

# H-SERIES

PILOT FREEZE DRIERS

Advanced feature models suitable for high end pharmaceutical, clean room, pilot and production use. Features of the HS range include advanced temperature, pressure and time control, as well as easy recipe development and optimisation.



# HS-1

## SINGLE STAGE REFRIGERATION



**Clean Room  
Compatible**



**Optional Shelf  
Stopping**



**Moveable**



**Nitrogen Purge  
Optional**



## Key Features

H-Series Freeze Driers are the ideal solution for high end pharmaceutical, clean room, pilot & production use.

Our H-Series range provides the user advanced temperature, pressure & time control as well as an optional accurate shelf stopping system.

The HS-1 is a general-purpose, high performance pilot unit ideal for drying a variety of products in controlled environments. It is available in a clean room version where the accessible parts are external to the clean room. The HS-1 is suited for product development & small-scale production.



**Research**



**Lab**



**Pharma**

## Technical Data

## HS-1

Ice Condenser Capacity	15kg
Ice Condenser Performance	10kg /24h
Ice Condenser Temperature	-55°C
Defrost	Hot Gas & Electric
Number of Shelves	4+1
Shelf Area	0.48m <sup>2</sup>
Shelf Spacing	60mm
Chamber Temperature	-45°C to +60°C
Cooling systems	Air cooled
Refrigeration	Frigopop Single Stage
Unit Dimensions (H x W x L)	2.1m x 0.8m x 1.1m
Refrigerant	R404A
Vacuum	Kurt J Lesker RV212
Chamber Dimensions	500mm id x 500mm
Power Supply	380-415v 20a 3~
Control System	Manual or Automatic Control





# HS-2

## SINGLE STAGE REFRIGERATION



**Clean Room  
Compatible**



**Optional Shelf  
Stopping**



**Moveable**



**Nitrogen Purge  
Optional**



## Key Features

H-Series Freeze Driers are the ideal solution for high end pharmaceutical, clean room, pilot & production use.

Our H-Series range provides the user advanced temperature, pressure & time control as well as an optional accurate shelf stopping system.

The HS-2 is a general-purpose, high performance pilot unit ideal for drying a variety of products in controlled environments. It is available in a clean room version where the accessible parts are external to the clean room. The HS-2 is suited for product development & small-scale production.



**Research**



**Lab**



**Pharma**

## Technical Data

## HS-2

Ice Condenser Capacity	25kg
Ice Condenser Performance	15kg /24h
Ice Condenser Temperature	-55°C
Defrost	Hot Gas & Electric
Number of Shelves	5+1
Shelf Area	1m <sup>2</sup>
Shelf Spacing	60mm
Chamber Temperature	-45°C to +60°C
Cooling systems	Air cooled
Refrigeration	Frigopool Single Stage
Unit Dimensions (H x W x L)	2.1m x 0.9m x 1.5m
Refrigerant	R404A
Vacuum	Kurt J Lesker RV212
Chamber Dimensions	650mm id x 650mm
Power Supply	380-415v 32a 3~
Control System	Manual or Automatic Control



# HS-3

SINGLE STAGE REFRIGERATION



**Clean Room  
Compatible**



**Shelf  
Stopping**



**Nitrogen Purge  
Optional**

## Key Features

H-Series Freeze Driers are the ideal solution for high end pharmaceutical, clean room, pilot & production use.

Our H-Series range provides the user advanced temperature, pressure & time control as well as an accurate shelf stopping system.

The HS-3 is a general-purpose, high performance pilot unit ideal for drying a variety of products in controlled environments. It is available in a clean room version where the accessible parts are external to the clean room. The HS-3 is suited for product development & medium-scale production.



Research



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Pharma



## Technical Data

## HS-3

Ice Condenser Capacity	35kg
Ice Condenser Performance	20kg /24h
Ice Condenser Temperature	-55°C
Defrost	Hot Gas & Electric
Number of Shelves	6+1
Shelf Area	1.95m <sup>2</sup>
Shelf Spacing	60mm
Chamber Temperature	-45°C to +60°C
Cooling systems	Air cooled
Refrigeration	Frigopop Single Stage
Unit Dimensions (H x W x L)	2.1m x 1.5m x 2m
Refrigerant	R404A
Vacuum	Kurt J Lesker RV224
Chamber Dimensions	850mm id x 850mm
Power Supply	380-415v 32a 3~
Control System	Manual or Automatic Control

