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Genscience

Lyophilization processes and solutions

Freeze-dryer
Vacuum Concentrator
Vacuum Concentrator Kits

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Application field of Freeze-dryer

Genscience Freeze Dryer offers a stable system with robust functionality, accurate data, and high reproducibility. It caters to your diverse freeze-drying needs day after day, whether in scientific research labs, the pharmaceutical industry, or chemical experiments. Genscience is poised to be your reliable companion, providing exceptional performance to elevate your laboratory efficiency. Choose Genscience Freeze Dryer to embark on a new level of expertise in the field of freeze-drying. Experience outstanding capabilities and enhance your laboratory efficiency!

Biological industry	Pharmaceutical industry	Material industry	Chemical industry	Food industry	Agriculture

Genscience freeze-dried classroom

Open WeChat to scan and learn more freeze-dried knowledge!

About Us

Nanjing Genscience Instrument Equipment Co., Ltd. is a professional company that specializes in the research, development, production, and sales of scientific instruments. Located in Nanjing, the ancient capital of the six dynasties and a rapidly growing economic zone in the Yangtze River Delta, our company has dedicated itself to the domestic high-end freeze dryer, vacuum centrifugal concentrator, and other instrument research, development, and production since its establishment.

Over the years, we have accumulated a wealth of theoretical knowledge and conducted extensive research and development in freeze dryer technology. As part of our commitment to excellence, we have invested in a new R&D and production base. Our goal is to establish a leading position in the domestic market for high-end freeze dryers, challenging the traditional perception of domestic instruments in China and even in the global market, thereby reducing reliance on imported instruments in the Chinese market.

We actively fulfill our corporate responsibility and strive to contribute to the independent, secure, and controllable development of domestic instruments in China. With the spirit of ingenuity, we are dedicated to creating an intelligent manufacturing environment in the scientific instrument industry in China.

Genscience

Product Family

Eco series Basic laboratory Freeze-dryer

Pro series Professional Laboratory Freeze-dryer

Lyo series Pilot freeze dryer

Vap series Vacuum Concentrator

Eco mini

70% larger area shelves

Design features

Basic laboratory Freeze-dryer, Our design features a compact and space-saving layout, making it highly efficient for laboratory use. With its small size and powerful energy output, it is capable of meeting the freeze-drying requirements of various laboratory samples, such as proteins, microorganisms, bacteria, antibodies, soil, and food.

Larger shelf area

Ice capture is more efficient

Corrosion resistant

Small size

Larger shelf area

Using a 26cm large diameter shelf, the lyophilized area is increased by 70% compared with the 20cm partition.

Configuration

3-layer Φ260mm shelf, shelf area 0.16 ㎡ . it has 8 external openings, which can be connected to round bottom lyophilized bottles, wide-mouth lyophilized bottles or 15-port ampoule adapters

Display

7 inch LCD touch screen, simple and intuitive interface, basic display and operation are in the main menu

Ice condensor temperature	-55℃	Shelf area	0.16 ㎡ -0.32 ㎡
Lyophilization efficiency	Ice condensor Max. capacity:4Kg; Ice condensor Max. performance:4Kg /24h	Defrost	Optional Integrated hot-gas function for rapid defrosting
Ultimate vacuum	0.02mbar/2pa	Mainframe	Weight:35kg; Size:W400*D550*H430+340mm（Drying chamber）

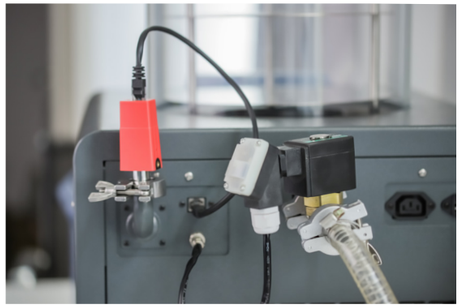
Pro series

Professional Laboratory Freeze-dryer

Intelligent control, efficient lyophilization

Large color touch screen, using the new lyo S control system, easy to operate, real-time mastery of the process. Manual lyophilization and automatic program freeze-drying can be selected to meet different use needs. Standard imported vacuum pump, vacuum gauge, solenoid valve, to achieve vacuum control, freeze-drying cycle shortened by 40%.

