

# Model FED 115 | Drying and heating chambers Avantgarde.Line with forced convection and enhanced timer functions

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

#### **BENEFITS**

- · Excellent temporal and spatial temperature accuracy
- · High energy efficiency
- · USB connection for recording data
- Temperature range up to 300 °C



Model 115



Model 115

### MAIN FEATURES

- Temperature range: ambient temperature plus 10 °C to 300 °C
- High temperature accuracy thanks to APT.line™ technology
- · Adjustable fan speed
- Controller with LCD display
- · Electromechanical control of the exhaust air flap
- · 2 chrome-plated racks

- Stackable
- Class 2 independent temperature safety device (DIN 12880) with visual temperature alarm
- Ergonomic handle design
- · Ethernet interface
- · USB port for recording data

## ORDERING INFORMATION

Interior volume [cu.ft.]	Voltage	Option model	Version	ArtNo.
Model FED 115				
4.1	230 V 1 ph 50/60 Hz	Standard	FED115-230V	9010-0293
	120 V 1 ph 60 Hz	Standard	FED115UL-120V	9010-0294



#### **TECHNICAL DATA**

Article Number         9010-0293         9010-0294           Performance Data Temperature         Vertowner of 10°C above arbient temperature to [°C]         300         300           Temperature range 10°C above arbient temperature to [°C]         12         12           Temperature fuctuation at 150°C [c K]         1.2         1.2           Recovery time after 30 seconds door open at 150°C [min]         9.3         3.0           Recovery time after 30 seconds door open at 150°C [min]         2.9         2.0           Recovery time after 30 seconds door open at 150°C [min]         2.0         2.0           Recovery time after 30 seconds door open at 150°C [min]         2.0         2.0           Recovery time after 30 seconds door open at 150°C [min]         2.0         2.0         2.0           Recovery time after 30 seconds door open at 150°C [min]         2.0	Description	FED115-230V <sup>1</sup>	FED115UL-120V <sup>1</sup>
Temperature range 10 °C above ambient temperature to 1°C [K]         300         300           Temperature variation at 150 °C [k K]         12         1.2           Temperature fluctuation at 150 °C [k K]         0.3         0.3           Recovery time after 30 seconds door open at 150 °C [min]         5         5           Recovery time after 30 seconds door open at 150 °C [min]         300         20           Readed Voltage [V]         300         20           Power frequency [Hz]         5060         60           Nominal power [kW]         1.3         1.4           Unit tace [A]         2.5         1.2           Phose (Nominal voltage) [ph]         6.3         2.5           Measures - Outer dimensions         710         7.0           Well frequency [Hz]         700         7.0           Height net [mm]         735         735           Height net [mm]         160         10           Well clearance sidewise [mm]         100         10           Wall clearance sidewise [mm]         10         1           Well clearance sidewise [mm]         55         55           Well clearance sidewise [mm]         55         55           Height [mm]         550         55	Article Number	9010-0293	9010-0294
Temperature variation at 150 °C [± K]         1.2         1.2           Temperature fluctuation at 150 °C [± K]         0.3         0.3           Heating-up time to 150 °C [min]         19         19           Recovery time after 30 seconds door open at 150 °C [min]         5         5           Electrical data	Performance Data Temperature		
Temperature fluctuation at 150 °C [kK]         0.3         0.3           Heating-up time to 150 °C [min]         19         19           Recovery time after 30 seconds door open at 150 °C [min]         5         5           Electrical data         ************************************	Temperature range 10 °C above ambient temperature to [°C]	300	300
Heating-up time to 150 °C (min)         19         19           Recovery time after 30 seconds door open at 150 °C (min)         5         5           Electrical data         Very College (V)         230         120           Power frequency (Ft-Z)         5060         60           Nominal power (kW)         1.3         1.4           Unit (use [A])         6.3         1.5           Phase (Nominal voltage) (ph)         6.3         1.5           Whese (Nominal voltage) (ph)         710         710           Measures - Outer dimensions         710         710           Well clearance back (mm)         605         605           Mall clearance back (mm)         606         605           Wall clearance back (mm)         100         100           Measures - Doors         Very College (W)         100           Unit doors         550         50           Measures - Internal Dimensions         550         50           Measures - Internal Dimensions         550         550	Temperature variation at 150 °C [± K]	1.2	1.2
