

**VERTRIEB DURCH:**



**Ihr Anbieter für Geräte im Bereich  
Labor, Mikrobiologie und Industrie.**

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# Laboratory Freeze Dryers Routine Applications



Reliable and flexible

New controller – LSCbasic



# Process reliability & flexibility

## For all your applications

### Let our experience, skill, and flexibility enhance your freeze drying

Benefit from our over 70 years of experience as the leading manufacturer of freeze drying systems. We have a finely graded series of systems for product-specific freeze drying, with a wide range of potential optimizations.

With our varied modular accessories program, our lab freeze drying systems can be used for a wide range of tasks.

### Daily routine applications guaranteed

Routine operations in particular places high demands on machinery. Expectations include flexibility for each application, a high level of process reliability, and self-explanatory technical functionality. The various basic systems in the Alpha and Beta series, combined with the specially developed LDplus (only for Alpha 1-2) and LSCbasic control system, meet the requirements for safe and successful freeze drying, day after day.

## Typical application

### Our freeze dryers are suitable for a wide range of potential applications:

- Retaining product characteristics of initial substances (e.g., pharmaceutical products, milk)
- Maintaining initial shapes (e.g., taxidermy, archaeological finds, flowers)
- Conditioning the material (e.g., freeze dried fruits in yogurt)
- Chemical analysis (e.g., trace surveys in food products, sludge, soil)

### Innovative technology for excellent results

- Compact, high-performance laboratory systems with low space requirements
- Very low noise level (54 dB (A) per DIN 45635)
- Drying chamber above the ice condensation chamber for high sublimation capacity and short process times
- Ice condensation chamber with internal condenser coils, made entirely of high-quality stainless steel (316L), resistant to solvents and acids typically used in freeze drying (except HCl)
- Modular construction for a wide range of applications
- Expandable with accessories for your task
- Integrated hot-gas function for rapid defrosting
- Integrated venting valve
- LDplus controller (only for Alpha 1-2) with digital display of ice condenser temperature and vacuum
- LSCbasic with color touch screen and intuitive operator controls and display of relevant process parameters
- Vacuum controller for optimizing process times
- Product temperature display per vapor pressure curve
- Data interface (LAN), for example for LyoLogplus documentation software

Detailed application examples:  
[martinchrist.de/application](http://martinchrist.de/application)

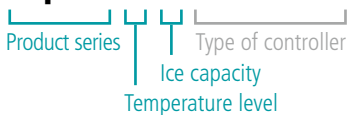
# Selection criteria

## Graduated condenser temperatures and drying capacities

Depending on the application, our lab freeze drying systems are available in various sizes with a wide range of accessories.

### Breakdown of product designations

#### Alpha 1-4 LSCbasic



Different ice condenser temperatures are available for different basic types, depending on the solvents used:

Temperature level	Temperature	Typical area of application
1	-55 °C	Aqueous products
2	-85 °C	Products containing solvents or with low freezing point
3	-105 °C	Products containing solvents (e.g., ethanol, methanol)

The systems have different maximum ice capacities:

Max. ice capacity	Type of system	Type of controller
2.5 kg	Alpha 1-2	LDplus
4 kg	Alpha 1-4	LSCbasic
	Alpha 2-4	LSCbasic
4 kg	Alpha 3-4	LSCbasic
8 kg	Beta 1-8	LSCbasic
	Beta 2-8	LSCbasic

Tell us about your own application needs. We will be happy to advise you.

## Our product series

For daily routine applications



 2.5 kg

 -55 °C

**Alpha 1-2 LDplus**



 4 kg

 -55 °C  
-85 °C

**Alpha 1-4 LSCbasic**  
**Alpha 2-4 LSCbasic**



 4 kg

 -105 °C

**Alpha 3-4 LSCbasic**



 8 kg

 -55 °C  
-85 °C

**Beta 1-8 LSCbasic**  
**Beta 2-8 LSCbasic**

# Flexible for smaller product quantities

## Alpha 1-2 LDplus

The Alpha 1-2 LDplus's high-quality features make it a universal tool for successful processes, every day.

