CryoLogic

Innovative Instrumentation

FREEZE CONTROL ® Controlled Rate Freezer Systems
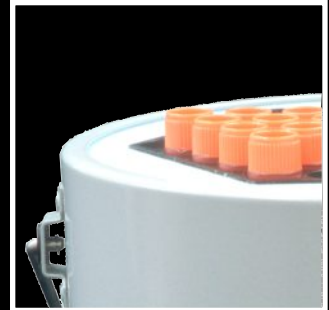
FREEZE CONTROL ® Controlled Rate Freezer Systems

CRYOPRESERVATION SYSTEM

FREEZE CONTROL® systems are controlled rate, liquid nitrogen freezers precision engineered for cryopreservation of biological specimens. **FREEZE CONTROL®** systems provide a patented and reliable method for heat transfer and temperature regulation in the freezing of biological material for long term preservation and viable recovery. Customers select from the range of temperature controllers and cryochambers to configure a system which best suits their specific requirements.

■ **FREEZE CONTROL®** systems are modular and parts are interchangeable.

■ Each system consists of a Temperature Controller, a Cryochamber, and a Cryobath.

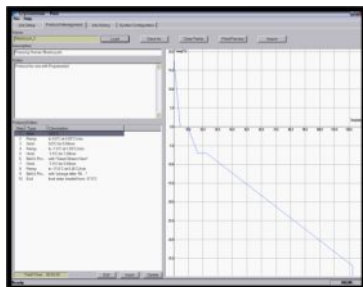■ The Cryochamber stands directly in liquid nitrogen in the Cryobath.

■ The Cryochamber is connected to the Temerature Controller which regulates the temperature of the biological specimens.

■ No special installation is required: systems can be quickly set up, and packed away, by the user.

FREEZE CONTROL® CL8800i System

TEMPERATURE PROTOCOLS

Temperature Protocols can be pre-installed on an internal memory chip.

Temperature Protocols can also be developed using CryoGenesis™ software.

Protocols include target temperature, rate, hold and unlimited ramps. Final program state can be hold or freefall.

MANUAL SEEDING

FREEZE CONTROL® systems allow convenient access for **Manual Seeding.**

Specimens can be safely accessed by raising the lifter, without exposing them to temperature fluctuations.

The conductive core of the cryochamber, and the tight thermal coupling between specimens and core, ensures that latent heat is efficiently removed during the nucleation process.

KEY BENEFITS

Accurate
■ Unique design allows the temperature to be precisely specified and accurately maintained at all times

Economical
■ Low consumption of liquid nitrogen and power
■ Minimal maintenance requirements therefore low maintenance costs

Reliable & Quiet
■ No solenoids, fans or valves with moving parts
■ Two year manufacturer's warranty

Power options
■ Universal power supply
■ Systems can also be run from a dedicated power pack

Ease of Use
■ Simple to Operate
■ Consistent user interface across all temperature controllers

Portable
■ Compact and light weight, easily moved from one place to another and readily shipped

Leading Innovation

FREEZE CONTROL®
by CryoLogic

TEMPERATURE CONTROLLERS

A range of **FREEZE CONTROL**® temperature controllers are available. The Preprogrammed and User-programmable temperature controllers provide reliable and accurate temperature regulation of specimens. The temperature controllers use a tightly coupled servo-loop in which specimen temperature is matched with pre-installed or computer generated temperature data by a process of continuously variable heat flow regulation.

Compliant temperature protocols are precisely followed, and temperatures can be held constant at any point within the control range. Temperatures well below the specified ranges can be reached through freefall, and temperature controllers can display these temperatures.

High Performance for Freezing and Thawing Specimens

■ Calibrations for temperature measurement and for control are performed to within ±0.1°C.

■ Proprietary circuit design and selection of components ensure that calibrations have long term stability, contributing to low maintenance and reduced service costs.

■ All temperature controllers can operate world wide, and can be run from our dedicated Power Pack, the CL-P10.

Cl8800i
Temperature control range
+40°C to -120°C
User-programmable
CryoGenesis™ Software
Preprogrammed
16 pre-installed protocols
Internal temperaturelogger
External power pack

Cl3300
Temperature control range
+40°C to -120°C
User-programmable
CryoGenesis™ software
External temperature logger
External power pack

Cl5500
Temperature control range
+20°C to -43°C Preprogrammed
16 pre-installed protocols
Internal power pack

Cl2200
Temperature control range
+20°C to -43°C
Preprogrammed
8 pre-installed protocols
External power pack

SIMPLE TO OPERATE

Control Warning Indicators
Indicates Cryochamber temperature is different from the protocol set temperature

Main Display
Choice of displaying Cryochamber temperature or the amount of time the protocol has elapsed

Selection of Individual Protocols
Preset in the internal memory chip
Advance or reverse through the selections

Status Indications
Run - Temperature protocol executing
Hold - Temperature protocol holding at a set temperature

Audible/Flashing Alarm
A push button to enable/disable the warning buzzer

Internal/PC Switch
Selection between internal and external protocol mode

Reset
Resets a temperature protocol to the start

Guaranteed Performance

CRYOCHAMBERS

A range of **FREEZE CONTROL**® cryochambers are available; each is designed to accommodate particular specimen containers. Cryochambers provide easy access during loading, manual seeding, inspection, and removal of specimens. Standard or fast models can be selected to suit different applications, with cooling rates appropriate for most user protocols. Cooling rates from 0.01°C/min can be specified, and temperature can be held at any point in the control range. Cryochambers are interchangeable.

