

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

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

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 [L]	Voltage	Option model	Version	ArtNo.
Model FP 400				
(00	400 V 3~ 50/60 Hz	Standard	FP400-400V	9010-0265
400	208 V 3~ 60 Hz	Standard	FP400UL-208V	9010-0266

TECHNICAL DATA

Description	FP400-400V	FP400UL-208V
Article Number	9010-0265	9010-0266
Performance Data Temperature		
Temperature range 5 °C above ambient temperature to [°C]	300	300
Temperature uniformity at 70 °C [± K]	1	1
Temperature uniformity at 150 °C [± K]	2.5	2.5
Temperature uniformity at 300 °C [± K]	4.8	4.8



Model 400

Data Sheet Model FP 400



Description	FP400-400V	FP400UL-208V
Article Number	9010-0265	9010-0266
Temperature fluctuation at 150 °C [± K]	0.3	0.3
Heating-up time to 70 °C [min]	18	18
Heating-up time to 150 °C [min]	35	35
Heating-up time to 250 °C [min]	60	60
Recovery time after 30 seconds door open at 70 °C [min]	2	2
Recovery time after 30 seconds door open at 150 °C [min]	17	17
Recovery time after 30 seconds door open at 300 °C [min]	21	21
Air change date		
Air change (approx.) at 70 °C	17 x/h	17 x/h
Air change (approx.) at 150 °C	18 x/h	18 x/h
Air change (approx.) at 300 °C	16 x/h	16 x/h
Electrical data		
Rated Voltage [V]	400	208
Power frequency [Hz]	50/60	60
Phase (Nominal voltage)	3~	3~
Measures - Outer dimensions		
Width net [mm]	1235	1235
Height net [mm]	1025	1025
Depth net [mm]	765	765
Wall clearance back [mm]	100	100
Wall clearance sidewise [mm]	160	160
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
Load per rack [kg]	35	35
Environment-specific data		
Energy consumption at 70 °C	520 Wh/h	520 Wh/h
Energy consumption at 150 °C	1200 Wh/h	1200 Wh/h
Energy consumption at 300 °C	2340 Wh/h	2340 Wh/h

