

# CryoMatrix Series

## Cryogenic Vapor Freezer

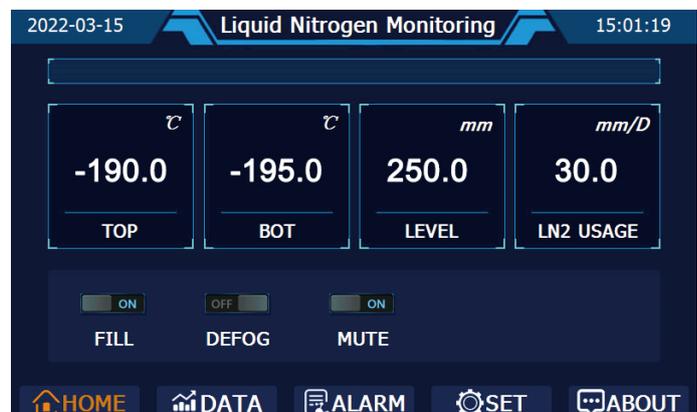
CryoMatrix series high-efficiency vapor phase liquid nitrogen storage system provides the most ideal storage conditions for biological samples. The whole series realize  $-190^{\circ}\text{C}$  vapor phase storage. Supported by  $\text{LN}_2$  automatic filling system and temperature &  $\text{LN}_2$  level monitoring system, CryoMatrix freezers provide all-round protection to precious sample, assisting life science research and cell therapy applications.

Based on the actual needs of users, Antech has innovatively optimized the performance, structure and control system of the vapor-phase cryogenic freezer to meet the user's highest standard of large-capacity vapor-phase cryogenic storage requirements.



### Advanced Control System

- HMI human-machine interactive touch screen, display temperature, liquid level, temperature curve and alarm information.
- Important events such as temperature, alarm, liquid nitrogen fill, can be checked, and can also download through USB disk.
- Various alarms, and the alarm information can be stored and downloaded through the USB disk.
- Operating data, such as temperature and liquid level, can be stored for up to 10 years.
- Optimized structure design to achieve the best sample storage density and save space.



## Features

- Multiple capacity freezers, from 370L to 1,800L, 2.0ml vials storage capacity from 15,600 to 94,500.
- Excellent temperature uniformity and stability, enabling samples to be stored at  $-190^{\circ}\text{C}$  vapor phase environment.
- Excellent vacuum performance and structural design ensure minimum liquid nitrogen consumption and lower storage costs.
- Advanced temperature, liquid level monitoring and alarm system, and can realize remote monitoring.
- Automatic supply of liquid nitrogen, safe and labor-saving.
- The liquid nitrogen supply system is controlled by multiple solenoid valves, which can effectively prevent the overflow of liquid nitrogen and sample contamination caused by high  $\text{LN}_2$  level.
- Manual filling available under special circumstances.
- Compatible with vapor phase and liquid phase storage modes, users can choose according to their needs.
- The optimized mechanism design realizes high-density storage to save space.



## Humanized Design



- Defog function, easier to find samples and shorten lid opening time.
- After 48 hours of lid open, temperature in the freezer remains below  $-150^{\circ}\text{C}$  (according to the factory test standard).
- The remote alarm interface can be connected to the central alarm system.
- Foldable step for convenient operation & space saving.
- Standard backup battery in case of power failure.
- Optional vacuum jacketed hose for lower liquid nitrogen consumption.

## Why CryoMatrix?

- High density storage  
Compared with similar products, CryoMatrix freezers have a small footprint and can store a large number of samples. It truly realizes high-density storage, which not only saves space, but also reduces the storage cost per sample. Both horizontal and vertical rack systems available.
- Excellent temperature uniformity  
Vacuum insulated stainless steel tank structure, high vacuum coverage, to ensure excellent thermal insulation performance. When samples are stored at vapor phase, top level sample temperature is lower than  $-180^{\circ}\text{C}$ .

- Stable opening temperature

The innovative lid and vacuum insulated neck design reduce LN<sub>2</sub> evaporation. Even when the lid is opened for up to 48 hours, the inner temperature can remains stable.

- Advanced temperature monitoring system

The monitoring system based on microprocessor and platinum temperature probe can display the maximum and minimum temperature inside the tank in real time with an accuracy of ±1°C. The user can set the alarm point by himself, with the option of alarm mute.