Recovery time after 30 seconds door open at 150 °C (min)         5           Electrical data           Rated Voltage (V)         230         120           Power frequency [Hz]         50060         60           Nominal power [kW]         1.3         1.4           Unit fuse [A]         6.3         12.5           Phase (Nominal voltage) [ph]         1         1           Measures - Outer dimensions         V         10           Width net [mm]         710         710           Height net [mm]         735         735           Depth net [mm]         605         605           Wall clearance sidewise [mm]         160         100           Wall clearance sidewise [mm]         100         100           Measures - Internal Dimensions         V         1           Width [mm]         550         50           Height [mm]         550         50           Depth [mm]         550         50           Measures - Internal Dimensions         550         50           Width [mm]         550         50           Depth [mm]         550         50           Measures - Internal Dimensions         550         50           Leight [mm]	Temperature fluctuation at 150 °C [± K]	0.3	0.3
Electrical data           Rated Voltage [V]         230         120           Power frequency [Hz]         50/60         60           Nominal power [kW]         1.3         1.4           Unit fuse [A]         6.3         12.5           Phase (Nominal voltage) [ph]         1         1           Measures - Outer dimensions         ****         ****           Width et [mm]         710         710           Height net [mm]         735         35           Depth net [mm]         605         605           Wall clearance back [mm]         160         10           Wall clearance sidewise [mm]         100         10           Wall clearance sidewise [mm]         100         10           Wassures - Doors         ***         1           Unit doors         5         50           Wessures - Internal Dimensions         550         50           Wessures - Internal Dimensions         550         550           Height [mm]         550         550           Height [mm]         550         550           Height [mm]         116         16           Neasures - Internal Dimensions         550         550           Height [	Heating-up time to 150 °C [min]	19	19
Rated Voltage [V]         230         120           Power frequency [Hz]         50/80         60           Nominal power [kW]         1.3         1.4           Unit fuse [A]         6.3         12.5           Phase (Nominal voltage) [ph]         1         7.0           Measures - Outer dimensions         ************************************	Recovery time after 30 seconds door open at 150 °C [min]	5	5
Power frequency [Hz]         50/60         60           Nominal power [kW]         1.3         1.4           Unit fuse [A]         6.3         1.2           Phase (Nominal voltage) [ph]         1.0         1.2           Measures - Outer dimensions         ************************************	Electrical data		
Nominal power [kW]         1.3         1.4           Unit fuse [A]         6.3         12.5           Phase (Nominal voltage) [ph]         1         1           Measures - Outer dimensions         ************************************	Rated Voltage [V]	230	120
Unit fuse [A]         6.3         12.5           Phase (Nominal voltage) [ph]         1         1           Measures - Outer dimensions         VID         710           Width net [rm]         710         735         735           Depth net [rm]         605         605         605           Wall clearance sidewise [rm]         160         160         605           Wall clearance sidewise [rm]         100         100         100           Measures - Doors         VID         1         1         1           Width [rm]         550         550         550         1	Power frequency [Hz]	50/60	60
Phase (Nominal voltage) [ph]         1         4           Measures - Outer dimensions         Vidth net [mm]         710         710           Height net [mm]         735         735         735           Depth net [mm]         605         605         605           Wall clearance back [mm]         160         160         100 <th< td=""><td>Nominal power [kW]</td><td>1.3</td><td>1.4</td></th<>	Nominal power [kW]	1.3	1.4
