

Freeze Dryer / Lyophilizer

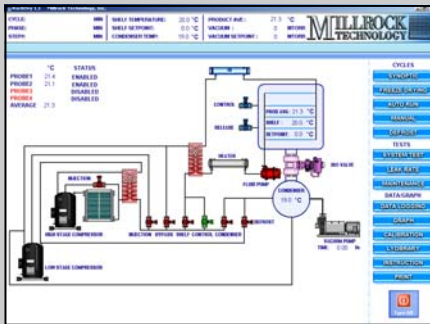


LAB Series combines many of the features of larger systems in to a small console. Using the best components and design techniques combined with the most advanced PC/PLC control system, the LAB Series is the perfect solution for both your small lot protocol development and small scale production needs. The system comes complete with Opti-Dry PC/PLC freeze drying control system and offers all the necessary options to meet your most demanding needs.

The LAB Series offers 3.75 sq ft of shelf area and 8L of condensing capacity with 63mm of shelf-to-shelf spacing, providing more performance and capacity than any system in its class.

Vial Size (ml/mm OD)	Capacity
2ml/15mm	1539
5ml/22mm	702
10ml/24mm	579

Opti-Dry Control Software



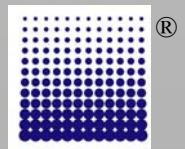
- Manual and Automatic Mode
- Graphic and Numeric Data Collection
- Automatic System and Leak Rate Testing
- Ethernet Based with Web Connectivity
- Optional Opti-Dry Pro provides the tools you need for protocol development



Standard Features	
Control System	PC/PLC with Opti-Dry Software
Shelf Temperature Range	-48C or -70C to +65C
Shelf Heat Transfer	Hollow Fluid Filled
Shelf Size and Finish	10" x 18" , 316L, 20 Ra or better
Shelf Area	3.75 sq ft
Shelf Spacing	2.5" (63mm)
Shelf Assembly	Bulk or Stoppering
Condenser Temperature	-53C or -85C
Condenser Capacity	8L
Condensing Rate	6L in 24 hours
Condenser Style	Exposed Coil
Compressors	Hermetic
Defrost	Hot Gas
Vacuum Pump	200 LPM, Corrosion Resistant
Vacuum Control	Pirani w/Solenoid & Needle Valve
Gas Backfill	Included
Product Sensors	Four (4)
Cabinet	35"W x 40"D x 52"H
Electrical	230V/60Hz or 200V/50Hz, 1PH

System Performance

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



LAB Series Equipment Design Features

- PC/PLC controls standard—no proprietary microprocessors
- 316L on all wetted parts
- Large shelves for more product capacity—10" x 18" each
- High shelf fluid flow for the best temperature uniformity
- Pneumatic stoppering—no bladders or cables
- Exposed coil condenser design to prevent vapor bypass which can destroy vacuum pumps (a common problem on externally wrapped condensers)
- CFC-Free, Non-proprietary refrigerants
- Hot gas defrost
- One product thermocouple per shelf with option for more
- Oversized air-cooled condenser to minimize the affect of changing ambient temperatures
- 200LPM two stage corrosion resistant vacuum pump with easy access from the front of the unit
- Built-in validation port
- Vacuum control and gas backfill standard
- Advanced instrumentation options
- Extensive list of options to meet your every need

Model	LD53	LD85
Condenser Temp	-53 C	-85 C
Condenser Capacity	6L/24Hrs, 8L Max	6L/24Hrs, 8L Max
Shelf Temp	-45 C to +65 C	-70 C to +65 C
Compressor	2 HP	2HP and 1HP
Vacuum Pump	200 LPM	200 LPM
Product Probes	4	4
Vacuum Gauge	Thermocouple	Thermocouple
Dimensions	35"W x 40"D x 52"H	35"W x 40"D x 52"H
Electrical Service	230V/60Hz 200V/50Hz 1PH	230V/60Hz 200V/50Hz 1PH

	Shelves	Area (sq ft/sq in/sq m)	Clearance (in/mm)
Bulk/Stoppering	3	3.75/540/0.348	2.5/63

Opti-Dry PC/PLC Control

The LAB Series 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.

Opti-Dry 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.

Manifold

For drying flasks, an optional manifold can be added. The manifold installs on the top of the unit and accommodates 12 vacuum valves.

Shell Freezer

As an option a shell freezer can be added to the system for quick and easy freezing of flasks. Flasks can be both plug or shell frozen to -40 C.

Opti-Dry Pro Upgrade

For R&D, Protocol Development, Cycle Automation and Optimization, Opti-Dry Pro offers all the tools you need.

Features:

- Eutectic Point Determination
- Product temperature feedback optimizes the recipe, both freezing and primary drying, based on the product temperature average.
- Multiple methods for Primary Drying Endpoint Determination
- Automatic Cycles for Optimum Drying Performance

Available Options

Additional Product Probes	Advanced Vacuum Control	
Capacitance Manometer	Moisture Sensor	LN2 Trap
Clean Room Configuration	Acid Trap	Flask Manifold
IQ/OQ Documentation	Extended Warranty	FAT and SAT

Note: Specifications subject to change without notice.
All specifications based on 20C ambient on 60Hz

Freeze Drying	10 Freezing Steps 16 Drying Steps with Pressure Control 1 Step Secondary Drying 1 Step Final Drying Alarms, Recipe Management, Data Logging
Manual	Individual switches for shelf, condenser, vacuum, isolation valve and release. Single set-points for shelf and set-point.
Defrost	Automatic timed hot gas.
System Test	Performance evaluation of shelf, condenser, vacuum, heating, and control.
Leak Rate	Automatic testing of leak rate.
Maintenance	Independent operation of components, with troubleshooting and calibration.

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