### Innovative technology for excellent results

- Small, high-performance tabletop unit
- Drying chamber above the ice condenser for high sublimation capacity and short process times
- Ice condenser chamber with internal condenser coils, made entirely of high-quality stainless steel type 316L
- Digital display of ice condenser temperature and vacuum, indirect product temperature measurement, analogous to vapor pressure curve
- Extensive range of accessories, from unheated shelves to manifolds to closure devices for vials
- Integrated hot-gas function for rapid defrosting



Link to installation  
video Alpha 1-2 LDplus:  
[martinchrist.de/EntryPackage](https://martinchrist.de/EntryPackage)

## Alpha 1-2 LDplus

2.5 kg ❄️ -55 °C

No.	Manifold <sup>1)</sup>		Shelf area		
	Number of flasks	Number	∅	A <sub>ges</sub>	Spacing
1	8	-	-	-	-
2	-	3	200 mm	0.09 m <sup>2</sup>	85 mm
3	8	3	200 mm	0.09 m <sup>2</sup>	85 mm
4	-	2	200 mm	0.06 m <sup>2</sup>	70 mm <sup>2)</sup>

<sup>1)</sup> For round-bottom flasks and wide-neck filter bottles or distributors for ampoules

<sup>2)</sup> Stoppering device



1



2



3



4

# Simple, fast, and targeted operation

## LDplus system controller

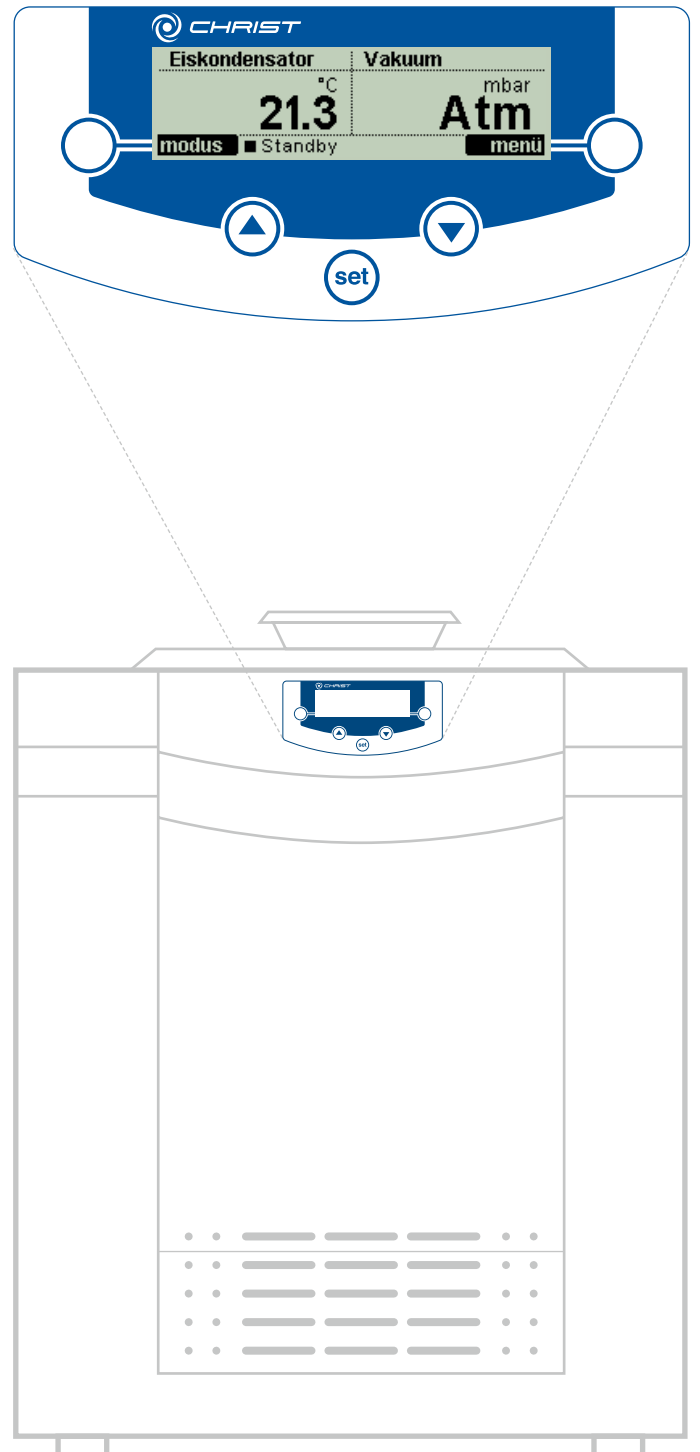
The LDplus system controller is a simple, intuitive user interface for controlling freeze drying processes. It combines functionality and practical utility:

- Clearly arranged graphic display
- Display of important process parameters
- Extensive selection of languages
- Vacuum controller
- Detailed message texts
- Option: LyoLogplus process documentation software

### Typical applications

- Bacterial suspensions
- Biomass
- Food products
- Analytics

### LDplus system controller



# For larger quantities of product and high demands

## Efficient product family with new user interface

### Alpha 1-4 LSCbasic and Alpha 2-4 LSCbasic

Universal table-top unit with compact form for efficient lyophilization of samples for everyday lab work. The LSCbasic user interface brings clear simplicity to the task.

