



Laboratory Freeze Dryer

LYOLAB Laboratory Freeze Dryer

An economical freeze dryer that combines many of the features of larger lyophilizers in a small floor model console system. The **LYOLAB Laboratory Freeze Dryer** provides control versatility with the most advanced PC/ PLC system and LyoMaster software.

The **LYOLAB Laboratory Freeze Dryer** fits a wide array of freeze drying applications. From investigational laboratory work to small diagnostics production.

Configured to meet your requirements. A shelf temperature choice of -45°C or -70°C to +65°C coupled with a condenser that cools to -53°C or -85°C ensures that you can configure a system to meet your demanding needs.

The **LYOLAB Lyophilizer** provides more performance and capacity than any other freeze dryer in its class. It offers up to 6.25 sq ft (0.580 sq M) of shelf area and a 16 Liter condensing capacity. With shelf-to-shelf spacing of up to 4.5 inches (115mm).

SYSTEM PERFORMANCE

- 5 shelf pull down from +20 to -40°C in less than 30 mins
- Vacuum pull down to 100 mT in less than 20 mins
- Vacuum leak rate less than 30 mT per hour
- Vacuum level 5 mT in clean dry (-85°C system)

LYOLAB Features

CONTROL SYSTEM

- 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 6.25 sq ft (.581 sq M) of shelf area
- Larger shelves - 10" x 18" (254 mm x 457 mm)
- Increased stoppering pressure for hard to stopper systems
- 316 L stainless steel on all wetted parts

CONDENSER

- Internal condenser
- Exposed coil configurations for maximum efficiency



LYOLAB Laboratory Freeze Dryer

APPLICATIONS

- Diagnostics
- Small Production
- Investigational Lab R&D
- Vials
- Bulk
- Well Plates



REFRIGERATION

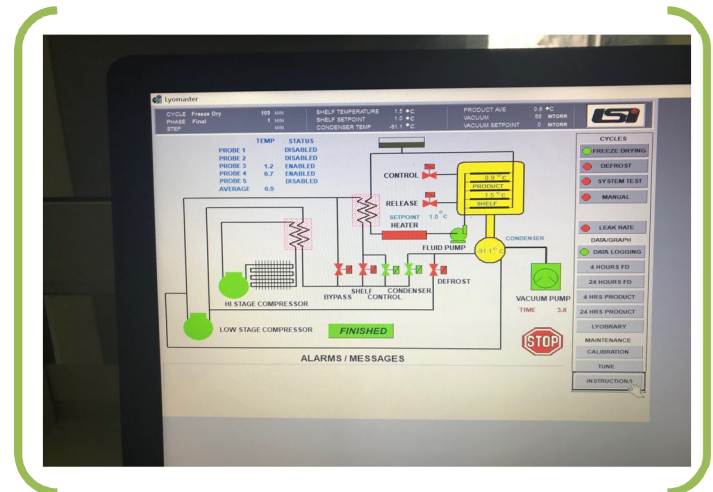
- Hermetic compressors
- Oversized compressors for high performance
- CFC Free non-proprietary refrigerants

VACUUM

- Pirani vacuum sensor
- Vacuum control
- Gas backfill
- 195 LPM corrosion resistant vacuum pump

ADDITIONAL

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



SPECIFICATIONS

LYOLAB™ STANDARD SPECIFICATIONS

SHELF AREA	3.75 to 6.25 sq ft (0348 to .581 sqM)
SHELF ASSEMBLY	Bulk or Pneumatic Stoppering
SHELF TEMPERATURE RANGE	-45°C or -70°C to +65°C
SHELF HEAT TRANSFER	Hollow Fluid Filled
SHELF SIZE/FINISH	10"x 18", 316 LSS, 20 Ra or better
CONDENSER TEMPERATURE	-53°C or -85°C
CONDENSER CAPACITY	16 L
CONDENSING RATE	12 L in 24 hours
CONDENSER STYLE	Exposed Coil
DEFROST	Hot Gas
COMPRESSORS (HERMETIC)	2 HP (-53°C) 2HP & 2 HP (-85°C)
PRODUCT SENSORS	4, Type T Thermocouples
VACUUM PUMP	195 LPM, Corrosion Resistant
VACUUM CONTROL	Pirani w/ Solenoid & Needle Valve
GAS BACKFILL	Included
CONTROL SYSTEM	PC/PLC with Opti-Dry Software
TRAYS	One per shelf included
CABINET	35" w x 42" d x 64" h
ELECTRICAL	230V/1ph/60Hz/30A

LYOLAB Laboratory Freeze Dryer

AVAILABLE OPTIONS

- FreezeBooster® Controlled Nucleation (Portable)*
- LyoMaster™ Heat Flow Measurement and Control
- Up to 18 Product Probes
- Capacitance Manometer (Control Only)
- Proportional Vacuum Control
- Dry Vacuum Pump
- Stainless Steel Door
- Shelf Latching Kit
- LN₂ Trap
- Water Cooled Condenser
- Hydraulic Stoppering (2 ml vials)
- Resistivity Probe
- Clean Room Configuration
- Isolator Interface
- 12 or 24 port Manifold
- H₂O₂ Integration Kit
- 21 CFR Part 11 Software
- Validation Documentation
- IQ/OQ Workbook
- FAT/SAT

LSI - PC/PLC CONTROL

THE **LYOLAB** Laboratory Freeze Dryer 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.

SHELF CONFIGURATION BULK FILL (LITERS)

SHELVES	SPACING (in/mm)	AREA (sq ft/sq M)	#trays Depth	1	2	3	4	5
				3	4.5/114	3.75/0.348	10mm	1.0
4	3.25/82	5.0/0.464	15mm	1.7	3.5	5.2	6.9	8.7
5	2.5/63	6.25/0.580	20mm	2.3	4.7	7.0	9.2	11.6

VIAL CAPACITY

VIAL ml	DIA (mm)	HEIGHT (mm)	NUMBER OF SHELVES				
			1	2	3	4	5
2	16	41	480	960	1440	1920	2400
5	22	48	241	482	723	964	1205
10	24	58	199	398	597	796	
20	29	71	136	272	408	544	
50	43	81	55	110	165		

The screenshot shows the Lyomaster software interface for a freeze-drying cycle. Key parameters include:

- Product Name:** Water
- Product #:** 1
- Operator:** Marc
- Recipe:** Water.rcp
- Freeze Stage:** 10 shelves, shelf setpoint from -10 to -55°C, time from 10 to 100 minutes.
- Primary Stage:** 16 shelves, shelf setpoint from -40 to 35°C, time from 0 to 80 minutes.
- Secondary Stage:** Shelf setpoint 20°C, time 30 minutes, vacuum setpoint 100 mT, final setpoint 25°C.
- Alarms:** Cond Overload (-40°C), Vacuum Overload (500 mT), Power Outage (10 min).
- Buttons:** NEW RECIPE, EXISTING, DELETE, SAVE, START.

LYOPHILIZATION SYSTEMS INC

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