

# EPIC™ Small Production Freeze Dryer

The EPIC™ Small Production Freeze Dryer is easy to move around and is a work-horse. The EPIC™ offers up to 30 sq ft (2.787 sq M) of shelf area with a condensing rate of 40 Liters in 24 hours, the perfect unit for small scale production. Not only does the price/performance beat anything in its class, but Millrock also provides the most advanced controls/user interface, as a standard feature. The standard controls are MCS - PC/PLC based, offering data collection and self-testing features.

Our easy-to-use software provides automatic freeze-drying, defrost, system and leak rate testing. Data can be printed either numerically or graphically. This same control system is used on industrial freeze dryers, allowing scaling to production.

Advanced system options include: FreezeBooster® Controlled Nucleation, Auto-Dry™ Protocol Optimization, AccuFlux® and CIP. The combination provides the ideal platform for simplified and optimized lyophilization protocol development.

In addition, the system is designed to be more tolerant of fluctuations in room temperature and supply voltage, which are common issues with lower end systems.

We have addressed common application issues in our design with features such as; more accurate vacuum sensors ensure that the equipment is not a limit to your freeze drying needs.

## SYSTEM PERFORMANCE

- 10 Shelf pull down from +20 to -40C in less than 45 minutes
- Vacuum pull down to 100 mT in less than 25 minutes
- Vacuum leak rate less than 30 mT per hour
- Vacuum level 10 mT in clean dry system (-85)

## APPLICATIONS

Bulk Applications / Trays  
Small Scale Production  
Tissue Bank  
Diagnostics  
Well Plates  
Vials  
R&D



## EPIC™ Features

### CONTROL SYSTEM

- MCS - PC/PLC with ethernet and remote internet connectivity
- Manual and automatic operating modes
- Graphic and numeric data collection
- Automatic system and leak rate testing
- Options for Protocol Optimization & Controlled Nucleation

### SHELF SYSTEM

- Up to 30 sq ft (.2.787) sq M) of shelf area
- Larger shelves for more product capacity - 18" x 24" (457mm x 608mm)
- Increased stoppering pressure for hard to stopper systems
- 316L stainless steel on all wetted parts

### CONDENSER

- 8" vapor port
- Exposed coil configurations for maximum efficiency

### REFRIGERATION

- Water cooled, highly reliable scroll compressors
- Oversized compressors for high performance
- CFC Free non-proprietary refrigerants
- Hot Gas Defrost

### VACUUM

- Pirani vacuum sensor
- Vacuum control
- Gas backfill
- 525 lpm corrosion resistant vacuum pump

### ADDITIONAL

- Sanitary style fittings on all sensor and vacuum ports
- Built in validation port

**EPIC™**  
**Small Production Freeze Dryer**

**MILLROCK**  
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## SPECIFICATIONS

### EPIC™ STANDARD SPECIFICATIONS

SHELF AREA	15 to 30 sq ft (1.394 to 2.987 sqM)
SHELF ASSEMBLY	Bulk or Hydraulic Stoppering
SHELF TEMPERATURE RANGE	-70C to +65C
SHELF HEAT TRANSFER	Hollow Fluid Filled
SHELF SIZE/FINISH	18"x 24", 316LSS, 20 Ra or better
CONDENSER TEMPERATURE	-85C
CONDENSER CAPACITY	50 L
CONDENSING RATE	40L in 24 hours
CONDENSER STYLE	Exposed Coil, 8" vapor port
DEFROST	Hot Gas
COMPRESSORS (SCROLL)	5 HP & 3.5 HP
PRODUCT SENSORS	4, Type T Thermocouples
VACUUM PUMP	525 LPM corrosion resistant
VACUUM CONTROL	Pirani w/ Solenoid & Needle Valve
GAS BACKFILL	Included
CONTROL SYSTEM	PC/PLC with MCS Software
TRAYS	Two per shelf included
CABINET	62" w x 44"d x 87.5"h
ELECTRICAL	230V/60Hz, 3 ph, 60 A 480V/60z, 3 ph, 40 A 230V/50Hz, 3 ph, 60 A 415V/50Hz, 3 ph 40 A

PLEASE NOTE THAT 50HZ UNITS HAVE A HEAT LOAD DERATING OF 17%

## VIAL CAPACITY

VIAL ml	DIA (mm)	HEIGHT (mm)	NUMBER OF SHELVES					
			5	6	7	8	9	10
2	16	41	5760	6912	8064	9216	10368	11520
5	22	48	2990	3588	4186	4784	5382	
10	24	58	2410	2892	3374	3856	4338	
20	29	71	1610	1932	2254	2576		
50	43	81	660	792	924	1056		
100	52	92	450	540	630			

## BULK FILL (LITERS)

#trays	Depth					
	5	6	7	8	9	10
10mm	13.9	16.7	19.5	22.3	25.1	27.8
15mm	20.9	25	29.2	33.4	37.6	41.8
20mm	27.8	33.4	39	44.6	50.1	55.7

Product temperature feedback optimizes the recipe, both freezing and primary drying, based on the product temperature average. Multiple methods for Primary Drying end-point determination (requires a capacitance manometer). Pressure Rise Testing (requires an isolation valve).



## AVAILABLE OPTIONS

- FreezeBooster® Controlled Nucleation (Portable)\*
- LyoPAT® Heat Flow Measurement and Control
- Up to 18 Product Probes
- Capacitance Manometer
- Proportional Vacuum Control
- Dry Vacuum Pump
- Isolation Valve
- Stainless Steel Door
- Shelf Latching Kit
- Resistivity Probe
- Hot Water Defrost
- CIP
- Resistivity Probe
- Clean Room Configuration
- Isolator Interface
- H2O2 Integration Kit
- 21 CFR Part 11 Software
- Validation Documentation
- IQ/OQ Workbook
- FAT/SAT
- LN2 Trap

## MCS - PC/PLC CONTROL

The EPIC™ Small Production lyophilizer comes complete with PLC controls and a PC for programming and data collection. Our easy-to-use software provides automatic freeze drying, defrost, and system test. Data can be printed either numerically or graphically. This same control system can be used on industrial dryers, allowing scaling to production. An interactive maintenance screen simplifies component servicing.



MCS uses an ethernet platform for hardware connectivity making data transmission extremely fast. It also provides web connectivity for those who want remote access to their systems.

## SHELF CONFIGURATION

SHELVES	SPACING (in/mm)	AREA (sq ft/sq M)
5	5.5/139	15/1.39
6	4.5/114	18/1.67
7	3.75/95	21/1.95
8	3.25/82	24/2.23
9	2.8/71	27/2.51
10	2.5/63	30/2.79

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Specifications subject to change without notification. All specifications based on 20C ambient and 60 Hz

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