**FROZEN IN TIME**  
Manufacturers of freeze driers and vacuum cold traps



# HS-4

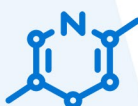
SINGLE STAGE REFRIGERATION



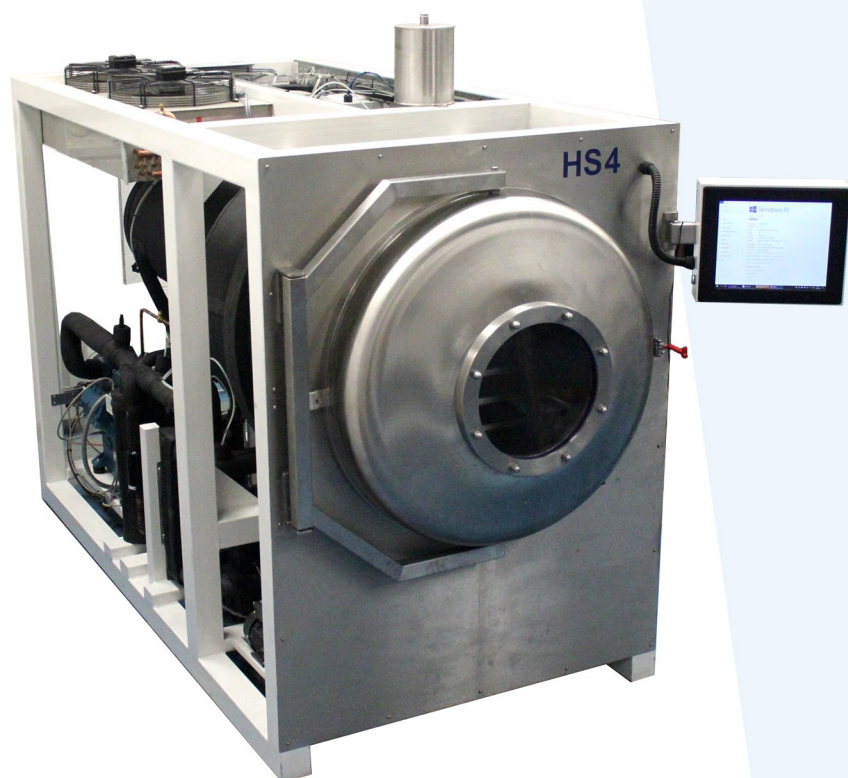
**Clean Room  
Compatible**



**Shelf  
Stopping**



**Nitrogen Purge  
Optional**



## Key Features

H-Series Freeze Driers are the ideal solution for high end pharmaceutical, clean room, pilot & production use.

Our H-Series range provides the user advanced temperature, pressure & time control as well as an accurate shelf stopping system.

The HS-4 is a general-purpose, high performance pilot unit ideal for drying a variety of products in controlled environments. It is available in a clean room version where the accessible parts are external to the clean room. The HS-4 is suited for product development & large-scale production.



**Research**



**Lab**



**Pharma**

## Technical Data

## HS-4

Ice Condenser Capacity	45kg
Ice Condenser Performance	30kg /24h
Ice Condenser Temperature	-55°C
Defrost	Hot Gas & Electric
Number of Shelves	6+1
Shelf Area	3.4m <sup>2</sup>
Shelf Spacing	60mm
Chamber Temperature	-45°C to +60°C
Cooling systems	Water or Air cooled
Refrigeration	Fracold Single Stage
Unit Dimensions (H x W x L)	2m x 1.4m x 3m
Refrigerant	R404A
Vacuum	Pfieffer Duo 35
Chamber Dimensions	1000mm id x 1000mm
Power Supply	380-415v 32a 3~
Control System	Manual or Automatic Control