Design features

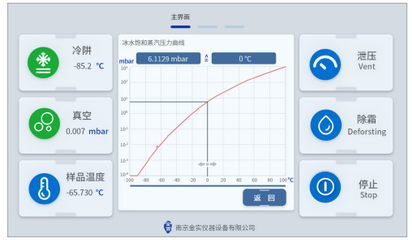


● Advanced system design, vacuum control is more accurate

Advanced refrigeration system for extremely fast cooling and drastic reduction of sample preparation time. Using the original imported solenoid valve, 0.001-1000mbar high-precision Pirani sensor, the full-scale vacuum degree is adjustable and controllable, avoiding the problems of special substances such as foaming, blowing and ice core caused by uncontrollable vacuum, and can speed up the lyophilization speed through reasonable vacuum control.

● Sample temperature simulation, intelligent recommendation of the best lyophilization conditions

The software fits the ice water saturated vapor pressure curve, the equipment simulates the interface sublimation temperature of the sample in the lyophilization process, compared with the traditional laboratory temperature probe can not insert the invalid design of the frozen solid sample, the software more intuitively simulates the temperature parameters of the sample during sublimation, and realizes the control and adjustment of the sample temperature, which is more practical and convenient.



● The freeze-drying protocol can be set up at will

Can manually control lyophilization, can also automatically program lyophilization, set lyophilization program, set system preheating, primary drying and secondary drying step by step, independently set the vacuum degree and corresponding duration of each step to ensure the freeze-drying efficiency and effect of the sample, can also start the program with one button, convenient and fast.

● It is more secure and safer to use

Flange face seal, flat plus L-ring design, no need for manual pressing sealing; Excellent sealing performance, long-term use of sealing effect almost no attenuation; Equipped with automatic pressure relief, one-key defrost, pressure protection device, operator authority and other functions, so that you freeze-drying is more assured and safer.

Pro 4055/4085

Free lyophilized　Option at will

Design features

Professional Laboratory Freeze-dryer，Discover the new pinnacle of professional laboratory freeze dryers! The overall manufacturing process has reached the world-class level. The Pro 4 series includes the Pro 4055 and Pro 4085, which can be used in a wide range of large, medium and small laboratories.

Coil condenser

One-key defrosting

vacuum control

Compact design

All-in-one Drying chamber

Detached lid Drying chamber

8/12/24 containers

Capping device、Square cavity、Ampoule adapter

Pro 6055/6085/6105

Efficient lyophilization

Design features

Professional Laboratory Freeze-dryer, Compared to the Pro 4 series, the Pro 6 series has a more spacious condenser cavity and a larger amount of ice condensation. This means that you can quickly and efficiently process lyophilization tasks for large numbers of samples. Stop worrying about heavy workloads!

Sample temperature simulation

One-click pressure relief

Anti-frost insulation design

Efficient lyophilization

All-in-one Drying chamber

Detached lid Drying chamber

8/12/24 containers

Capping device、Square cavity、Ampoule adapter

Pro 8055/8085/8105

Power research

Design features

Professional Laboratory Freeze-dryer, Pro 8 series integrated high-efficiency freeze dryer, integrated built-in vacuum pump, small footprint, low noise, small oil pollution; The use of ultra-large capacity cold trap, larger ice condensation capacity, can meet a large number of freeze-drying needs at one time; Larger T-racks or larger area partitions are available for larger lyophilized areas.

Extra-large capacity ice condenser

All-in-one design

larger lyophilized area

Efficient lyophilization

Partial configuration*

*See P14 for details

Pro 6105C

Organic solvent Freeze-dryer

Professional antiseptic

Adjustable spacing for corrosion-resistant sample holders

-105° C ultra-low temperature coil condenser, standard PTFE corrosion-resistant coating, can effectively capture all kinds of organic solvents

Corrosion-resistant hybrid pumps or corrosion-resistant dry pumps

AL

Integrally molded corrosion-resistant aluminum lyophilized chamber lid

Transparent corrosion-resistant lyophilized chamber

Includes high-precision corrosion-resistant vacuum gauge

Automatic vacuum degree control, program setting process, automatic pressure relief, hot gas defrosting, process curve recording, etc

Design features

The all-new Pro-6105C lyophilizer will revolutionize the way you process samples containing organic solvents! Whether you are engaged in research, pharmaceuticals or chemicals, this freeze dryer will be your right assistant.

We know that samples containing organic solvents often cause many problems: they have a low freezing point, they melt easily and are pumped away by vacuum pumps, and these solvents can cause serious corrosion to general accessories. However, now you don't have to worry about these questions anymore!

