LAB INSTRUMENTS
10/27Adobedr
Houston, Texas-77095, USA
Info@qclabinstruments.com
www. qclabinstruments.com

CCF Series
Controlled Rate Freezers

Introduction

Preserving the viability of biological samples during the freezing process is critical for research, clinical, and biopharmaceutical applications. The CCF Series Controlled Rate Freezers provide the ultimate solution, delivering precise, repeatable, and fully documented freezing profiles. By meticulously controlling the rate of temperature fluctuation, our system minimizes the detrimental effects of undercooling and latent heat release, ensuring the highest possible post-thaw cell viability and functionality. Ideal for GMP-compliant environments and critical laboratory tasks, the CCF Series is the cornerstone of dependable cryopreservation.

Technical Advantages

Advanced Microprocessor Control

Delivers exceptional temperature accuracy and uniformity, ensuring reproducible results for every run.

Optimized Sample Protection

Innovative air handling and liquid nitrogen injection systems prevent intracellular ice crystal formation, maximizing sample viability.

Intuitive Touchscreen Interface

Simplifies programming, operation, and real-time monitoring of freezing cycles, reducing setup time and potential errors.

Comprehensive Data Traceability

Automatically records and stores critical run data, including temp-curves and events, with easy export via USB for full compliance with GLP/GMP standards.

Robust & Reliable Construction

Features a durable, powder-coated steel exterior and an easy-to-clean SUS304 stainless steel chamber, built for long-term, high-throughput use.

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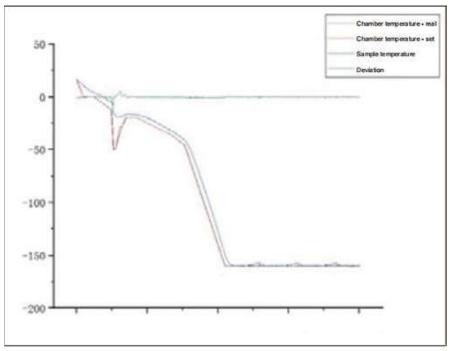
Features

Engineered for Unmatched Reliability and Performance

Redundant Solenoid Valves: A dual-valve design provides critical backup. If the primary valve fails, the system automatically switches to the secondary, ensuring uninterrupted freezing & safeguarding sample integrity.

Superior Temperature Uniformity: An advanced air-handling and LN2 injection system ensures consistent temperature throughout the chamber, eliminating gradients so all samples freeze at the same programmed rate.

Durable & Insulated Construction: Built with rugged Type 304 stainless steel, the unit is durable and easy to decontaminate. High-performance foam insulation minimizes LN2 consumption and ensures stable temperatures.



Intuitive Operation and Complete Data Traceability

Large Touchscreen Display: The intuitive color touch-screen allows for effortless setup, operation, and review. Real-time graphical curves for chamber and sample temperatures provide instant process insight.

Flexible Program Management: Includes 6 pre-set profiles and storage for 20 user-defined programs. Creating & editing protocols directly on-screen is simple & convenient.

Enhanced Data Management: Cycle data and events are automatically recorded and easily exported via a built-in USB port, supporting quality control, auditing, and GMP/GLP protocols.

Comprehensive Sample Protection and Monitoring

Real-Time Monitoring: Dual Type T thermocouples monitor chamber and sample temperatures with real-time responsiveness, ensuring freezing profile is precisely followed.

Multi-Level Alarm System: Standard alarms alert users to critical events such as temperature deviations, component malfunction, or power failure, enabling prompt intervention.

System Connectivity: An RS232 port and a remote alarm contact allow for easy integration with external and facility-wide monitoring systems for ultimate peace of mind.

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Technical Specifications

Model	CCF-17	CCF-34	CCF-51
Capacity (Liter)	17	34	51
2ml cryovial	380	810	1190
5ml cryovial	228	486	714
25/50ml blood bag	30	60	90
250ml blood bag	10	20	30
0.25ml straw	594	1188	1782
0.5ml straw	450	900	1350
Door Type	Front Open (Upright)		
Temperature Range	+50°C to -190°C		
Freezing Rate	0.1 to 99.9°C/min		
Heating Rate	0.1 to 12°C/min		
Temperature Uniformity	< 2°C		
Controller	Microprocessor with Color Touchscreen		
Control way	Auto/Manual		
Screen	10 inches touch screen		
Program Storage	26 Total (6 pre-set, 20 user-defined)		
Data Interface	USB Port, RS232 Port		
Sensors	Type T Thermocouples (Chamber & Sample)		
Refrigerant	Liquid Nitrogen (LN2)		
Interior Dimensions (W*D*H) mm	180*305*330	330*305*330	502*305*330
Exterior Dimensions (W*D*H) mm	860*540*550	1006*540*550	1190*540*550
Chamber Material	SUS304 Stainless Steel		
Net Weight	73kg	86kg	97kg
Power Supply	AC 220~240V, 50/60Hz		
LN2 Source Pressure	14 ~ 22 PSI (0.1 MPa)		

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Freezing Racks & Accessories

Image	Model	Description	CCF-17	CCF-34	CCF-51
	CRF-RV2S	Small rack for 2ml vials (5 layers, 380 vials total)	1	-	1 small 1 large
	CRF-RV5S	Small rack for 5ml vials (3 layers, 228 vials total)	1	-	1 small 1 large
	CRF-RV2L	Large rack for 2ml vials (5 layers, 810 vials total)	-	1	1 small 1 large
	CRF-RV5L	Large rack for 5ml vials (3 layers, 486 vials total)	-	1	1 small 1 large
	CRF-RB025	10-layer rack for 25ml bags	3	6	9
	CRF-RB050	10-layer rack for 50ml bags	3	6	9
	CRF-RB250	10-layer rack for 250ml bags	1	2	3
	CRF-RB500	10-layer rack for 500ml bags	1	2	3
	CRF-RS66	Rack system for 0.25ml straws (66 straws per plate)	9	18	27
	CRF-RS50	Rack system for 0.5ml straws (50 straws per plate)	3	18	27
	CRF-SP66	Straw plate for 0.25ml straws (66 straws per plate)	1	1	1
	CRF-SP50	Straw plate for 0.5ml straws (50 straws per plate)	1	1	1

Installation

For optimal performance of CCF series controlled rate freezers, we recommend using CCF series self-pressurized liquid nitrogen containers.
*** Operating pressure of 0.1MPa**
*** Built-in pressure building regulator**
*** Liquid level monitoring system (available in both float-type and electric digital options)**
*** Integrated casters for smooth mobility and convenient transportation**