Measures - Outer dimensions           Width net [mm]         710         710           Height net [mm]         735         735           Depth net [mm]         605         605           Wall clearance back [mm]         160         160           Wall clearance sidewise [mm]         100         100           Measures - Doors         VIII doors         1         1           Measures - Internal Dimensions         550         550           Width [mm]         550         550           Height [mm]         550         550           Depth [mm]         885         58           Measures         116         116           Net weight of the unit (empty) [kg]         54         54           permitted load [kg]         150         150           Load per rack [kg]         30         30           Energy consumption at 150 °C         340 Wh/h         340 Wh/h           Sound-pressure level [dB(A)]         43         43           Fixtures	Unit fuse [A]	6.3	12.5
Width net [mm]         710         710           Height net [mm]         735         735           Depth net [mm]         605         605           Wall clearance back [mm]         160         160           Wall clearance sidewise [mm]         100         100           Measures - Doors         VIII doors         1         1           Unit doors         550         550         1           Measures - Internal Dimensions         550         550         550           Width [mm]         550         550         550           Depth [mm]         550         550         550           Measures         116         116         116           Measures         116         116         116         116           Depth [mm]         54         54         54         116         1	Phase (Nominal voltage) [ph]	1	1
Height net [mm]         735         735           Depth net [mm]         605         605           Wall clearance back [mm]         160         100           Wall clearance sidewise [mm]         100         100           Measures - Doors         1         1           Unit doors         1         1           Measures - Internal Dimensions         550         550           Width [mm]         550         550           Depth [mm]         385         385           Measures         116         16           Interior volume [L]         116         16           Net weight of the unit (empty) [kg]         54         54           permitted load [kg]         150         150           Load per rack [kg]         30         30           Energy consumption at 150 °C         340 Wh/h         340 Wh/h           Sound-pressure level [dB(A)]         43         43           Fixtures	Measures - Outer dimensions		
Depth net [mm]         605         605           Wall clearance back [mm]         160         100           Wall clearance sidewise [mm]         100         100           Measures - Doors         Unit doors         1         1           Unit doors         550         550         550           Height [mm]         550         550         550           Depth [mm]         385         385         385           Measures         Interior volume [L]         116         116           Net weight of the unit (empty) [kg]         54         54           permitted load [kg]         150         150           Load per rack [kg]         30         30           Energy consumption at 150 °C         340 Wh/h         340 Wh/h           Sound-pressure level [dB(A)]         43         340 Wh/h	Width net [mm]	710	710
Wall clearance back [mm]         160         160           Wall clearance sidewise [mm]         100         100           Measures - Doors         -         -           Unit doors         1         1           Measures - Internal Dimensions         -         550         550           Height [mm]         550         550         550           Depth [mm]         385         385           Measures         -         -         -           Interior volume [L]         116         116         -           Net weight of the unit (empty) [kg]         54         54         -           Load per rack [kg]         30         30         -         -           Environment-specific data         -         340 Wh/h         340 Wh/h         340 Wh/h         Sound-pressure level [dB(A)]         43         340 Wh/h         -           Sound-pressure level [dB(A)]         43         34         -	Height net [mm]	735	735
Wall clearance sidewise [mm]         100         100           Measures - Doors         1         1           Unit doors         1         1           Measures - Internal Dimensions         Vidth [mm]         550         550           Height [mm]         550         550         550           Depth [mm]         385         385           Measures         Videous [L]         116         116           Net weight of the unit (empty) [kg]         54         54           permitted load [kg]         150         50           Load per rack [kg]         30         30           Environment-specific data         50         340 Wh/h           Sound-pressure level [dB(A)]         340 Wh/h         340 Wh/h           Sound-pressure level [dB(A)]         43         34	Depth net [mm]	605	605
Measures - Doors           Unit doors         1	Wall clearance back [mm]	160	160