OPTIONS AND ACCESSORIES

iom, left iom, right iom, rio	Designation	Description	*	ArtNo.
smm, dpl or Note smm, top or Second		10 mm, back	01	8012-0390
in mm, lopa601 ccgam, linka801 ccgam, linka801 ccgam, linka802 cc		10 mm, left	01	8012-0388
spam, bak a, a, bak b, a, b,		10 mm, right	01	8012-0387
so mm, left or. 8012-04 so mm, right or. 8012-04 so mm, right or. 8012-04 so mm, right or. 8012-04 so mm, left 000000000000000000000000000000000000		10 mm, top	01	8012-0386
		30 mm, back	01	8012-0540
appendix gam, topgam, top <td></td> <td>30 mm, left</td> <td>01</td> <td>8012-0537</td>		30 mm, left	01	8012-0537
ign m, top ign m,		30 mm, right	01	8012-0536
gen, back 9 om, back 9 om, back 9 om, op som, left 9 om, left 9 om, op 9 om, op jonn, left 9 om, op 9 om, op 9 om, op 9 om, op ion m, left 9 om, op 9 object 9 o	•	30 mm, top	01	8012-0539
$ \frac{1}{50 \text{ nm}, \text{ lght}} = 0 \text{ nm}, \frac{1}{50 \text{ nm}, \log n} = 0 $	-	50 mm, back	01	8012-054
$\frac{so mn, top 1}{so mm, ight 1} (so the source of the sou$		50 mm, left	01	8012-054
$\frac{1}{100 \text{ mm}, \text{left}}}{100 \text{ mm}, \text{left}}, 0, 11 8012-0, 11 8012-0, 0, 11 8012-0, 0, 11 8012-0, 0, 11 8012$		50 mm, right	01	8012-054
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instrument tray - 4022-0 small - 4022-0 interface converter, S232/RS422 - 115V RS 422 cable set and RS 232 / RS 422 interface converter for connection to 10-way plug distributor or for connection to a unit - 8012-02 interface converter, S232/RS422 - 230V RS 422 cable set and RS 232 / RS 422 interface converter for connection to 10-way plug distributor or for connection to a unit - 8012-02 interface converter, S232/RS422 - 230V RS 422 cable set and RS 232 / RS 422 interface converter for connection to 10-way plug distributor or for connection to a unit - 8012-02 iterface converter, S422 - 230V RS 422 cable set and RS 422 / Ethernet interface converter for connection to 10-way plug distributor or for connection to a unit - 8012-02 iterface converter, S422 - 215V RS 422 cable set and RS 422 / Ethernet interface converter for connection to 10-way plug distributor or for connection to a unit - 8012-02 iterface converter, S422 - 230V RS 422 cable set and RS 422 / Ethernet interface converter for connection to 10-way plug distributor or for connection to a unit - 8012-02 iterface converter, S422 - 230V RS 422 cable set and RS 422 / Ethernet interface converter for connection to 10-way plug distributor or for connection to a unit - 8012-02		including 2 reinforced racks (max. total load 250 kg, max. load per rack 70 kg)	-	8012-0339
small-4022-01tterface converter, S232/RS422 - 115VRS 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-8012-01tterface converter, S232/RS422 - 230VRS 422 cable set and RS 232 / RS 422 interface converter for connection to 10-way plug distributor or for connection to a unit-8012-01tterface converter, S232/RS422 - 230VRS 422 cable set and RS 422 / RS 422 interface converter for connection to 10-way plug distributor or for connection to a unit-8012-01tterface converter, S422 - 115VRS 422 cable set and RS 422 / Ethernet interface converter for connection to 10-way plug distributor or for connection to a unit-8012-01tterface converter, S422 - 230VRS 422 cable set and RS 422 / Ethernet interface converter for connection to 10-way plug distributor or for connection to a unit-8012-01tterface converter, S422 - 230VRS 422 cable set and RS 422 / Ethernet interface converter for connection to 10-way plug distributor or for connection to a unit-8012-01tterface converter, S422 - 230VRS 422 cable set and RS 422 / Ethernet interface converter for connection to 10-way plug distributor or for connection to a unit-8012-01tterface converter, S422 - 230VRS 422 cable set and RS 422 / Ethernet interface converter for connection to 10-way plug distributor or for connection to a unit-8012-01	actrumont trans	large	-	4022-012