**FROZEN IN TIME**  
Manufacturers of freeze driers and vacuum cold traps

# HS-5

SINGLE STAGE REFRIGERATION



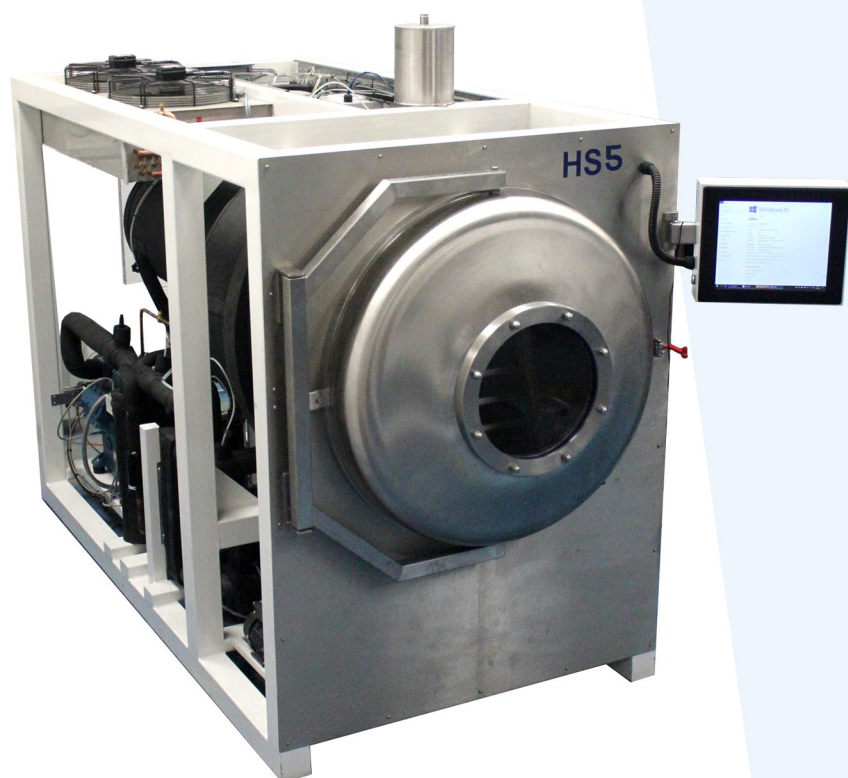
**Clean Room  
Compatible**



**Shelf  
Stoppering**



**Nitrogen Purge  
Optional**



## Key Features

H-Series Freeze Driers are the ideal solution for high end pharmaceutical, clean room, pilot & production use.

Our H-Series range provides the user advanced temperature, pressure & time control as well as an accurate shelf stopping system.

The HS-5 is a general-purpose, high performance pilot unit ideal for drying a variety of products in controlled environments. It is available in a clean room version where the accessible parts are external to the clean room. The HS-5 is suited for product development & large-scale production.



**Research**



**Lab**



**Pharma**

## Technical Data

## HS-5

Ice Condenser Capacity	80kg
Ice Condenser Performance	60kg /24h
Ice Condenser Temperature	-55°C
Defrost	Hot Gas & Electric
Number of Shelves	7+1
Shelf Area	6.5m <sup>2</sup>
Shelf Spacing	60mm
Chamber Temperature	-45°C to +60°C
Cooling systems	Water cooled
Refrigeration	Fracold Single Stage
Unit Dimensions (H x W x L)	2m x 1.7m x 3.5m
Refrigerant	R404A
Vacuum	Pfieber Duo 65
Chamber Dimensions	1268mm id x 1000mm
Power Supply	380-415v 63a 3~
Control System	Automatic Control

**FROZEN IN TIME**  
Manufacturers of freeze driers and vacuum cold traps



# HSL-1

CASCADE REFRIGERATION



**Low  
Temperature**



**Optional Shelf  
Stoppering**



**Moveable**



**Nitrogen Purge  
Optional**



## Key Features

H-Series Freeze Driers are the ideal solution for high end pharmaceutical, clean room, pilot & production use.

Our low temperature H-Series range provides the capability to reach temperatures as low as  $-85^{\circ}\text{C}$ , as well as features such as advanced temperature, pressure & time control.

The HSL-1 is a general-purpose, high performance pilot unit ideal for drying a variety of products at low temperatures. It is available in a clean room version where the accessible parts are external to the clean room. The HSL-1 is suited for product development & small-scale production.