Unit doors         1         1           Measures - Internal Dimensions         550         550           Width [mm]         550         550           Beight [mm]         385         385           Depth [mm]         385         385           Measures         ************************************	Wall clearance sidewise [mm]	100	100
Measures - Internal Dimensions           Width [mm]         550         550           Height [mm]         550         550           Depth [mm]         385         385           Measures         Interior volume [L]         116         116           Net weight of the unit (empty) [kg]         54         54           permitted load [kg]         150         150           Load per rack [kg]         30         30           Environment-specific data         Energy consumption at 150 °C         340 Wh/h         340 Wh/h           Sound-pressure level [dB(A)]         43         43           Fixtures	Measures - Doors		
Width [mm]         550         550           Height [mm]         550         550           Depth [mm]         385         385           Measures         V         V           Interior volume [L]         116         116           Net weight of the unit (empty) [kg]         54         54           permitted load [kg]         150         150           Load per rack [kg]         30         30           Environment-specific data         V         V           Energy consumption at 150 °C         340 Wh/h         340 Wh/h           Sound-pressure level [dB(A)]         43         43           Fixtures	Unit doors	1	1
Height [mm]         550         550           Depth [mm]         385         385           Measures         Interior volume [L]         116         116           Net weight of the unit (empty) [kg]         54         54           permitted load [kg]         150         150           Load per rack [kg]         30         30           Environment-specific data         340 Wh/h         340 Wh/h           Sound-pressure level [dB(A)]         43         43           Fixtures         Fixtures         550	Measures - Internal Dimensions		
Depth [mm]         385         385           Measures         Interior volume [L]         116         116           Net weight of the unit (empty) [kg]         54         54           permitted load [kg]         150         150           Load per rack [kg]         30         30           Environment-specific data         340 Wh/h         340 Wh/h           Sound-pressure level [dB(A)]         43         43           Fixtures	Width [mm]	550	550
Measures         Interior volume [L]       116       116         Net weight of the unit (empty) [kg]       54       54         permitted load [kg]       150       150         Load per rack [kg]       30       30         Environment-specific data       ***       ***         Energy consumption at 150 °C       340 Wh/h       340 Wh/h         Sound-pressure level [dB(A)]       43       43         Fixtures       ****       ****	Height [mm]	550	550
Interior volume [L]         116         116           Net weight of the unit (empty) [kg]         54         54           permitted load [kg]         150         150           Load per rack [kg]         30         30           Environment-specific data         ***           Energy consumption at 150 °C         340 Wh/h         340 Wh/h           Sound-pressure level [dB(A)]         43         43           Fixtures         ***         ***	Depth [mm]	385	385
Net weight of the unit (empty) [kg]         54         54           permitted load [kg]         150         150           Load per rack [kg]         30         30           Environment-specific data         ***           Energy consumption at 150 °C         340 Wh/h         340 Wh/h           Sound-pressure level [dB(A)]         43         43           Fixtures         ****         ****	Measures		
permitted load [kg]         150         150           Load per rack [kg]         30         30           Environment-specific data         **** Energy consumption at 150 °C** Sound-pressure level [dB(A)]         340 Wh/h         340 Wh/h           Sound-pressure level [dB(A)]         43         43           Fixtures         **** *** *** *** *** *** *** ** *** **	Interior volume [L]	116	116
Load per rack [kg]       30       30         Environment-specific data	Net weight of the unit (empty) [kg]	54	54
Environment-specific data  Energy consumption at 150 °C 340 Wh/h 340 Wh/h  Sound-pressure level [dB(A)] 43 43  Fixtures	permitted load [kg]	150	150
Energy consumption at 150 °C 340 Wh/h 340 Wh/h Sound-pressure level [dB(A)] 43 43 Fixtures	Load per rack [kg]	30	30
Sound-pressure level [dB(A)] 43 43  Fixtures	Environment-specific data		
Fixtures	Energy consumption at 150 °C	340 Wh/h	340 Wh/h
	Sound-pressure level [dB(A)]	43	43
Number of shelves (std./max.) 2/5 2/5	Fixtures		
	Number of shelves (std./max.)	2/5	2/5