FREEZE CONTROL® Cryochambers are unique.

■ The cylindrical design ensures symmetrical heat transfer from all specimens to liquid nitrogen.

■ Specimen temperature is measured by a high grade precision platinum resistance temperature sensor permanently mounted in the core.

■ Temperature is continuously monitored and regulated to precisely maintain specimen temperature.

■ The highly conductive material used for the cryochamber ensures a very high degree of temperature uniformity of each specimen.

Fast 23-Slot Cryochamber

Fast 60 Ampoule Cryochamber

Standard 23-Slot Cryochamber

CUSTOMISED CORES
Cores are fixed in the cryochamber and cannot be removed. Core configurations accommodate a range of straws and ampoules.
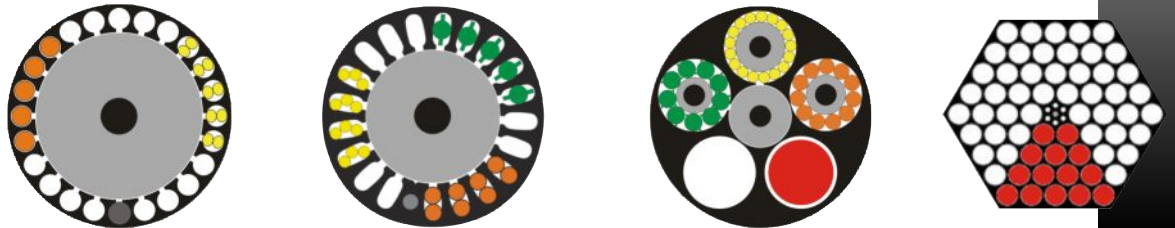
	23-Slot Core	20-Slot Core	5-Slot Core	60 Ampoule Core
Capacity	46 x 0.25ml straws 23 x 0.50ml straws	20 x 0.30 or 0.50mlCBS™straws 60 x 0.25ml straws 40 x 0.50ml straws	5 x 5.0ml ampoules 10 x 2.0ml ampoules 15 x 1.0ml ampoules 85 x 0.25ml straws 55 x 0.50ml straws 45 x 0.30 or 0.50ml CBS™ straws	60 x 1.0ml ampoules 60 x 2.0ml ampoules
Maximum Cooling Rates (unloaded)	**Standard Models**			
	9°C/min at 20°C 6°C/min at -40°C	8°C/min at 20°C 5°C/min at -40°C	6°C/min at 20°C 4°C/min at -40°C	
	Fast Models			
	16°C/min at 20°C 10°C/min at -40°C	14°C/min at 20°C 9°C/min at -40°C	12°C/min at 20°C 7°C/min at -40°C	5°C/min at 20°C 3°C/min at -40°C

Reliable Results

CRYOGENESIS™ SOFTWARE

CryoGenesis™ is dedicated Windows based proprietary software for **FREEZE CONTROL**® User-programmable freezers. CryoGenesis™ software can provide monitoring, recording, and control of freezing and thawing profiles. Both freezing and thawing profiles are managed with the inbuilt editor, allowing unlimited protocols to be created.

CryoGenesis™ software allows the user to view all data graphically as it is created or at a later time. The user is able to analyse and export temperature data to other programs such as spreadsheets or databases, save, and print profile data. New software is compatible with earlier temperature controller models.

EASY SETUP

Configuration System Panel

Configuration System Panel
■ Select different **FREEZE CONTROL**® models
■ Makes it easy to use the same protocols for different **FREEZE CONTROL**® Models

Protocol Management Panel
Protocols can be:
■ Created
■ Edited
■ Loaded
■ Viewed
■ Printed
■ Saved
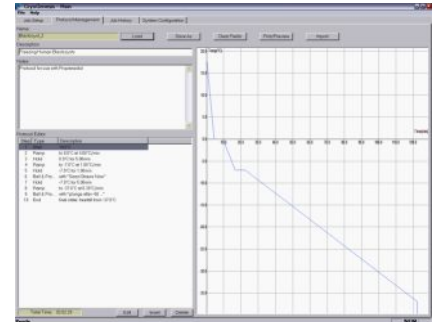
Protocol Management Panel