## Technical Data

## HSL-1

Ice Condenser Capacity	15kg
Ice Condenser Performance	10kg /24h
Ice Condenser Temperature	$-85^{\circ}\text{C}$
Defrost	Hot Gas & Electric
Number of Shelves	4+1
Shelf Area	0.48m <sup>2</sup>
Shelf Spacing	60mm
Chamber Temperature	$-65^{\circ}\text{C}$ to $+60^{\circ}\text{C}$
Cooling systems	Air cooled
Refrigeration	Frigpopol Cascade
Unit Dimensions (H x W x L)	2.1m x 0.8m x 1.1m
Refrigerant	R404A & R1150
Vacuum	Kurt J Lesker RV212
Chamber Dimensions	500mm id x 500mm
Power Supply	380-415v 20a 3~
Control System	Manual or Automatic Control



Research



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**FROZEN IN TIME**  
Manufacturers of freeze driers and vacuum cold traps







# HSL-2

CASCADE REFRIGERATION



**Low  
Temperature**



**Shelf  
Stoppering**



**Moveable**



**Nitrogen Purge  
Optional**



## Key Features

H-Series Freeze Driers are the ideal solution for high end pharmaceutical, clean room, pilot & production use.

Our low temperature H-Series range provides the capability to reach temperatures as low as  $-85^{\circ}\text{C}$ , as well as features such as advanced temperature, pressure & time control.

The HSL-2 is a general-purpose, high performance pilot unit ideal for drying a variety of products at low temperatures. It is available in a clean room version where the accessible parts are external to the clean room. The HSL-2 is suited for product development & small-scale production.



**Research**



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**Pharma**

## Technical Data

## HSL-2

Ice Condenser Capacity	25kg
Ice Condenser Performance	15kg /24h
Ice Condenser Temperature	$-85^{\circ}\text{C}$
Defrost	Hot Gas & Electric
Number of Shelves	5+1
Shelf Area	1m <sup>2</sup>
Shelf Spacing	60mm
Chamber Temperature	$-65^{\circ}\text{C}$ to $+60^{\circ}\text{C}$
Cooling systems	Air cooled
Refrigeration	Frigopopul Cascade
Unit Dimensions (H x W x L)	2.1m x 0.9m x 1.5m
Refrigerant	R404A & R1150
Vacuum	Kurt J Lesker RV212
Chamber Dimensions	650mm id x 650mm
Power Supply	380-415v 32a 3~
Control System	Manual or Automatic Control

**FROZEN IN TIME**  
Manufacturers of freeze driers and vacuum cold traps





# HSL-3

CASCADE REFRIGERATION



**Low  
Temperature**



**Shelf  
Stoppering**



**Clean Room  
Compatible**



**Nitrogen Purge  
Optional**



## Key Features

H-Series Freeze Driers are the ideal solution for high end pharmaceutical, clean room, pilot & production use.

Our low temperature H-Series range provides the capability to reach temperatures as low as  $-85^{\circ}\text{C}$ , as well as features such as advanced temperature, pressure & time control.

The HSL-3 is a general-purpose, high performance pilot unit ideal for drying a variety of products at low temperatures. It is available in a clean room version where the accessible parts are external to the clean room. The HSL-3 is suited for product development & small-scale production.



**Research**



**Lab**



**Pharma**

## Technical Data

## HSL-3

Ice Condenser Capacity	35kg
Ice Condenser Performance	20kg /24h
Ice Condenser Temperature	$-85^{\circ}\text{C}$
Defrost	Hot Gas & Electric
Number of Shelves	6+1
Shelf Area	1.95m <sup>2</sup>
Shelf Spacing	60mm
Chamber Temperature	$-65^{\circ}\text{C}$ to $+60^{\circ}\text{C}$
Cooling systems	Air cooled
Refrigeration	Frigopool Cascade
Unit Dimensions (H x W x L)	2.1m x 1.5m x 1.1m
Refrigerant	R404A & R1150
Vacuum	Kurt J Lesker RV224
Chamber Dimensions	850mm id x 850mm
Power Supply	380-415v 32a 3~
Control System	Manual or Automatic Control