- Automatic LN<sub>2</sub> filling & level monitoring system

The liquid level monitoring system based on high-precision differential pressure sensor displays the liquid level in real time to ensure the safety and reliability of the automatic filling of liquid nitrogen. The color touch screen can display: top temperature, bottom temperature, liquid level height, daily liquid nitrogen consumption and other parameters.

- Warm gas bypass

The warm gas bypass design can remove the high temperature nitrogen (gas) in the pipeline before the liquid nitrogen is injected, so as to ensure that only ultra-low temperature liquid nitrogen is injected into freezer, which avoids the temperature fluctuation in the freezer & thermo shock to samples during filling process, protecting the safety of samples.



## Rack for cryogenic boxes



Inventory racks for cryobox



Model	Description	Part Number
<b>For 81/100-place 2" height box</b>		
CFC-10-2	10-place	5122A93
CFC-12-2	12-place	5122C93
CFC-13-2	13-place	5122D93
CFC-14-2	14-place	5122E93
CFC-15-2	15-place	5122F93
<b>For 25-place 2" height box</b>		
CFC-10-2S	10-place	5121A93
CFC-12-2S	12-place	5121C93
CFC-13-2S	13-place	5121D93
CFC-14-2S	14-place	5121E93
CFC-15-2S	15-place	5121F93
<b>For 81-place 3.75" height box</b>		
CFC-5-3	5-place	5123153
CFC-6-3	6-place	5123163
CFC-8-3	8-place	5123183
<b>Cryogenic box, polycarbonate material, LN<sub>2</sub> duration</b>		
CBA-25-2	25-place box, 2" height, for 1.5~2.0ml vials	5211110
CBA-81-2	81-place box, 2" height, for 1.5~2.0ml vials	5211120
CBA-100-2	100-place box, 2" height, for 1.5~2.0ml vials	5211130
CBA-81-3	81-place box, 3.75" height, for 5ml vials	5211140

## Frame Rack & Cassette for Blood Bags



Blood bag cassette



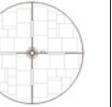
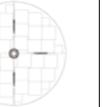
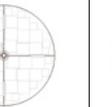
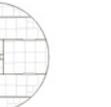
Blood bag frame

Model	Description/capacity	Part Number
<b>Cassette &amp; frame</b>		
BBC-A	Pall MEDSEPTM 25 mL, OriGen CS 25[Dimensions(mm): 91*100*11]	5241100
CFB-A-3	3-place	5124135
CFB-A-4	4-place	5124145
CFB-A-5	5-place	5124155
CFB-A-6	6-place	5124165
CFB-A-7	7-place	5124175
CFB-A-8	8-place	5124185
CFB-A-9	9-place	5124195
<b>Cassette &amp; Frame</b>		
BBC-B	Fenwal 4R9951, OriGen CS 50[Dimensions(mm): 91*157*11]	5241200
CFB-B-3	3-place	5125135
CFB-B-4	4-place	5125145
CFB-B-5	5-place	5125155
CFB-B-6	6-place	5125165
CFB-B-7	7-place	5125175
CFB-B-8	8-place	5125185
CFB-B-9	9-place	5125195
CFB-B-10	10-place	51251A5
CFB-B-11	11-place	51251B5
<b>Cassette &amp; Frame</b>		
BBC-C	Fenwal 4R9953 & 4R5461, OriGen CS 250, CryoMACS 50 & 250, CryoPAC 025B & 050B [Dimensions(mm): 143*202*11]	5241300
CFB-C-3	3-place	5126135
CFB-C-4	4-place	5126145
CFB-C-5	5-place	5126155
CFB-C-6	6-place	5126165
CFB-C-7	7-place	5126175
<b>Cassette &amp; Frame</b>		
BBC-D	Fenwal 4R9955 & 4R5462, OriGen CS 500, CryoPAC 250B & 500B [Dimensions(mm): 143*277*11]	5241400
CFB-D-3	3-place	5127135
CFB-D-4	4-place	5127145
CFB-D-5	5-place	5127155
CFB-D-6	6-place	5127165
CFB-D-7	7-place	5127175
<b>Cassette &amp; Frame</b>		
BBC-E	Gambro DF-200 or CryoMACS 50 & 250[Dimensions(mm): 163*191*20]	5241500
CFB-E-3	3-place	5128135
CFB-E-4	4-place	5128145
CFB-E-5	5-place	5128155
<b>Cassette &amp; Frame</b>		
BBC-F	Gambro DF-700, OriGen CS 1000, CryoMACS 500 & 750 & 1000, CryoPAC 750B[Dimensions(mm): 165*300*20]	5241600
CFB-F-3	3-place	5129135
CFB-F-4	4-place	5129145
CFB-F-5	5-place	5129155