Designed specifically for processing samples containing organic solvents, the Pro-6105C Freeze Dryer is fully corrosion-resistant for peace of mind. Whatever your challenge, our freeze dryers are up to the task.

Pro 9055/9085/9105

Laboratory public platform Freeze-dryer

Easy to operate

Simple operation

Integrated freeze dryer, built-in vacuum pump, simple operation, no need to move the lyophilization chamber back and forth like a bell freeze dryer, the operation interface is large and clear.

Large area

The shelf area is large, reaching 0.48 ㎡, and a small or large number of samples can be lyophilized.

Fast

The shelf is equipped with a heating function as standard, allowing some samples to be quickly lyophilized when heat is required.

Corrosion resistant

The condenser temperature is low, at least -85 ° C, both aqueous and organic solvents can be lyophilized, except for the lyophilized chamber door, the inside of the cavity is stainless steel, resistant to organic solvent corrosion.

Choose the right Freeze-dryer

Simple lyophilization		Process development*	
normal	All-in-one	Single chamber Pilot	Double chamber Pilot
Eco mini Pro 4 series Pro 6 series Pro 8 series	Pro 9 series	Lyo cube	Lyo D30 Lyo D50

*See P20 for details

Choose different types of Freeze-dryer

The primary factor in the selection of lyophilizer: Determine the purpose of the application。

1.Simple lyophilization—Laboratory Freeze-dryer

2.Process development—Pilot freeze dryer

Choose the right temperature

Genscience Laboratory freeze dryer is equipped with condensers with different temperatures. The appropriate condenser temperature depends on the different solvents contained in the sample.

-55℃	-85℃	-105℃
Aqueous products	Products containing solvents or with low freezing point	Products containing solvents (e.g., ethanol, methanol)
Pro 4055 Pro 6055 Pro 8055 Pro 9055	Pro 4085 Pro 6085 Pro 8085 Pro 9085	Pro 6105 Pro 6105C Pro 8105 Pro 9105

Different Ice condensor Max. capacity

Genscience Laboratory freeze dryer has a variety of ice condensation capacity to choose from to meet a variety of experimental volume requirements.

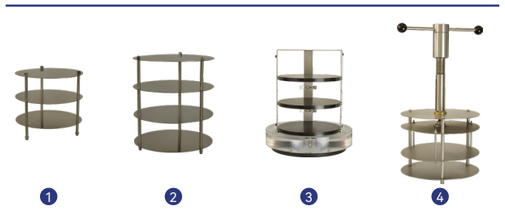
4Kg	8Kg	12Kg
Eco mini Pro 4055 /Pro 4085	Pro 6055/Pro 6085/ Pro 6105 Pro9055/Pro9085/ Pro9105	Pro 8085/Pro 8105

Unique functional options

For the laboratory platform 1. there are many users; 2. there are many types of samples; 3. the amount of samples is uncertain; 4. the sample types are different, the sample drying cycle is uncertain, etc., the laboratory public platform freeze dryer is specially developed. According to the customer's problem of difficult freeze-drying of organic solvents, a new organic solvent freeze-dryer was launched. Genscience is committed to meeting the different needs of customers.

Laboratory public platform Freeze-dryer	Organic solvent Freeze-dryer
Pro 9085 /Pro 9105	Pro 6105C

Choose the right accessories



Shelf

1. 3 layers shelf, Φ260mm, area 0.16 ㎡ , spacing 85mm

2. 4 layers shelf, Φ260mm,, More layers of shelves can also be selected, with an area of up to 0.32 ㎡。

3. 3-layer electrically heated shelf for faster lyophilization。

4. 3 layers shelf, Φ250mm capping device, area 0.1 ㎡, Vials can be capped under vacuum or after filling with an appropriate amount of gas.

All-in-one Drying chamber

1. All-in-one Drying chamber, Optional 3-layer or 4-layer shelf, freeze-dried crystal dishes and other samples.

2 and 3. All-in-one Drying chamber, 3 or more layers shelf, 8/12/24 containers.

Detached lid Drying chamber

1. Detached lid Drying chamber, Optional 3-layer or 4-layer shelf, freeze-dried crystal dishes and other samples.

2 和 3. Detached lid Drying chamber, 3 or more layers shelf 8/12/24 containers.

8/12/24 containers

1、2 和 3. 8/12/24 containers, Round-bottom freeze-dryingbottles, wide-mouth freeze-drying bottles or 15-port ampoule adapters are available.

