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

BINDER heating chambers of the FED series provide almost unlimited capacity and are particularly adaptable. With advanced timing functions and a adjustable fan, temperature and convection conditions are easily controlled.

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

Model 400

IMPORTANT FEATURES

- Temperature range: +5°C above ambient temperature 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]	Power supply - unit fuse	Plug*	Version	Model version	Art.-No.
Model FED 400					
400	400 V 3~/N/PE 50/60 Hz -16,0 A	CEE 16 / 6 H plug 5-pin	Standard	FED400-400V	9010-0216
	208 V 3~ 60 Hz -16,0 A	NEMA L21-20	Standard	FED400UL-208V	9010-0217

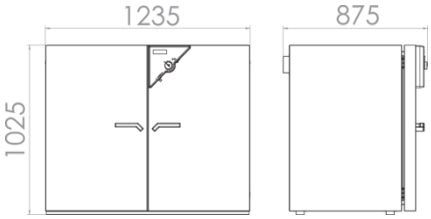
TECHNICAL DATA

Data		
Article Number	9010-0216	9010-0217
Designation	FED400-400V	FED400UL-208V
Option model	Standard	Standard
Performance Data Temperature		
Temperature range	+5 °C above ambient temperature to 300 °C	+5 °C above ambient temperature to 300 °C
Temperature uniformity at 150°C	3.8 ± K	3.8 ± K
Temperature fluctuation at 150°C	0.7 ± K	0.7 ± K
Heating up time to 150°C	29 min	29 min
Recovery time after door was opened for 30 s at 150°C	6 min	6 min
Air change data		
Air change rate at 150°C	18 x/h	18 x/h
Electrical data		
Rated Voltage	400 V	208 V
Power frequency	50/60 Hz	60 Hz
Nominal power	3,4 kW	3,4 kW
Unit fuse	16,0 A	16,0 A
Phase (Nominal voltage)	3~/N/PE	3~
Dimensions and weights		
Interior volume	400 L	400 L
Net weight of the unit (empty)	145 kg	145 kg
Load per rack	35 kg	35 kg
Permitted load	90 kg	90 kg
Wall clearance back	160 mm	160 mm
Wall clearance sidewise	100 mm	100 mm
Housing dimensions not incl. fittings and connections		
Width net	1,235 mm	1,235 mm
Height net	1,025 mm	1,025 mm
Depth net	765 mm	765 mm
Internal Dimensions		

Interior width	1,000 mm	1,000 mm
Interior height	800 mm	800 mm
Interior depth	510 mm	510 mm
Unit doors	2	2
Environment-specific data		
Energy consumption at 150°C	1,200 Wh/h	1,200 Wh/h
Fixtures		
Number of shelves (std./max.)	2/10	2/10

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.

DIMENSIONS Incl. fittings and connections [mm]



OPTIONS

Designation	Description	FED 400	*	Art.-No.
Access port with silicone plug	back			
	10 mm	•	01	8012-1285
	30 mm	•	01	8012-1369
	50 mm	•	01	8012-1385
	left			
	10 mm	•	01	8012-1278
	30 mm	•	01	8012-1361
	50 mm	•	01	8012-1377
	100 mm	•	01	8012-1509
	right			
	10 mm	•	01	8012-1271
	30 mm	•	01	8012-1356

Designation	Description	FED 400	*	Art.-No.
	50 mm	•	01	8012-1373
	100 mm	•	01	8012-1506
	top			
	10 mm	•	01	8012-1264
	30 mm	•	01	8012-1365
	50 mm	•	01	8012-1381
	100 mm	•	01	8012-1388
Alarm function for overheating	Switchable acoustic alarm, with adjustable limit value on the independent temperature safety device			
	208 V option model	•	-	8012-1305
	switchable acoustic alarm, with adjustable limit value on the independent temperature safety device. Not in combination with the following option: Door with window			
	400 V option model	•	-	8012-1301
Analog output 4-20 mA	for temperature values (output not adjustable)	•	02	8012-0433
Calibration certificate, expanded	for temperature; for extending the measurement in center of chamber to include another test temperature	•	-	8012-1118
Calibration certificate, temperature	for temperature, measurement in center of chamber at specified temperature	•	-	8012-1137
	temperature measurement incl. certificate, 9 measuring points at specified temperature	•	-	8012-1554
	temperature measurement incl. certificate, 15- 18 measuring points at specified temperature	•	-	8012-1575
	temperature measurement incl. certificate and 27 measuring points at specified temperature	•	-	8012-1596
Class 3.1 independent temperature safety device	with visual alarm (DIN 12880)	•	-	8012-1148
Door gasket	made of FKM, silicone-free	•	-	8012-1310
Door lock	lockable door handle	•	-	8012-1254
Fan, reinforced	to increase air change rates			
	400 V option model	•	-	8012-0200
HEPA air filter	On fresh air supply for unit; filter classification H14 (acc. to. EN 1822-1:2009, > 99.995% at 0.3 µm); not in conjunction with reinforced heating output, reinforced fan	•	-	8012-0076
Inner chamber, reinforced	including 2 reinforced racks	•	-	8012-0339
Measurement of air exchange rate	in accordance with ASTM D5374, definition and protocol according to ambient temperature	•	-	8012-1197

