Model FP 400 | Drying and heating chambers Classic.Line with forced convection and program functions

A BINDER material test chamber with mechanical convection of the FP series provides reliably short drying times and particularly fast heating – even for chambers under full loads.

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 400

Model 400

MAIN FEATURES

- Temperature range: room temperature plus 5 °C to 300 °C
- APT.line™ preheating chamber technology
- Adjustable fan speed
- Adjustable exhaust air flap
- Controller with time-segment and real-time 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 [cu.ft.]	Voltage	Option model	Version	Art.-No.
Model FP 400				
14.1	400 V 3 ph 50/60 Hz	Standard	FP400-400V	9010-0265
	208 V 3 ph 60 Hz	Standard	FP400UL-208V	9010-0266

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TECHNICAL DATA

Description	FP400-400V[1]	FP400UL-208V[1]
Article Number	9010-0265	9010-0266
Performance Data Temperature		
Temperature range 5 °C above ambient temperature to [°C]	300	300
Temperature variation at 150 °C [± K]	2.5	2.5
Temperature fluctuation at 150 °C [± K]	0.3	0.3
Heating-up time to 150 °C [min]	35	35
Recovery time after 30 seconds door open at 150 °C [min]	17	17
Air change data		
Air change (approx.) at 150 °C [x/h]	18	18
Electrical data		
Rated Voltage [V]	400	208
Power frequency [Hz]	50/60	60
Nominal power [kW]	3.4	3.4
Unit fuse [A]	3 x 16	3 x 16
Phase (Nominal voltage) [ph]	3	3
Measures - Outer dimensions		
Width net [mm]	1235	1235
Height net [mm]	1025	1025
Depth net [mm]	765	765
Wall clearance back [mm]	160	160
Wall clearance sidewise [mm]	100	100
Measures - Internal Dimensions		
Width [mm]	1000	1000
Height [mm]	800	800
Depth [mm]	510	510
Measures		
Interior volume [L]	400	400
Net weight of the unit (empty) [kg]	145	145
permitted load [kg]	90	90
Load per rack [kg]	35	35
Environment-specific data		
Energy consumption at 150 °C	1200 Wh/h	1200 Wh/h
Fixtures		
Number of shelves (std./max.)	2/10	2/10

1 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.

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OPTIONS AND ACCESSORIES

Designation	Description	*	Art.-No.
Access port with silicone plug	back		
	10 mm	01	8012-1286
	30 mm	01	8012-1370
	50 mm	01	8012-1386
	left		
	10 mm	01	8012-1279
	30 mm	01	8012-1362
	50 mm	01	8012-1378
	100 mm	01, 11	8012-1510
	right		
	10 mm	01	8012-1272
	30 mm	01	8012-1357
	50 mm	01	8012-1374
	100 mm	01, 11	8012-1507
	top		
	10 mm	01	8012-1265
	30 mm	01	8012-1366
	50 mm	01	8012-1382
	100 mm	01, 10	8012-1389
Analog output, 4 – 20 mA	for temperature values (output not adjustable)	02	8012-0481
Calibration certificate, expanded	for temperature; for extending the measurement in center of chamber to include another test temperature	–	8012-1119
Calibration certificate, temperature	for temperature, measurement in center of chamber at specified temperature	–	8012-1138
	temperature measurement incl. certificate and 27 measuring points at specified temperature	–	8012-1597
	temperature measurement incl. certificate, 15- 18 measuring points at specified temperature	–	8012-1576
	temperature measurement incl. certificate, 9 measuring points at specified temperature	–	8012-1555
Cart	Cart – stable cart, casters with locking brakes, dimensions: W 1,300 x D 800 x H 780 mm	–	9051-0019
Class 3.1 independent temperature safety device	with visual alarm (DIN 12880)	04, 12	8012-1149
Door gasket	made of FKM, silicone-free	03	8012-1311
Door lock	lockable door handle	–	8012-1255
Fan, reinforced	to increase air change rates		
	208 V option model	–	8012-1236
	400 V option model	–	8012-1200
Inner chamber, reinforced	including 2 reinforced racks (max. total load 250 kg, max. load per rack 70 kg)	–	8012-1257
Instrument tray	with lid made from 18/8 stainless steel, stackable, dimensions: 230 x 133 x 45 mm		
	small	–	4022-0123
	with lid made from 18/8 stainless steel, stackable, dimensions: 315 x 215 x 60 mm		
	large	–	4022-0124
Interface converter	RS 422 cable set and RS 232 / RS 422 interface converter for connection to 10-way plug distributor or for connection to a unit		
	120 V, 60 Hz option model	–	8012-0557
	230 V, 50/60 Hz option model	–	8012-0556
	RS 422 cable set and RS 422 / Ethernet interface converter for connection to 10-way plug distributor or for connection to a unit		
	120 V, 60 Hz option model	–	8012-0405
	230 V, 50/60 Hz option model	–	8012-0380
Interface converter, USB / RS422	RS 422 cable set and RS 422 / USB interface converter for connection to 10-way plug distributor or for connection to a unit (USB-powered converter)	–	8012-0665