**FROZEN IN TIME**  
Manufacturers of freeze driers and vacuum cold traps







# HSL-4

CASCADE REFRIGERATION



**Low  
Temperature**



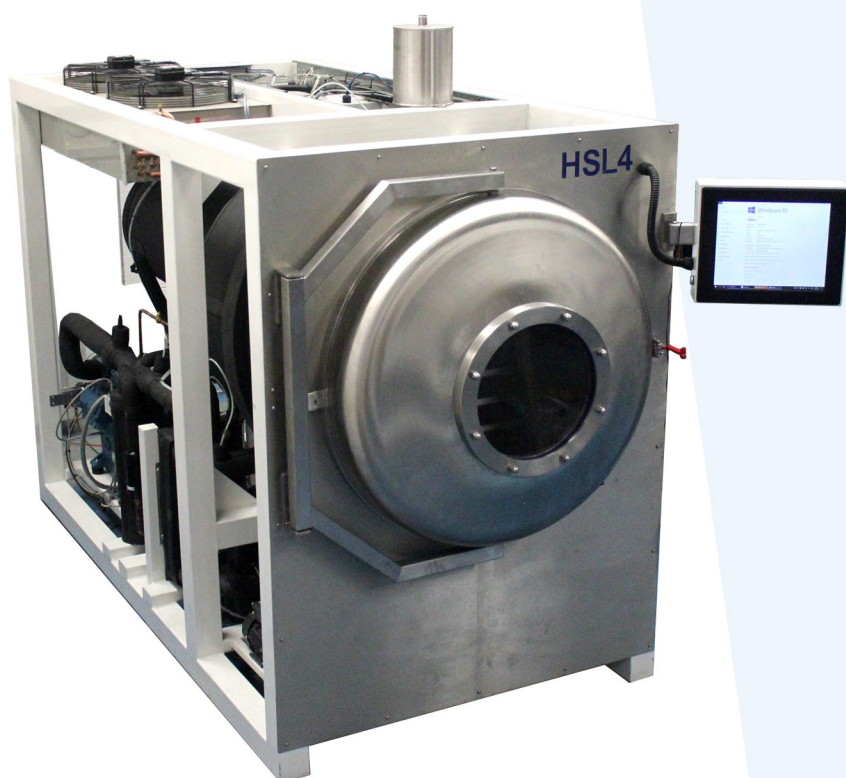
**Shelf  
Stoppering**



**Clean Room  
Compatible**



**Nitrogen Purge  
Optional**



## Key Features

H-Series Freeze Driers are the ideal solution for high end pharmaceutical, clean room, pilot & production use.

Our low temperature H-Series range provides the capability to reach temperatures as low as  $-85^{\circ}\text{C}$ , as well as features such as advanced temperature, pressure & time control.

The HSL-4 is a general-purpose, high performance pilot unit ideal for drying a variety of products at low temperatures. It is available in a clean room version where the accessible parts are external to the clean room. The HSL-4 is suited for product development & small-scale production.

## Technical Data

## HSL-4

Ice Condenser Capacity	45kg
Ice Condenser Performance	30kg /24h
Ice Condenser Temperature	$-85^{\circ}\text{C}$
Defrost	Hot Gas & Electric
Number of Shelves	6+1
Shelf Area	3.4m <sup>2</sup>
Shelf Spacing	60mm
Chamber Temperature	$-65^{\circ}\text{C}$ to $+60^{\circ}\text{C}$
Cooling systems	Water or Air cooled
Refrigeration	Frascold Cascade
Unit Dimensions (H x W x L)	2.1m x 1.5m x 1.1m
Refrigerant	R404A & R1150
Vacuum	Pfeiffer Duo 35
Chamber Dimensions	1000mm id x 1000mm
Power Supply	380-415v 32a 3~
Control System	Manual or Automatic Control