Designation	Description	FED 400	*	Art.-No.
Pt 100 temperature sensor	additional flexible Pt 100, interior, with external connection incl. LEMO connector (3-pin)	•	-	8012-1176
Viewing window and interior lighting	Viewing window 290 x 470 mm in every door and interior lighting 30 W. Not in combination with the following option: Alarm function for overheating			
	208 V option model	•	-	8012-1241
	400 V option model	•	-	8012-1239

ACCESSORIES

Designation	Description	FED 400	*	Art.-No.
APT-COM™ 4 BASIC-Edition	for simple logging and documentation requirements with up to 5 networked units.			
	version 4, BASIC edition	•	-	9053-0039
APT-COM™ 4 GLP-Edition	for working under GLP-compliant conditions. Measured values are documented in a tamper-proof way in line with the requirements of FDA Regulation 21 CFR 11.			
	version 4, GLP edition	•	-	9053-0042
APT-COM™ 4 PROFESSIONAL-Edition	convenient unit and user management built on the BASIC edition. Suitable for networking up to 100 units.			
	version 4, PROFESSIONAL edition	•	-	9053-0040
pH-neutral detergent	concentrated, for gentle remove of residual contaminants; 1 kg	•	-	8012-2250
Qualification documents	IQ/OQ/PQ documents – supporting documents for validation performed by customers, according to customer requirements, PQ section added to qualification folder IQ/OQ; parameters: temperature, CO_2, O_2 – or pressure, depending on unit			
	Digital in PDF format	•	-	7057-0005
	Hard copy inside folder	•	-	7007-0005
	IQ/OQ documents – supporting documents for validation performed by customers, consisting of: IQ/OQ checklists incl. calibration guide and comprehensive unit documentation; parameters: temperature, CO_2, O_2, pressure, depending on unit			
	Digital in PDF format	•	-	7057-0001
	Hard copy inside folder	•	-	7007-0001
Rack	chrome plated	•	-	8012-2036
	stainless steel	•	-	8012-2159
Rack, reinforced	stainless steel, with fasteners (1 set of 4)	•	-	8012-0346
Rack accessories	fasteners (1 set of 4) for additional security of racks	•	-	8012-0531
Shelf, perforated	Stainless steel	•	-	8012-2162
Table on castors	stable cart, casters with locking brakes, dimensions: W 1,300 x D 800 x H 780 mm	•	-	9051-0019

SERVICES

Designation	Description	*	Art.-No.
Calibration services			
Calibration certificate, temperature	Calibration of one (1) test temperature specified by the user in center of chamber, including certificate	05	DL30-0120
	Extension of calibration of one (1) additional test temperature specified by the user in the center of the usable space, including certificate	05	DL30-0102
Measurement of air exchange rate	including certificate (in accordance with ASTM D5374)	05	DL33-0000
Temperature measurement, 9 measuring points	Temperature measurement with 9 measuring points with a set value specified by the user, including certificate	05	DL30-0109
Temperature measurement, 18 measuring points	Temperature measurement with 18 measuring points with a set value specified by the user, including certificate	05	DL30-0118
Temperature measurement, 27 measuring points	Temperature measurement with 27 measuring points with a set value specified by the user, including certificate	05	DL30-0127
Installation services			
Unit commissioning	Connect the unit to the customer-side connections (electricity, water, wastewater, gas), basic functions check, brief operating instructions. (excl.: unpacking, setup, controller instructions, programming, installation work)	05	DL10-0160
Unit instructions	Instruction regarding operating principle and basic functions of the unit, operation of the control electronics including programming	05	DL10-0540
Maintenance contracts			
BRONZE 3-year maintenance contract	Maintenance service as contractually agreed, visual inspection of mechanical and electrical components, check of control response, 20% discount on spare parts	05	DL20-0720
GOLD 3-year maintenance contract	Maintenance service as contractually agreed, visual inspection of mechanical and electrical components, check of control response, 20% discount on spare parts, testing of all key functions, replacement of wear parts, calibration of one test temperature specified by the user in the center of the usable space, including certificate	05	DL20-0910
SILVER 3-year maintenance contract	Maintenance service as contractually agreed, visual inspection of mechanical and electrical components, check of control response, 20% discount on spare parts, testing of all key functions, calibration of one test temperature specified by the user in the center of the usable space, without certificate	05	DL20-0810
Maintenance services			
Maintenance	One-off maintenance service in accordance with maintenance schedule. Visual inspection of mechanical and electrical components, testing of all key functions. Calibration of a test temperature specified by the user in center of usable space without certificate	05	DL20-0602
Validation services			
Execution of IQ/OQ	Execution of IQ/OQ in accordance with qualification folder	05	DL40-0100
Execution of IQ/OQ/PQ	Execution of IQ/OQ/PQ in accordance with qualification folder	05	DL44-0500
Warranty service			
1-year warranty extension	The warranty is extended by 1 year from the delivery date, wear parts are excluded	05	DL50-0010

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.

05 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).

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