

Model FED 400 | Drying and heating chambers with forced convection and enhanced timer 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



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 expanded timer functions
- 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	Art.-No.
Model FED 400				
400	400 V 3~ 50/60 Hz	Standard	FED400-400V	9010-0216
	208 V 3~ 60 Hz	Standard	FED400UL-208V	9010-0217

TECHNICAL DATA

Description	FED400-400V	FED400UL-208V
Article Number	9010-0216	9010-0217
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
Temperature fluctuation at 150 °C [± K]	0.3	0.3
Heating-up time to 70 °C [min]	18	18

Description	FED400-400V	FED400UL-208V
Article Number	9010-0216	9010-0217
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 data		
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
Nominal power [kW]	3.4	3.4
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
Steam space volume [L]	498	498
Measures - Doors		
Unit doors	2	2
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

Designation	Description	*	Art.-No.
Access port with silicone plug	10 mm, back	01	8012-0390
	10 mm, left	01	8012-0388
	10 mm, right	01	8012-0387
	10 mm, top	01	8012-0386
	30 mm, back	01	8012-0540
	30 mm, left	01	8012-0537
	30 mm, right	01	8012-0536
	30 mm, top	01	8012-0539
	50 mm, back	01	8012-0546
	50 mm, left	01	8012-0542
	50 mm, right	01	8012-0541
	50 mm, top	01	8012-0545
	100 mm, left	01, 11	8012-0722
	100 mm, right	01, 11	8012-0721
	100 mm, top	01, 10	8012-0547
Analog output, 4 – 20 mA	for temperature values (output not adjustable)	02	8012-0433
Calibration certificate, expanded	each measurement at additional measuring point or testing temperature	–	8012-0022
Calibration certificate, temperature	for temperature, measurement in center of chamber at specified temperature	–	8012-0030
	temperature measurement incl. Certificate and 27 measuring points at specified temperature	–	8012-0921
	temperature measurement incl. certificate, 15- 18 measuring points at specified temperature	–	8012-0918
	temperature measurement incl. certificate, 9 measuring points at specified temperature	–	8012-0915
Cart	stable cart, casters with locking brakes	–	9051-0019
Class 3.1 independent temperature safety device	with visual alarm (DIN 12880)	04, 12	8012-0032
Data Logger Kit	T 350: temperature logging from 0 °C to 350 °C	19	8012-0714
Data Logger Kit, software	LOG ANALYZE software kit, configuration and evaluation software for all BINDER Data Logger Kits (incl. USB data cable)	19	8012-0821
Door gasket	made of FKM, silicone-free	03	8012-0497
Door lock	lockable door handle	–	8012-0319
Fan, reinforced	to increase air exchange rate		
	208 V option model	–	8012-0245
	400 V option model	–	8012-0200
HEPA air filter	class H14 filter (according to EN 1822, min. 99.995 %)	–	8012-0076
Inner chamber, reinforced	including 2 reinforced racks (max. total load 250 kg, max. load per rack 70 kg)	–	8012-0339
Instrument tray	large	–	4022-0124
	small	–	4022-0123
Interface converter, RS232/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		
	120 V, 60 Hz option model	–	8012-0557
Interface converter, RS232/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		
	230 V, 50/60 Hz option model	–	8012-0556
Interface converter, RS422 - 115V	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
Interface converter, RS422 - 230V	RS 422 cable set and RS 422 / Ethernet interface converter for connection to 10-way plug distributor or for connection to a unit		
	230 V, 50/60 Hz option model	–	8012-0380

* Notes › See last page

Designation	Description	*	Art.-No.
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
	audible, can be switched off, adjustable limit on the independent temperature safety device		
Overheating alarm	120 V, 208 V option model	-	8012-0470
	230 V, 400 V option model	-	8012-0469
pH-neutral detergent	concentrated, for gentle remove of residual contaminants; 1 kg	-	1002-0016
	chrome plated	-	6004-0005
Rack	stainless steel	-	6004-0011
Rack, accessories	set of 4 fasteners for additional security	-	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	-	6004-0032
	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 in each door, 470 x 290 mm, and 30 W interior lighting		
Viewing window and interior lighting	208 V option model	-	8012-0271
	400 V option model	-	8012-0269

* Notes › See last page

SERVICES

Designation	Description	*	Art.-No.
Installation services			
Installation	and set up of unit at operating location, connect to existing connections	13, 18	DL100100
Instruction	unit function instructions for operation and programming of the controller	18	DL100400
Preventive maintenance			
Preventive maintenance	Executive of equipment inspection according to maintenance plan	14, 18	DL200200
Calibration services			
Calibration temperature	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			
Execution of IQ/OQ	in accordance with qualification folder	15, 18, 20	DL400100

* Notes › See last page

Designation	Description	*	Art.-No.
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	8012-0855
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	8012-0944

* Notes › See last page

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.
- 05 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.
- 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.
- 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.
- 21 ATEX conformity:
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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