**Research**



**Lab**



**Pharma**

**FROZEN IN TIME**  
Manufacturers of freeze driers and vacuum cold traps







# HSL-5

CASCADE REFRIGERATION



**Low  
Temperature**



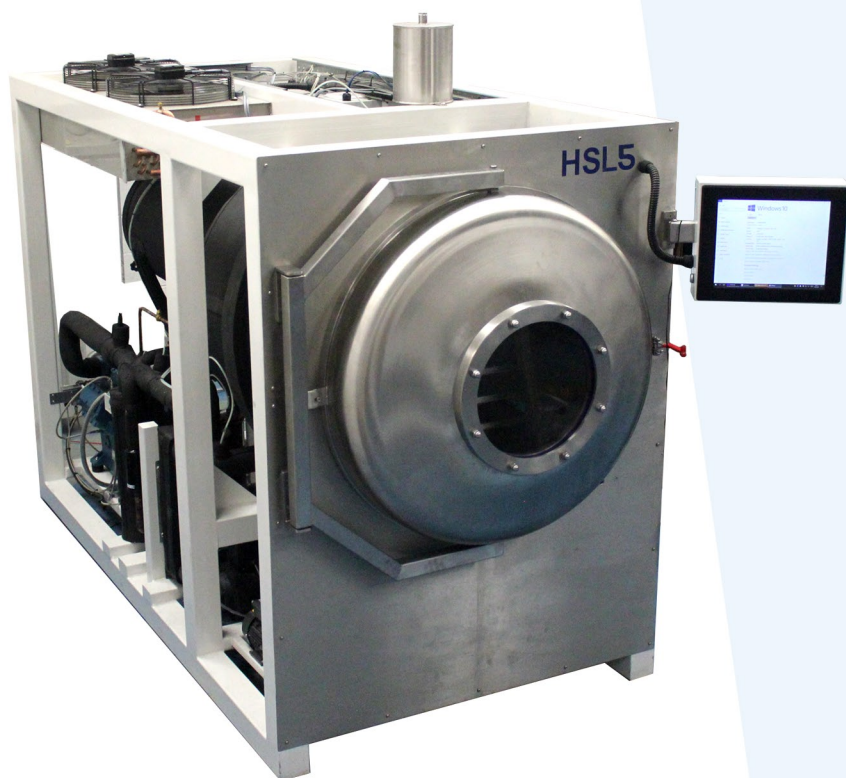
**Shelf  
Stoppering**



**Clean Room  
Compatible**



**Nitrogen Purge  
Optional**



## Key Features

H-Series Freeze Driers are the ideal solution for high end pharmaceutical, clean room, pilot & production use.

Our low temperature H-Series range provides the capability to reach temperatures as low as  $-85^{\circ}\text{C}$ , as well as features such as advanced temperature, pressure & time control.

The HSL-5 is a general-purpose, high performance pilot unit ideal for drying a variety of products at low temperatures. It is available in a clean room version where the accessible parts are external to the clean room. The HSL-5 is suited for product development & large-scale production.



**Research**



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## Technical Data

## HSL-5

Ice Condenser Capacity	80kg
Ice Condenser Performance	60kg /24h
Ice Condenser Temperature	$-85^{\circ}\text{C}$
Defrost	Hot Gas & Electric
Number of Shelves	7+1
Shelf Area	6.5m <sup>2</sup>
Shelf Spacing	60mm
Chamber Temperature	$-65^{\circ}\text{C}$ to $+60^{\circ}\text{C}$
Cooling systems	Water cooled
Refrigeration	Frascold Cascade
Unit Dimensions (H x W x L)	2m x 1.7m x 3.5m
Refrigerant	R404A & R1150
Vacuum	Pfeiffer Duo 65
Chamber Dimensions	1268mm id x 1000mm
Power Supply	380-415v 63a 3~
Control System	Automatic Control

**FROZEN IN TIME**  
Manufacturers of freeze driers and vacuum cold traps





# HSLS-4

STEAM STERILISABLE



**Low  
Temperature**



**Shelf  
Stoppering**



**Clean Room  
Compatible**



**STEAM  
STERILISE**



## Key Features

H-Series Freeze Driers are the ideal solution for high end pharmaceutical, clean room, pilot & production use.

Our steam sterilisable variations provide the capability to reach temperatures as low as  $-85^{\circ}\text{C}$ , and sterilise the internal surfaces with 2.5bar of steam pressure at  $135^{\circ}\text{C}$ .

The HSLS-4 is a steam sterilisable, high performance pilot unit ideal for drying a variety of products at low temperatures. It is available in a clean room version where the accessible parts are external to the clean room. The HSLS-4 is suited for product development & medium scale production.



**Research**



**Lab**



**Pharma**

## Technical Data

## HSLS-4

Ice Condenser Capacity	45kg
Ice Condenser Performance	30kg /24h
Ice Condenser Temperature	$-85^{\circ}\text{C}$
Defrost	Hot Gas & Electric
Number of Shelves	8+1
Shelf Area	3.8m <sup>2</sup>
Shelf Spacing	60mm
Chamber Temperature	$-70^{\circ}\text{C}$ to $+60^{\circ}\text{C}$
Cooling systems	Water or Air cooled
Refrigeration	Frigopopul Cascade
Unit Dimensions (H x W x L)	2.1m x 1.5m x 1.1m
Refrigerant	R404A & R1150
Vacuum	Pfeiffer Duo 35
Chamber Dimensions	1000mm id x 1000mm
Power Supply	380-415v 32a 3~
Control System	Automatic Control
Sterilisation Temperature	$135^{\circ}\text{C}$
Clean Steam Pressure	2.5bar

**FROZEN IN TIME**  
Manufacturers of freeze driers and vacuum cold traps

