

PILOT PRODUCTION

FREEZE DRYER BFD-10 SERIES



The BFD-10 pilot freeze dryer is designed to meet the demands of lab R&D and pilot production. A variety of tailored options are available to meet your specific needs. The lyophilizer is recommended for pilot production and laboratory applications include freeze drying recipe development, process optimization, clinical trials and small batch test. Vekuma's BFD-10 freeze dryer is a one-size-fits-all solution that can support you from lab investigation until to scale up.

Technical Specifications

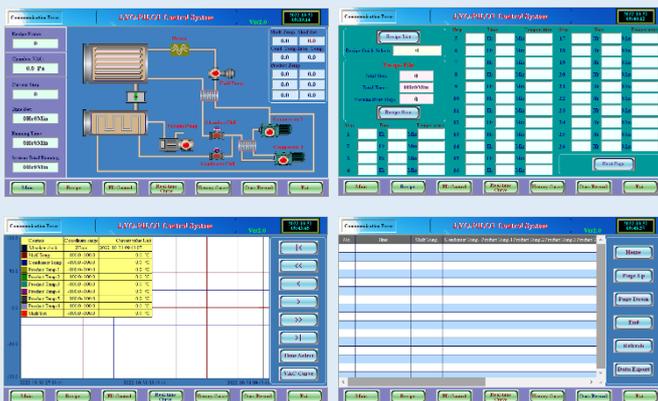
Install Size	W/1430*D/1050*H/1950mm
Weight	900Kgs
Power Install	8Kwh
Voltage	380V/50Hz/3P
No. of Shelves (Max.)	8+1
Shelf Area (Max.)	1.26m2
Shelf Clearance	56~176mm
Shelf Dimension	W/355*D/455*T/16mm
Condenser Volume	48L
Condenser Performance	15Kgs/24Hrs
Condenser Capacity	30Kgs
System Final Vacuum	0.01mBar

Performance Specifications

Shelf Temperature Control Range	-50C ~ +70C
Lowest Shelf Temperature	-55C
Shelf Temperature Control Accuracy	<+/-1C
Shelf Temperature Uniformity	<+/-1C
Shelf Cooling Rate +20C to -40C	<60Min
Shelf Heating Rate	>1C/Min
Lowest Condenser Temperature	-85C
Condenser Cooling Rate +20C to -40C	<10Min
Condenser Defrost Time	<60Min
System Final Vacuum	<0.01mBar
Vacuumize To 1 mBar	<30Min
Leak Rate	<0.05mBar L/Sec

Standard Features

- S/S304 drying chamber, interior polish Ra<0.6um.
- Acrylic drying chamber door, lubricate free gasket.
- S/S304 shelves, flatness <0.5mm/m.
- Shelves upper and bottom polish Ra<0.4um.
- S/S304 ice condenser, interior polish Ra<0.6um.
- S/S304 condenser coils, surface polish Ra<0.4um.
- Acrylic condenser door, lubricate free gasket.
- Condenser auto defrost.
- 2-stage oil sealed rotary vacuum pump, velocity 16m3.
- 3HP + 3HP cascade refrigeration system, air cooled ^[1].
- 2x800w fluid heating bar.
- Industrial grade, PLC and user-friendly touch screen HMI based control system. LYO-PILOT interface, which has the function of:
 - Alive display main components working status and key parameters.
 - Freeze drying recipes management system.
 - Real-time freeze drying curve and historical trend review.
 - Drying data-logging and export to USB memory.
 - Automatic and semi-automatic work mode.
 - Users and authorizations.
 - Alarms.
 - Interlocking system to avoid hardware damage due to mis-operate.
 - Vacuum pump will not active if condenser higher than -45C.
 - Vacuum pump auto shut down if chamber pressure not reduce.
 - All air and water isolate valves automatic close to protect raw product once power outage.
 - Drying data and recipes in HMI will not lose once power outage.
 - Freeze drying will continue after power restoration ^[2].
 - System always executes the latest modified drying steps, even if the freeze drying is in process.
 - Shelf temperature not reach set, system will not move to next step although the set time has been reached.



Processing Capacity

BFD-10S		Vials Load					
Shelves No.	3	4	5	6	7	8	
Vials Size							
2R/4R Dia.16	1764	2352	2940	3528	4116	4704	
6R/8R Dia.22	900	1200	1500	1800	2100	2400	
10R/15R Dia.24	756	1008	1260	1512			
Shelf Area	0.47m ²	0.63m ²	0.78m ²	0.94m ²	1.10m ²	1.26m ²	
Shelf Clearance	176mm	128mm	99mm	80mm	66mm	56mm	

BFD-10		Bulk Fill					
Shelves No.	3	4	5	6	7	8	
Thick In Trays							
10mm	4.7L	6.3L	7.8L	9.4L	11L	12.6L	
15mm	7L	9.4L	11.8L	14.1L	16.5L	18.9L	
20mm	0.94L	12.6L	15.7L	18.9L	22L	25.2L	
Shelf Area	0.47m ²	0.63m ²	0.78m ²	0.94m ²	1.1m ²	1.26m ²	



Accessories and Options

Name	Part No.	Description
S/S316L Material		Drying chamber, shelves, trays, condenser & coils.
S/S Door		Drying chamber and condenser door.
Inert Gas Backfill Port		
VHP Port		
Side Mounted Flask Rack		6 ports manifolds
Dry Vacuum Pump		Scroll type, oil free pump.
Vacuum Break Filter		0.22um.
Auto Vacuum Break Valve		
Capacitive Vacuum Gauge		
Condenser Isolate Valve		
Auto Condenser Drain Valve		
Pneumatic Operated Valves		All air and water isolate valves open/close by compressed air.
Eutectic Point Detector		
PC Control		
Clean Room Configuration		

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