# Inventory & Layout

Model                      CryoMatrix 15K    CryoMatrix 19K    CryoMatrix 28K    CryoMatrix 39K    CryoMatrix 44K    CryoMatrix 55K    CryoMatrix 94K

## 2ml vial (square rack)

Rack layout							
Maximum capacity	15600	19500	28000	39200	44200	55500	94875
Large rack model x rack qty	CFC-12-2 x 12	CFC-15-2 x 12	CFC-10-2 x 24	CFC-14-2 x 24	CFC-13-2 x 32	CFC-15-2 x 32	CFC-15-2 x 60
Small rack model x rack qty	CFC-12-2S x 4	CFC-15-2S x 4	CFC-10-2S x 16	CFC-14-2S x 16	CFC-13-2S x 8	CFC-15-2S x 8	CFC-15-2S x 13

## 5ml vial (square rack)

Maximum capacity	5832	6840	9720	13608	15552	18144	34020
Rack model x rack qty	CFC-6-3 x 12	CFC-7-3 x 12	CFC-5-3 x 24	CFC-7-3 x 24	CFC-6-3 x 32	CFC-7-3 x 32	CFC-7-3 x 60

## 25ml blood bag (Pall MEDSEPTM 25 mL, OriGen CS 25)

Maximum capacity	1316	1692	1780	2848	3052	4192	6840
Cassette model x qty	BBC-A x 1316	BBC-A x 1692	BBC-A x 1780	BBC-A x 2848	BBC-A x 3052	BBC-A x 4192	BBC-A x 6840
Rack model x rack qty	CFB-A-7 x 188	CFB-A-9 x 188	CFB-A-5 x 356	CFB-A-8 x 356	CFB-A-7 x 436	CFB-A-8 x 524	CFB-A-9 x 760

## 50ml blood bag (Fenwal 4R9951, OriGen CS 50)

Maximum capacity	812	1044	1100	1760	1904	2592	4266
Cassette model x qty	BBC-B x 812	BBC-B x 1044	BBC-B x 1100	BBC-B x 1760	BBC-B x 1904	BBC-B x 2592	BBC-B x 4266
Rack model x rack qty	CFB-B-7 x 118	CFB-B-8 x 120	CFB-B-6 x 248	CFB-B-8 x 248	CFB-B-7 x 272	CFB-B-8 x 324	CFB-B-9 x 474

## 250ml blood bag (Fenwal 4R9953 & 4R5461, OriGen CS 250 or CryoMACS 50 & 250)

Maximum capacity	264	352	516	860	848	1100	1890
Cassette model x qty	BBC-C x 264	BBC-C x 352	BBC-C x 516	BBC-C x 860	BBC-C x 848	BBC-C x 1100	BBC-C x 1890
Rack model x rack qty	CFB-C-3 x 88	CFB-C-4 x 88	CFB-C-3 x 172	CFB-C-5 x 172	CFB-C-4 x 212	CFB-C-5 x 232	CFB-C-5 x 378

## 500ml blood bag (Fenwal 4R9955 & 4R5462, OriGen CS 500)

Maximum capacity	156	208	336	560	576	780	1240
Cassette model x qty	BBC-D x 156	BBC-D x 208	BBC-D x 336	BBC-D x 560	BBC-D x 576	BBC-D x 780	BBC-D x 1240
Rack model x rack qty	CFB-D-3 x 52	CFB-D-4 x 52	CFB-D-3 x 112	CFB-D-5 x 112	CFB-D-4 x 144	CFB-D-5 x 156	CFB-D-5 x 248

## 200ml blood bag (Gambro DF-200 or CryoMACS 50 & 250)

Maximum capacity	240	300	348	464	576	800	1240
Cassette model x qty	BBC-E x 240	BBC-E x 300	BBC-E x 348	BBC-E x 464	BBC-E x 576	BBC-E x 800	BBC-E x 1240
Rack model x rack qty	CFB-E-4 x 60	CFB-E-5 x 60	CFB-E-3 x 116	CFB-E-4x 116	CFB-E-4 x 144	CFB-E-5 x 160	CFB-E-5 x 248