* Notes › See last page

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Designation	Description	*	Art.-No.
Measurement of air exchange rate	in accordance with ASTM D5374, definition and protocol according to ambient temperature	–	8012-1198
pH-neutral detergent	concentrated, for gentle remove of residual contaminants; 1 kg	–	1002-0016
Pt 100 temperature sensor	additional flexible Pt 100, interior, for displaying the temperature on the unit display	–	8012-0504
Rack	chrome plated	–	6004-0005
	stainless steel	–	6004-0011
Rack accessories	Rack accessories – fasteners (1 set of 4) for additional security of racks	–	8012-0531
Rack, reinforced	stainless steel, with 1 set of 4 fasteners, max. load 70 kg	–	8012-0346
RS 422 interface	modular plug distributor for 10 RS 422 interfaces	–	8012-0295
RS 422 interface, cable (15 m)	RS 422 connection cable (15 m) between plug distributor and RS 422 interface	–	5023-0036
RS 422 interface, cable (50 m)	RS 422 extension cable (50 m) between interface converter and unit or RS 232 / RS 422 plug distributor	–	5023-0117
Shelf, perforated	stainless steel	–	6004-0029
			6004-0032
Software	APT-COM™ communications software		
	version 2 to 3, GLP edition	19	9053-0016
	version 3, BASIC edition	19	9053-0014
	version 3, GLP edition	19	9053-0015
	version 3, STANDARD edition	19	9053-0013
	APT-COM™ communications software, price: for free		
	version 3, GLP DEMO Edition	19	9053-0008
Viewing window and interior lighting	viewing window in each door, 470 x 290 mm, and 30 W interior lighting		
	120 V option model	–	8012-0240
	230 V option model	–	8012-0060
Zero voltage relay contacts	for controlling 3 relay contacts via program regulators, accessible via 6-pin DIN socket (max. 24 V - 2.5 A)		
	120 V option model	–	8012-0472
	230 V option model	–	8012-0471

* Notes › See last page

SERVICES

Designation	Description	*	Art.-No.
Installation services			
Data Logger Kit installation service	unit function instructions for operation and programming of the controller	18	DL100500
Installation	and set up of unit at operating location, connect to existing connections	13, 18	DL100100
Preventive maintenance			
Preventive maintenance	Executive of equipment inspection according to maintenance plan	14, 18	DL200200
Calibration services			
Data Logger Kit calibration service	including certificate, one measuring point in center of chamber at specified temperature	14, 16, 17, 18	DL300101
Measurement of air exchange rate	including certificate (in accordance with ASTM D5374)	14, 16, 17, 18	DL330000
Temperature measurement 18 measuring points	including certificate, 18 measuring points at specified temperature	14, 16, 17, 18	DL300118
Temperature measurement 27 measuring points	including certificate, 27 measuring points at specified temperature	14, 16, 17, 18	DL300127
Temperature measurement 9 measuring points	including certificate, 9 measuring points at specified temperature	14, 16, 17, 18	DL300109
Validation services			
Data Logger Kit validation service	in accordance with qualification folder	15, 18, 20	DL410200
Execution of IQ/OQ/PQ	in accordance with customer's requirement, price: on request	15, 18	DL440500

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Designation	Description	*	Art.-No.
Qualification folder IQ/OQ	supporting documents for validation performed by customer, consisting of: IQ/OQ checklists, unit schematics, QM certificate in accordance with ISO 9001	15, 18, 20	8012-0856
Qualification folder IQ/OQ/PQ	supporting documents for validation performed by customer, in accordance with customer's requirement, extension of Qualification folder IQ/OQ by chapter PQ	15, 18	8012-0945
Warranty service			
Extension of the warranty from 2 to 3 years	beginning with the date of delivery, wearing parts are not included	–	DL005041
Extension of the warranty from 2 to 5 years	beginning with the date of delivery, wearing parts are not included	–	DL005042

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NOTES

01	Condensation may occur in the area around the access port. Access ports may be placed in custom locations for an additional charge.
02	UL mark is not granted when this option is used.
03	Heat resistant only to max. 200 °C.
04	Only available on units rated for 230 V.
06	Heating-up time may increase as a result of the lower heat conductivity.
09	Not in conjunction with the optional access port, door with window and interior lighting.
10	Not available on 23-liter units.
11	Not available on 23- or 53-liter units.
12	Only available on units rated for 230 V or 400 V.
13	Installation and connections take place at unit location; transport within the company only upon consultation.
14	We recommend a BINDER service contract (see the chapter on BINDER Service) to cover unit inspections, calibrations and validations.
15	OQ according to Yellow Paper = completed factory validation documentation of all OQ checklists.
16	Sensor calibration is performed in an accredited calibration laboratory.
17	Calibration is performed according to the BINDER factory standard.
18	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).
19	For additional accessories, refer to the Process documentation chapter.
20	When ordering IQ/OQ qualification folders and associated IQ/OQ execution on one order, we offer a 15 % discount for both items.
	When ordering IQ/OQ/PQ qualification folders and associated IQ/OQ/PQ execution on one order, we offer a 15 % discount for the item of the IQ/OQ/PQ folder.

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