Square cavity

1. Square cavity lyophilized chamber, W34mmD36mmH34mm, It is easy to use, there is no need to move the freeze-drying chamber when using, the door can be opened and closed, and the freeze-drying area is larger.

2. 3 layers shelf, monolayer 300mm*300mm, The freeze-drying area can reach 0.27 ㎡。

Ampoule adapter

1. 48 ampoules multi-lane tubes, can be connected to 48 ampoule tubes.

2. 15-port ampoule adapter, can be connected to 15 ampoule tubes.

3. ampoule tube.




Parameters	Pro 4 series	Pro 6 series		Pro 8 series	Pro 9 series
	Pro 4055/4085	Pro 6055/6085/6105	Pro6105C	Pro 8055/8085/8105	Pro 9085/9105
Lyo S control system	●				
Vacuum control	●				
Hot-gas defrost	●				
capping device	○	○	—	○	○
Flange face seal	●				
External coil condenser	●				
Anti-frost insulation	●				
Sample temperature simulation	●				
All-in-one	—	—		—	●
electrically heated shelf	○	○		○	●
Corrosion-resistant pumps	●				
USB interface	●				
Ice condensor temperature	-55/-85℃	-55/-85/-105℃	-105℃	-55/-85/-105℃	-85/-105℃
Shelf area	0.16 ㎡ -0.32 ㎡				0.48 ㎡
Shelf size	Φ260mm				325*500mm
Ice condensor Max. performance	4Kg/24h	6Kg/24h		8Kg/24h	6Kg/24h
Ice condensor Max. capacity	4Kg	8Kg		12Kg	8Kg
Ultimate vacuum	0.01mbar/1pa				
Vacuum control range	0.001-1000mbar				
Mainframe Size	W455*D550*H430 mm	W780*D550*H430mm		W900*D720*H1300 mm	W850*D600*H1400 mm
Weight	45kg	80Kg	80Kg	130Kg	150Kg
Power	0.8KW	1.6KW	1.65KW	2KW	0.9KW
Power requirements	10A，220V			16A，220V	

● Standard ○ optional — not available

Vap 01

Simple operation Fast concentration

Design features

Vacuum Concentrator, Humanized design, intuitive human-computer interaction operation panel, can set and display time, vacuum, temperature and other parameters, a variety of capacity of practical rotor to choose from. It can be used in a variety of scientific fields, mainly for sample concentration, which can remove water and solvents from HPLC components or samples containing DNA/RNA or proteins.

Large capacity,a variety of rotors to choose from

Intuitive human-machine interaction

Automatic air intake, rotor termination, electronic lock cover

Optimal steam flow

Vacuum Concentrator Kits*

Vap 01+vortex dry pump

The evaporation time of a vacuum centrifugal concentrator is highly dependent on the type of sample solvent used. In general, solvents with low boiling points (such as ethanol, chloroethanol, chloroform, short-chain alkanes, etc.) evaporate faster than solvents with high boiling points (such as water, DMF, DMSO, NMP, etc.) (the boiling points of different solvents can be queried through this information). The heating of the centrifuge chamber, the energy supplied to the sample, can speed up the evaporation rate. Evaporation time can be shortened by providing more energy, especially for solvents with high boiling points (such as aqueous solvents). Evaporation is the process of absorbing heat, so even if the centrifuge chamber is heated, the solvent and residual sample will remain cold.

Vap 01+Ice condensor+vortex dry pump

When using a vortex dry pump, some solvents under the cold trap are not necessary, but when the sample > 100ml, in order to reduce the evaporation time, a cold trap is recommended. A chemical diaphragm pump is also available, allowing any solvent to be pumped directly.

Vap 01+Pro series+vortex dry pump

When the sample is vacuum centrifugal concentration, the vacuum pump of the lyophilizer can be used to create a vacuum environment, and the condenser of the lyophilizer can capture various solvents, so the vacuum centrifugal concentrator can be combined with the lyophilizer to form a centrifugal concentration and lyophilizing integrated machine, which can not only freeze dry the sample, but also vacuum centrifuge concentration of the sample.

Vap 01+Pro series+vortex dry pump

It can be used in combination with a variety of models of freeze dryers, different configurations, and combinations.