## 700ml blood bag (Gambro DF-700, OriGen CS 1000 or CryoMACS 500& 750 & 1000)

Maximum capacity	112	140	192	256	336	480	680
Cassette model x qty	BBC-F x 112	BBC-F x 140	BBC-F x 192	BBC-F x 256	BBC-F x 336	BBC-F x 480	BBC-F x 680
Rack model x rack qty	CFB-F-3 x 28	CFB-F-5 x 28	CFB-F-3 x 64	CFB-F-4 x 64	CFB-F-4 x 84	CFB-F-5 x 96	CFB-F-5 x 136

# Specification

Model

CryoMatrix 15K CryoMatrix 19K CryoMatrix 28K CryoMatrix 39K CryoMatrix 44K CryoMatrix 55K CryoMatrix 94K

Maximum Storage Capacity								
1.2 & 2ml vial	1.2 & 2ml vial	15600	19500	28000	39200	44200	55500	94875
	Number of large rack (81/100-place box)	12	12	24	24	32	32	60
	Number of small rack (25-place box)	4	4	16	16	8	20	13
	2" Boxes per rack	12	15	10	14	13	15	15
5ml vial	5ml vial (81-place)	5832	6804	9720	13608	15552	18144	34020
	Number of racks	12	12	24	24	32	32	60
	3.75" Boxes per rack	6	7	5	7	6	7	7
Cassette BBC-A	Numbers of blood bag	1316	1692	1780	2848	3052	4192	6840
	Layers per rack	7	9	5	8	7	8	9
	Number of racks	188	188	356	356	436	524	760
Cassette BBC-B	Numbers of blood bag	812	1044	1100	1760	1904	2592	4266
	Layers per rack	7	9	5	8	7	8	9
	Number of racks	116	116	220	220	272	324	474
Cassette BBC-C	Numbers of blood bag	264	352	516	860	848	1160	1890
	Layers per rack	3	4	3	5	4	5	5
	Number of racks	88	88	172	172	212	232	378
Cassette BBC-D	Numbers of blood bag	156	208	336	560	576	780	1240
	Layers per rack	3	4	3	5	4	5	5
	Number of racks	52	52	112	112	144	156	248
Cassette BBC-E	Numbers of blood bag	240	300	348	464	576	800	1240
	Layers per rack	4	5	3	4	4	5	5
	Number of racks	60	60	116	116	144	160	248
Cassette BBC-F	Numbers of blood bag	112	140	192	256	336	480	680
	Layers per rack	4	5	3	4	4	5	5
	Number of racks	28	28	64	64	84	96	136

LN <sub>2</sub> Capacity								
LN <sub>2</sub> capacity (L)	370	460	588	800	890	1162	1854	
LN <sub>2</sub> capacity at vapor platform (L)	55	55	125	133	165	200	296	

Dimensions								
Neck opening (mm)	317	317	445	445	465	520	635	
Usable internal height (mm)	708	914	590	840	765	887	906	
Inner diameter (mm)	758	758	1012	1012	1113	1172	1467	
External diameter (mm)	820	820	1090	1090	1190	1256	1565	
Overall height (mm)	1400	1600	1400	1650	1600	1790	1750	
Door width limit (mm)	850	850	1140	1140	1210	1300	1615	
Weight empty (kg)	212	264	310	394	400	580	805	
Weight full, vapor charged (kg)	513	638	790	1040	1112	1526	2270	

Functions								
Controller	Touch screen							
Full auto fill	Standard							
Data storage / USB port / RS485 port	Standard							
Defog	Standard							
Foldable step	Standard							
Backup battery	Standard							
Vacuum jacketed hose	Optional							
Inventory rack	Optional							
Wi-Fi connection & cloud access	Optional							

\* Cassette BBC-A: Pall MEDSEPTM 25 mL, OriGen CS 25; Cassette BBC-B: Fenwal 4R9951, OriGen CS 50;

Cassette BBC-C: Fenwal 4R9953 & 4R5461, OriGen CS 250, CryoMACS 50 & 250, CryoPAC 025B & 050B; Cassette BBC-D: Fenwal 4R9955 & 4R5462, OriGen CS 500, CryoPAC 250B & 500B;

Cassette BBC-E: Gambro DF-200 or CryoMACS 50 & 250; Cassette BBC-F: Gambro DF-700, OriGen CS 1000, CryoMACS 500 & 750 & 1000, CryoPAC 750B.