a unit a unit - 8012-04 120 V, 60 Hz option model - 8012-04 tterface 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 - 8012-04 230 V, 50/60 Hz option model - 8012-04 tterface converter, S232/RS422 - 230V - 8012-04 tterface converter, S232 cable set and RS 422 / Ethernet interface converter for connection to 10-way plug distributor or for connection to a unit - 8012-04 tterface converter, S422 cable set and RS 422 / Ethernet interface converter for connection to 10-way plug distributor or for connection to a unit - 8012-04 tterface converter, S422 cable set and RS 422 / Ethernet interface converter for connection to 10-way plug distributor or for connection - 8012-04 tterface converter, S422 cable set and RS 422 / Ethernet interface converter for connection to 10-way plug distributor or for connection - 8012-04 tterface converter, S422 cable set and RS 422 / Ethernet interface converter for connection to 10-way plug distributor or for connection - 8012-04 tterface converter, S422 cable set and RS 422 / Ethernet interface converter for connection to 10-way plug distributor or for connection - 8012-04	istrument tray	small	-	4022-012
120 V, 60 Hz option model - 8012-01 Iterface 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 - 8012-01 230 V, 50/60 Hz option model - 8012-01 - 8012-01 Iterface converter, RS 422 cable set and RS 422 / Ethernet interface converter for connection to 10-way plug distributor or for connection to a unit - 8012-01 Iterface converter, S422 cable set and RS 422 / Ethernet interface converter for connection to 10-way plug distributor or for connection to a unit - 8012-01 Iterface converter, S422 cable set and RS 422 / Ethernet interface converter for connection to 10-way plug distributor or for connection to a unit - 8012-01 Iterface converter, S422 cable set and RS 422 / Ethernet interface converter for connection to 10-way plug distributor or for connection to a unit - 8012-01 Iterface converter, S422 cable set and RS 422 / Ethernet interface converter for connection to 10-way plug distributor or for connection to a unit - 8012-01 Iterface converter, S422 cable set and RS 422 / Ethernet interface converter for connection to 10-way plug distributor or for connection to a unit - 8012-01				
a unit a unit S232/RS422 - 230V 230 V, 50/60 Hz option model - 8012-02 atterface converter, RS 422 cable set and RS 422 / Ethernet interface converter for connection to 10-way plug distributor or for connection - 8012-02 atterface converter, RS 422 cable set and RS 422 / Ethernet interface converter for connection to 10-way plug distributor or for connection - 8012-02 Atterface converter, RS 422 cable set and RS 422 / Ethernet interface converter for connection to 10-way plug distributor or for connection - 8012-02 Atterface converter, RS 422 cable set and RS 422 / Ethernet interface converter for connection to 10-way plug distributor or for connection - 8012-02 Atterface converter, S422 cable set and RS 422 / Ethernet interface converter for connection to 10-way plug distributor or for connection - 8012-02 Atterface converter, S422 cable set and RS 422 / Ethernet interface converter for connection to 10-way plug distributor or for connection - 8012-02 Atterface converter, S422 cable set and RS 422 / Ethernet interface converter for connection to 10-way plug distributor or for connection - 8012-02	кэ232/кэ422 - 115V	120 V, 60 Hz option model	-	8012-055;
230 V, 50/60 Hz option model - 8012-01 terface converter, RS 422 cable set and RS 422 / Ethernet interface converter for connection to 10-way plug distributor or for connection - 8012-01 terface converter, S422 cable set and RS 422 / Ethernet interface converter for connection to 10-way plug distributor or for connection - 8012-01 terface converter, RS 422 cable set and RS 422 / Ethernet interface converter for connection to 10-way plug distributor or for connection - 8012-01 terface converter, S422 cable set and RS 422 / Ethernet interface converter for connection to 10-way plug distributor or for connection - 8012-01 terface converter, S422 cable set and RS 422 / Ethernet interface converter for connection to 10-way plug distributor or for connection - 8012-01 to a unit - - - - -				
to a unit 120 V, 60 Hz option model – 8012-04 RS 422 cable set and RS 422 / Ethernet interface converter for connection to 10-way plug distributor or for connection terface converter, S422 cable set and RS 422 / Ethernet interface converter for connection to 10-way plug distributor or for connection to a unit	NJ232/NJ422 - 230V	230 V, 50/60 Hz option model	-	8012-0556
120 V, 60 Hz option model - 8012-04 RS 422 cable set and RS 422 / Ethernet interface converter for connection to 10-way plug distributor or for connection terface converter, S422 - 230V				
nterface converter, to a unit S422 - 230V	RS422 - 115V	120 V, 60 Hz option model	-	8012-040
5422 - 230V				
- 8012-0 ⁻	5422 - 230V	230 V, 50/60 Hz option model	_	8012-038