*Ask sales for more combinations

Vacuum Concentrator Parameters

Vacuum Concentrator Parameters	Vap 01
Rotor capacity	66 x 1.5/2.2 ml　36 x 4 - 7 ml　18 x 10 -15 ml　6x 50 ml Centrifuge tubes 2 x Micro well plates or Deep well plates
Rotate speed	Max.1800rpm，The gradient is adjustable
System	Magnetic drive system，Vacuum digital display，Control system
Temperature range	Room temperature+5℃ -60℃ ,Continuously adjustable
Size	W396*D560*H323mm
Power requirements	16A，220V

Freeze dryer Parameters	Pro 4 series	
	Pro 4055	Pro 4085
Lyo S control system	●	
Vacuum control	●	
Hot-gas defrost	●	
capping device	○	
Flange face seal	●	
External coil condenser	●	
Anti-frost insulation	●	
Sample temperature simulation	●	
All-in-one	—	
electrically heated shelf	○	
Corrosion-resistant pumps	○	
USB interface	●	
Ice condensor temperature	-55℃	-85℃
Shelf area	0.16 m^2 -0.32 m^2	
Shelf size	Φ260mm	
Ice condensor Max. performance	4Kg/24h	
Ice condensor Max. capacity	6Kg	
Ultimate vacuum	0.01mbar/1pa	
Vacuum control range	0.001-1000mbar	
Mainframe Size	W455*D550*H430mm	
Weight	45kg	60kg
Power	0.8KW	1.6KW
Power requirements	16A，220V	

● Standard　○ optional　— not available

Solvent solutions

solvent	boiling point (℃)	Vapor pressure mbar(hPa)						Freezing point (℃)
		5℃	20℃	30℃	40℃	45℃	50℃	
CH_3COOH	118		16	26.5			77	+17
CH_3COCH_3	56		246	360	560		814	-95.4
CH_3CN	80.1		97	153			360	-45.7
C_6H_6	80		100	155			365	+5.5
$CH_3CH_2CH_2CH_2OH$	117		6.7	13.3			50	-89.5
$CHCl_3$	61		213	320			695	-63
$C_2H_4Cl_2$	84		87	135	210	270	337	-35.5
CH_2Cl_2	40		470	689.5			1500	-95
$CH_3CON(CH_3)_2$	165.5		3.3	7.4			44	-20
$HCON(CH_3)_2$	153		3.77	6.5	13.4		23	-61
$(CH_3)_2SO$	189		2.5	3.5			7.5	+18.5
$CH_2CH_2OCH_2CH_2O$	101		38	68			159	+12
$CH_3COOC_2H_5$	77		98	148			379	-83
CH_3CH_2OH	78		58	100			293	-114
$CH_3(CH_2)_2CH_3$	69		162	248			540	-95
$(CH_3)_2CHOH$	82		43	76			229	-88
$CH_3CH_2CH_2OH$	97		20	36			121	-126
CH_3OH	65		129	200	352		552	-98
C_5H_9NO	203		0.32	0.67	1.33		2.5	-24
$(CH_2)_4O$	64		173	280			586	-108
$C_6H_5CH_3$	111		29	51			123	-95
CCl_3COOH	196		0.1	0.5			1.2	+59
Cl_2CCHCl	87		78	124			284	-86
CF_3COOH	72		110	180			-15	
H_2O	100		23.37	42.41	74		123	0

Solvent use

Medium and low boiling solvent	High boiling solvent (Used with vacuum pump and ice condenser)	Corrosive solvent (Special configuration required)
• Acetonitril(ACN)	• Dimethylsulfoxide(DMSO)	• Hydrochloric acid
• Acetone	• NMP	
• Chloroform	• Dioxane	
• Dioxin	• t-Butanol	
• Methylenchloride(DCM)		
• Ethanol(EtOH)		
• Hexane(Hex)		
• Methanol(MeOH)		
• TFA		
• Water		

Lyo cube

In situ lyophilization

Design features

Using advanced refrigeration structure and technology, through automatic process procedures, convenient operation design, accurate control system, to ensure reliable user data and high repeatability of experimental results. Small desktop system, compact design, in-situ lyophilization, with powerful R&D functions;
It can be used in protein, microorganisms, bacteria, antibodies, soil, food and other industries.

