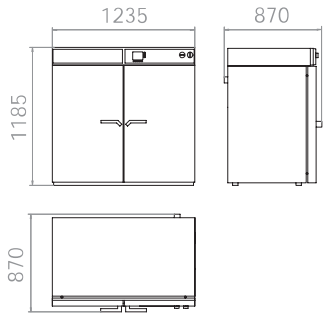
M 115



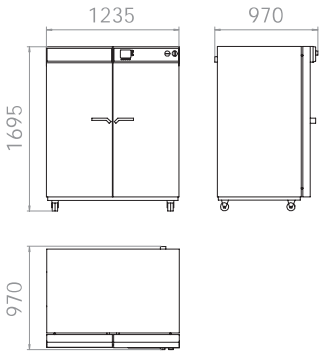
M 240



M 400



M 720



INSTALLATION REQUIREMENTS

	FP 53	FP 115	FP 240	FP 400	FP 720
Nominal voltage (±10 %) 50/60 Hz (V)	230 1N~	230 1N~	230 1N~	400 3N~	400 3N~
Nominal power (kW)	1.2	1.6	2.7	3.4	5.0