<sup>1</sup> 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 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.



## **OPTIONS AND ACCESSORIES**

Designation	Description	*	ArtNo.
	left		
	10 mm	01	8012-1278
	30 mm	01	8012-1655
	50 mm	01	8012-1657
	100 mm	01	8012-1669
	right		
	10 mm	01	8012-1271
Access port with silicone blug	30 mm	01	8012-1654
	50 mm	01	8012-1656
	100 mm	01	8012-1670
	top		
	10 mm	01	8012-1264
	30 mm	01	8012-1365
	50 mm	01	8012-1381
	100 mm	01, 10	8012-1672
Analog output, 4 – 20 mA	for temperature values (output not adjustable)	02	8012-1625
Calibration certificate, expanded	for temperature; for extending the measurement in center of chamber to include another test temperature	-	8012-1118
	for temperature, measurement in center of chamber at specified temperature	-	8012-1137
Calibration certificate,	temperature measurement incl. certificate and 27 measuring points at specified temperature	_	8012-1596
emperature	temperature measurement incl. certificate, 15- 18 measuring points at specified temperature	_	8012-1575
	temperature measurement incl. certificate, 9 measuring points at specified temperature	_	8012-1554
Cart	Cart – stable cart, casters with locking brakes, dimensions: W 1,000 x D 800 x H 780 mm	_	9051-0018
Class 3.1 independent emperature safety device	with visual alarm (DIN 12880)	04, 12	8012-1644
Door gasket	made of FKM, silicone-free	03	8012-1651
Door lock	lockable door handle	_	8012-1666
Gas-tight option model	Incl. additional measures for the greatest possible impermeability to gas; not in conjunction with access port or interior lighting option	09	8012-1686
Heating output,	For faster heating up time and improved recovery time; max. 300 °C; not in conjunction with load management option		
reinforced	230 V option model	-	8012-1699
nert gas connection	With gas inlet and outlet, Ø 10 mm, incl. additional measures for the greatest possible impermeability to gas; not in conjunction with access port or interior lighting option	-	8012-1692
nner chamber, einforced	including 2 reinforced racks (max. total load 250 kg, max. load per rack 70 kg)	-	8012-1714
	with lid made from 18/8 stainless steel, stackable, dimensions: 230 x 133 x 45 mm		
notrument tre	small	-	4022-0123
nstrument tray	with lid made from 18/8 stainless steel, stackable, dimensions: 315 x 215 x 60 mm		
	large	-	4022-0124
Measurement of air exchange rate	in accordance with ASTM D5374, definition and protocol according to ambient temperature	-	8012-1197
H-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	-	8012-1621
DI	chrome plated	-	6004-0167
Rack	stainless steel	_	6004-0151
Rack, heavy load	Stainless steel (1.4301/AISI 304), max. load per rack 70 kg, max. total load 150 kg	_	6004-0199
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<sup>\*</sup> Notes > See last page



Designation	Description	*	ArtNo.
	APT-COM™ communications software		
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
Time	battery-backed	-	8012-1642
Viewing window and interior lighting	viewing window (triple insulating glass) in door, 370 x 370 mm, and 15 W interior		
	120 V option model	-	8012-1707
	230 V option model	_	8012-1705

<sup>\*</sup> Notes > See last page

## **SERVICES**

Designation	Description	*	ArtNo.
Installation services			
Data Logger Kit installation service	unit function instructions for operation and programming of the controller	18	DL100400
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	DL400100
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
Warranty service			
Extension of the warranty from 2 to 3 years	beginning with the date of delivery, wearing parts are not included	-	DL003041
Extension of the warranty from 2 to 5 years	beginning with the date of delivery, wearing parts are not included	-	DL003042

<sup>\*</sup> Notes > See last page



#### **NOTES**

- Condensation may occur in the area around the access port. Access ports may be placed in custom locations for an additional charge. 01 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.
- 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.
- Not available on 23- or 53-liter units.

  Only available on units rated for 230 V or 400 V. 11 12
- 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
- OQ according to Yellow Paper = completed factory validation documentation of all OQ checklists.
- Sensor calibration is performed in an accredited calibration laboratory.
- Calibration is performed according to the BINDER factory standard. 17
- 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). 18
- For additional accessories, refer to the Process documentation chapter. 19
- 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.