Data Sheet Model FP 400

BINDER

Designation	Description	*	ArtNo.
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
Magnetic Pouch (A4)	insert pouch with magnetic strip	-	1007-0065
Measurement of air exchange rate	in accordance with ASTM D5374, definition and protocol according to ambient temperature	-	8012-0195
Measuring channel for digital display of specimen temperature	with additional Pt 100 temperature sensor, measured data recorded via RS 422 interface	-	8012-0504
Work opting alarm	audible, can be switched off, adjustable limit on the independent temperature safety device		
Overheating alarm	230 V, 400 V option model	-	8012-0469
H-neutral detergent	concentrated, for gentle remove of residual contaminants; 1 kg	-	1002-0016
	chrome plated	-	6004-0005
Rack	stainless steel	-	6004-0011
ack, accessories	set of 4 fasteners for additional security	-	8012-0531
ack, reinforced	stainless steel, with 1 set of 4 fasteners, max. load 70 kg	-	8012-0346
S 422 interface	modular plug distributor for 10 RS 422 interfaces	-	8012-0295
S 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
	APT-COM™ communications software		,
	version 2 to 3, GLP edition	19	9053-0016
	version 3, BASIC edition	19	9053-0014
oftware	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
iewing window and	viewing window in each door, 470 x 290 mm, and 30 W interior lighting		0.0
interior lighting	120 V option model	-	8012-0240
	230 V option model	-	8012-0060
ero voltage relay	for controlling 3 relay outputs via program regulators, accessible via 6-pin DIN socket (max. 24 V - 2.5 A)		
outputs	120 V option model	-	8012-0471
			8012-0472

* Notes > See last page

SERVICES

Description	*	ArtNo.
and set up of unit at operating location, connect to existing connections	13, 18	DL100100
unit function instructions for operation and programming of the controller	18	DL100500
Executive of equipment inspection according to maintenance plan	14, 18	DL200200
including certificate, one measuring point in center of chamber at specified temperature	14, 16, 17, 18	DL300101
including certificate (in accordance with ASTM D5374)	14, 16, 17, 18	DL330000
including certificate, 18 measuring points at specified temperature	14, 16, 17, 18	DL300118
	and set up of unit at operating location, connect to existing connections unit function instructions for operation and programming of the controller Executive of equipment inspection according to maintenance plan including certificate, one measuring point in center of chamber at specified temperature including certificate (in accordance with ASTM D5374)	and set up of unit at operating location, connect to existing connections 13, 18 unit function instructions for operation and programming of the controller 18 Executive of equipment inspection according to maintenance plan 14, 18 including certificate, one measuring point in center of chamber at specified temperature 14, 16, 17, 18 including certificate (in accordance with ASTM D5374) 14, 16, 17, 18 including certificate. 18 measuring points at specified temperature 14, 16, 17, 18

* Notes > See last page

BINDER

Designation	Description	*	ArtNo.
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			
Execution of IQ/OQ	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
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

* Notes > See last page

BINDER

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.
- Heat resistant only to max. 200 °C. 03
- Only available on units rated for 230 V. 04
- Attention: The pump is delivered separately. The electric connection for the pump (230 V/1~/50 Hz) must be carried out by an authorized electrician. 05
- 06 Heating-up time may increase as a result of the lower heat conductivity.
- 07 The additional heat input may affect the temperature behavior. 08
- The pump (packaged separately) is ready for connection. Not in conjunction with the optional access port, door with window and interior lighting. 09
- Not available on 23-liter units. 10
- Not available on 23- or 53-liter units. 11
- 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.
- We recommend a BINDER service contract (see the chapter on BINDER Service) to cover unit inspections, calibrations and validations. 14
- OQ according to Yellow Paper = completed factory validation documentation of all OQ checklists. Sensor calibration is performed in an accredited calibration laboratory. 15
- 16 Calibration is performed according to the BINDER factory standard. 17
- . 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).
- For additional accessories, refer to the Process documentation chapter. 19
- 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. ATEX conformity: 21
- Pumping chamber (pumped gases): II 2G IIC T3 X Environment with inert purge gas: II 2G IIB T4 X Environment without inert purge gas: II 3G IIB T4 X Motor: II 2G Ex d IIB T4 Gb

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