EASY OPERATION
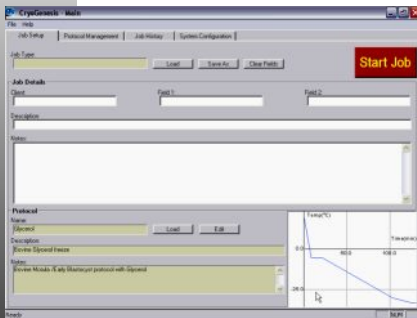
Job Setup Panel

Job Setup Panel
■ Allows user to simply manage and create freezing or thawing jobs
■ Setup and Edit job details

Protocol Panel
■ Protocol information is monitored and controlled
■ Displays measured chamber temperatures while the protocol is running
■ Event Log is produced which contains full traceability information including details of protocol temperatures
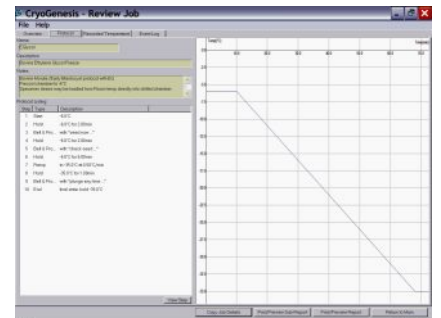
Protocol Panel

EASY DATA MANAGEMENT
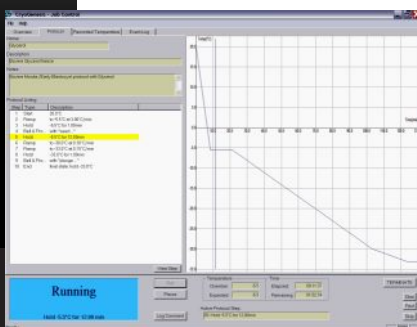
Review Job Panel

Review Job Panel
■ Job overview is displayed
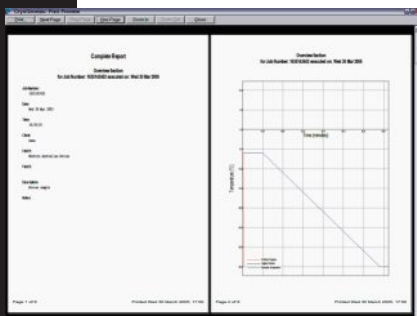■ Protocol and recorded temperatures are displayed

Job History Panel
■ All past jobs are listed in this panel
■ Provides access to information about all of the jobs

Report Panel
Choice of reports generated:
■ Protocol Reports
■ Recorded Cryochamber Temperature Reports
■ Event Log Reports
■ Complete Job Reports

Job History Panel

Report Panel

Simple & Powerful Control

CRYOCHAMBER LIDS

Various cryochamber lids are available to accommodate the type of specimen container used

■ **Standard** 20mm High, for standard and CBS™ straws

■ **Medium** 60mm High, for straws with plugs

■ **Tall** 120mm High for double length straws

CARRY CASES

Horizontal or Upright carry cases are available

■ Rugged construction for shipping

■ Convenient for transporting and storage

LIFTERS & SPACERS

■ Lifters with spacers attached are available to suit the cryochamber and type of specimen container

■ Lifters allow straws or ampoules to be raised simultaneously

■ Spacers ensure tight coupling of specimen containers with the wall of the core, and reduce convection within the core

POWER PACK CL-P10

A dedicated external power pack with three operating modes:

■ From internal battery

■ From mains

■ From an external 12V battery with car cable

Operation time is 2.5 to 3.5 hours

Use with **FREEZE CONTROL**® systems CL2200, CL3300, CL8800i, and earlier **FREEZE CONTROL**® models

CRYOBATHS

Insulated liquid nitrogen containers with lids available in two sizes.

■ 1.5 L (~2 hours operation time)

■ 3.8 L (~4 hours operation time)

TEMPERATURE LOGGER TL-13

An external temperature logger which provides data acquisition facilities for real-time temperature logging in applications requiring documented regulatory compliance

■ Requires CryoGenesis™ software

■ Records specimen temperature during freezing or thawing operations for printing

■ Use with CL3300

8800iSYS	**CI8800i System**	User-Programmable Temperature Controller 23-slot Cryochamber CryoGenesis™ Software 16 Pre-installed Protocols 1.5L Cryobath Carry Case	
3300SYS	**CL3300 System**	User-Programmable Temperature Controller 23-Slot Cryochamber CryoGenesis™ Software 1.5L Cryobath Carry Case	
5500SYS	**CL5500 System**	Preprogrammed Temperature Controller 23-Slot Cryochamber 16 Pre-installed Protocols In built Battery Pack 1.5L Cryobath Carry Case	
2200SYS	**CL2200 System**	Preprogrammed Temperature Controller 23-Slot Cryochamber 8 Pre-installed Protocols 1.5L Cryobath Carry Case	

Designed and manufactured by CryoLogic Pty Ltd

Manufacturer of:
FREEZE CONTROL® Cryopreservation Systems
CVM™ Vitrifi cation Kit
BioTherm™ Smart Suite
BioTherm™ Transportable Incubators
Voltain™ Cell Fusion System

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European Patent Number: 181235

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