Condenser temperature:

- Alpha 1-4 LSCbasic:  $-55^{\circ}\text{C}$  for typical aqueous solutions
- Alpha 2-4 LSCbasic:  $-85^{\circ}\text{C}$  for solutions with low freezing point



### Beta 1-8 LSCbasic and Beta 2-8 LSCbasic

Compact table-top unit for efficient drying of larger quantities of samples, with intuitive LSCbasic user interface. A wide range of configurations supports many varied individual solutions.

Condenser temperature:

- Beta 1-8 LSCbasic:  $-55^{\circ}\text{C}$  for typical aqueous solutions
- Beta 2-8 LSCbasic:  $-85^{\circ}\text{C}$  for solutions with low freezing point



### Special system for safe freeze drying of organic samples containing solvents

#### Alpha 3-4 LSCbasic

The condenser temperature of the Alpha 3-4 LSCbasic is  $-105^{\circ}\text{C}$ . The ice capacity is 4 kg. The specialized system is available in two different packet configurations (see page 13). Meets increased safety requirements for commonly flammable solvents.



# Intuitive user interface with touch screen

## LSCbasic system controller

Cutting-edge technologies are collated into an easy-to-use, intuitive user interface with the LSCbasic system controller. Automatic process sequences ensure reproducible results.

- 5.7" color touchscreen with clear layout
- Automatic or manual sequencing of freeze drying processes
- Interactive graphic display of the system schematic
- Extensive message texts (cause, countermeasures, effect)
- Maintenance interval for vacuum pump and system
- System test (leakage and performance test)
- Multiple language selection
- Selectable units of measure for temperature °C/°F and pressure mbar/hPa/Torr
- Password protection available
- Process data capture and option for data exchange via USB or Ethernet

**LSCbasic**  
**System controller**  
Convenient and intuitive



## Configuration examples

### Alpha 1-4 LSCbasic

### Alpha 2-4 LSCbasic



No.	Manifold <sup>1)</sup>	Shelf area			
	Number of containers	Number	Ø	A <sub>ges</sub>	Spacing
1	8	-	-	-	-
2	12	3	265 mm	0.15 m <sup>2</sup>	79 mm
3	2 x 12	3	265 mm	0.15 m <sup>2</sup>	79 mm
4	-	5	360 mm	0.5 m <sup>2</sup>	70 mm
5	-	2	250 mm	0.1 m <sup>2</sup>	45 mm <sup>2)</sup>

<sup>1)</sup> For round-bottom flasks and wide-neck filter bottles or distributors for ampoules

<sup>2)</sup> Stoppering device

#### Typical applications

- Soil samples
- Plant material
- Food products for toxin analytics
- Natural materials

### Beta 1-8 LSCbasic

### Beta 2-8 LSCbasic



No.	Manifold <sup>1)</sup>	Shelf area			
	Number of containers	Number	Ø	A <sub>ges</sub>	Spacing
6	8	-	-	-	-
7	-	5	265 mm	0.25 m <sup>2</sup>	79 mm
8	2 x 12	3	265 mm	0.15 m <sup>2</sup>	79 mm
9	-	5	360 mm	0.5 m <sup>2</sup>	70 mm
10	-	4	250 mm	0.2 m <sup>2</sup>	50 mm <sup>2)</sup>

<sup>1)</sup> For round-bottom flasks and wide-neck filter bottles or distributors for ampoules

<sup>2)</sup> Stoppering device

#### Typical applications

- Excrements
- Plant materials for DNA analysis
- Colloids from must and wine
- Ingredient analytics

Note: If your task has special equipment requirements, our series of devices with the LSCplus system controller has additional features, such as heated storage surfaces, product temperature measurement, and program functions.



1



2



3



4



5



6



7



8



9



10



# Specialized system for organic solvents

## Alpha 3-4 LSCbasic



Freeze drying is not only used for water-based materials. Typical examples include HPLC fractions with organic and inorganic solvents, such as acetonitrile, TFA and other alcohols, or other products with t-butanol, DMSO, etc.

### Increased safety considerations require special system configurations:

- Safe: No sources of ignition, such as commonly used Pirani vacuum sensors
- Durable: High-quality materials for excellent chemical resistance, such as 316L stainless steel for the condenser, manifolds, and drying chamber, and solvent-resistant seals
- High-performance: Internal condenser; most solvents are frozen or liquefied in the chamber at -105 °C
- Solvent-resistant hybrid vacuum pump (chemical-resistant membrane plus rotary vane pump)
- Connection for inertization during loading and defrosting

The Alpha 3-4 solvent packet is equipped with the user-friendly LSCbasic control system, for safe and successful freeze drying, day after day.