8
8-inch high-definition LCD touch screen;

Time
The lyophilization process curve and data can be displayed synchronously, showing current and historical data;

PROG
30 custom storage programs; Up to 36 program steps per program;

Ctrl
The freeze drying process can be selected manually and automatically;

E P
Eutectic point testing system

D S
Optional capacitive sensor, standard nitrogen backfilling device, diaphragm valve, active doping and other configurations;

Lyo D30

Double-chamber pilot

Design features

Floor-mounted double-chamber pilot freeze dryer with precise control and high data repeatability; All the features of the Lyo Cube; Equipped with stainless steel thermally conductive silicone separators, it meets the highest standards for the pharmaceutical and biotechnology industries.

It can be used in pharmaceutical, protein, microorganism, soil, food and other industries.

PID control based on adaptive algorithm

Adding adaptive algorithms to classic PID control can make device control more accurate and less affected by environmental and device performance fluctuations

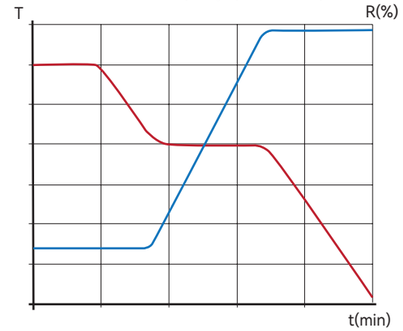
Optional

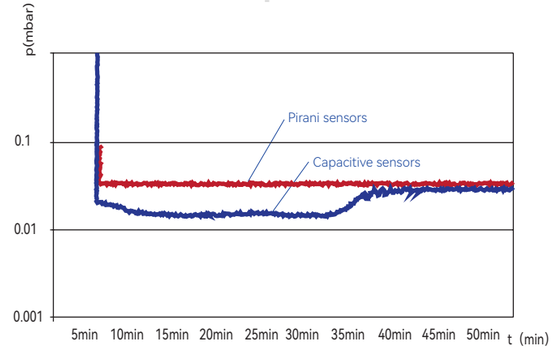
Ergonomic design

The equipment is simple and generous, takes up less space, can operate the instrument comfortably, and the height, angle and layout of the instrument are adapted to the height of the user, improving work efficiency and reducing fatigue. The design of the operation interface and buttons is simple and intuitive, easy to understand and operate

Eutectic point test

The eutectic point of the sample is an important indicator of the sample lyophilization process





Dual sensor-Lyophilized end point judgment

Optional capacitive sensor, by comparing two different measurement principles of the vacuum sensor measurement values to determine the end point of freeze-drying

Lyo D50

Floor-to-ceiling double chamber

HD display

8 inch HD LCD touch screen, simple and intuitive interface, basic display and operation are in the main menu

Larger shelf area

It can be equipped with 4+1 layer shelf, and the freeze-dried area can reach 0.64 m²

Silicone oil thermal conduction system

Silicone oil thermal conduction system, the temperature control of the shlef is more accurate and reliable, and the process amplification error is smaller

Built-in vacuum pump

The vacuum pump is built into the machine, and the equipment landing is simple and generous, and it takes up less space

Parameters	Lyo Cube		Lyo D30	Lyo D50
	Lyo Cube -55	Lyo Cube -85		
Up to 30 programs can be stored A single procedure with 36 steps	●		●	●
Software	○		○	○
Defrosting	Hot gas		Hot gas	Hot gas
Hydraulic gland device	○		○	○
Pressure rise test	—		●	●
Safety pressure	●		●	●
Safety resistance	●		●	●
Sample/shelf set temperature/Actual temperature Detection	●		●	●
Eutectic point test system	●		●	●
Sample temperature	●		●	●
Capacitive pressure measurement	○		○	○
Compare stress test	—		●	●
USB interface	●		●	●
Ice condensor temperature	-55℃	-85℃	-85℃	-85℃
Shelf temperature	-45-60℃	-55-60℃	-55-60℃	-60-60℃
Number of shelf layers	2+1 层		3+1 层	4+1 层
Area of the shelf	0.2 m²		0.3 m²	0.64 m²
Size of the shelf	240*410mm		240*410mm	300*400mm
Ice condensor Max. performance	3Kg/24h		6Kg/24h	10Kg/24h
Ice condensor Max. capacity	4Kg		8Kg	20Kg
Shelf temperature control accuracy	±1 ℃		±1 ℃	±1 ℃
Size	W750*D750*H850mm		W900*D720*H1300mm	W1226*D800*H1700mm Top cover 165mm
Weight	110kg	130kg	350Kg	750Kg
Power	1.1KW	1.7KW	2.8KW	3.8KW
Power requirements	16A，220V	16A，220V	16A，380V	16A，380V

● Standard ○ optional — not available