### Typical applications

- Preparative HPLC fractions
- Removal of solvents after chromatography
- Organic coloring agents
- Polymers in benzol
- Organic substances in solvents

# Complete and ready to use

## Two system configurations

### Solvent packet flask:

- Alpha 3-4 LSCbasic freeze dryer with internal condenser, made entirely of stainless steel (316L)
- Solvent-resistant materials
- Vacuum-chemical hybrid pump with filter
- Stainless steel vacuum hose
- Capacitive vacuum measurement probe
- Vacuum controller for reducing drying times by up to 40%
- Connection for inertization (e.g., for nitrogen)
- Drain valve
- Manifold with 12 chemical-resistant valves for flasks



### Universal solvent packet – flasks and storage surface:

- Alpha 3-4 LSCbasic freeze dryer with internal condenser, made entirely of stainless steel (316L)
- Solvent-resistant materials for seals and connectors
- Vacuum-chemical hybrid pump with filter
- Stainless steel vacuum hose
- Capacitive vacuum measurement probe
- Vacuum controller for reducing drying times by up to 40%
- Connection for inertization (e.g., for nitrogen)
- Drain valve
- Base plate for storage surface
- 3 storage spaces, diameter 265 mm, unheated
- Drying chamber made of mineral glass
- 12 chemical-resistant valves for flasks (optional)



## Technical data

Technical data	Alpha 1-2 LDplus	Alpha 1-4 LSCbasic	Alpha 2-4 LSCbasic	Beta 1-8 LSCbasic	Beta 2-8 LSCbasic	Alpha 3-4 LSCbasic
<b>Ice condenser</b>						
<ul style="list-style-type: none"> <li>Max. capacity</li> <li>Max. performance</li> <li>Temperature (approx.)</li> <li>Chamber volume (approx.)</li> </ul>	2.5 kg 2 kg/24 h -55 °C 3.5 l	4 kg 4 kg/24 h -55 °C 6.5 l	4 kg 4 kg/24 h -85 °C 6.5 l	8 kg 6 kg/24 h -55 °C 11 l	8 kg 6 kg/24 h -85 °C 11 l	4 kg 2.5 kg/24 h -105 °C 11 l
<b>Chiller unit</b>	0.43 kW	0.51 kW	2 x 0.51 kW	0.51 kW	2 x 0.51 kW	1x 0.52 kW/ 1x 0.75 kW
<b>Refrigerant</b>	CFC-free	CFC-free	CFC-free	CFC-free	CFC-free	CFC-free
<b>Dimensions</b> of the base machine (W x H x D in mm)	315 x 345 x 460	390 x 415 x 540	390 x 415 x 540	780 x 415 x 540	780 x 415 x 540	780 x 415 x 540
<b>Weight (approx.)</b>	28 kg	42 kg	55 kg	63 kg	78 kg	80 kg
<b>Noise level in dB (A)</b>	49	54	54	54	54	54
<b>Electrical connection</b>	230 V/50 Hz 230 V/60 Hz	230 V/50 Hz 220 V/60 Hz 208 V/60 Hz	230 V/50 Hz 220 V/60 Hz 208 V/60 Hz	230 V/50 Hz 220 V/60 Hz 208 V/60 Hz	230 V/50 Hz 220 V/60 Hz 208 V/60 Hz	230 V/50 Hz
<b>Defrost function</b>	●	●	●	●	●	●
<b>Venting valve</b>		●	●	●	●	●
<b>Temperature</b>						
<ul style="list-style-type: none"> <li>Ice condenser (display)</li> <li>Product using the vapor pressure curve</li> </ul>	● ●	● ●	● ●	● ●	● ●	● ●
<b>Vacuum sensor</b>						
<ul style="list-style-type: none"> <li>Pirani</li> <li>Capacitive</li> </ul>	●	● ○	● ○	● ○	● ○	— ●
<b>Vacuum controller</b>	●	●	●	●	●	●
<b>Communication</b>						
<ul style="list-style-type: none"> <li>Serial interface</li> <li>Ethernet</li> <li>USB</li> <li>LyoLogplus</li> <li>LPCplus</li> </ul>	○ — — ○ ○	— ○ ○ ○ ○	— ○ ○ ○ ○	— ○ ○ ○ ○	— ○ ○ ○ ○	— ○ ○ ○ ○

The data provided refer to the base unit for ambient conditions of +10 °C to +25 °C.  
Subject to technical changes.

● Standard   ○ optional   — not available

## Our product range

With our unique, broadly graduated range of devices of accessories, we provide freeze drying systems and vacuum concentrators for any application. Challenge us to support your task!



- 1 Freeze drying systems for industrial production, with ice condenser capacities from 20 to 500 kg; individualized project planning including the LyoShuttle loading and unloading system.
- 2 Pilot freeze drying systems for process development and optimization, with ice condenser capacities from 4 to 16 kg.
- 3 Freeze drying systems for routine applications, research, and development, with ice condenser capacities from 2 to 24 kg.
- 4 Rotary-vacuum concentrators for routine applications, up to evaporation in high-end pharmaceutical research.



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