

# Pharmaceutical and BioProcessing Application

## High Performance Controlled Rate Freeze/Thaw Chamber



Farrar Scientific offers state of the art solutions for a rapid freeze/thaw process for Bio Processing applications, greatly reducing the freeze or thaw conditioning time from days or weeks to hours.

Our Control Rate Chamber Model 4002, (air cooled) or 4102, (water cooled) can rapid freeze/thaw from +40C to -80C.

The Farrar Scientific Controlled rate chamber enables fast, uniform bulk freezing and thawing of Protein or products contained in a variety of containers, (bags, bottles or any size containers) such as single use system (SUS), polycarbonate vessels or polypropylene vessels.

***“Rapid bulk freezing and/or thawing in hours instead of days or weeks”***

### General Performance:

- ◆ Uniform, repeatable results improve quality control in production and logistics.
- ◆ Forced-air circulation provides quick pulldown from ambient to desired temperature throughout the container extending to the fluid core which avoids false freeze points and optimizes the freezing process (1,000 CFM air circulation).
- ◆ Repeatable Freeze & Thaw process.
- ◆ Eliminates uncertainty. Provides temperature specific conditioning to satisfy processing and shipping protocols for various pharmaceuticals.
- ◆ Solid phase conditioning assures maximum heat of fusion for greater energy storage and longest cooling capacity over time.

### Application and Electrical Requirements

<b>Application</b>	Pharmaceutical and Bioprocessing.
<b>Chamber Volume</b>	23.3 Cu. Ft. (659.8 L)
<b>Temperature Range</b>	Programmable +40°C to -80°C
<b>Electrical</b>	208/240 VAC, 3 Ø, 60Hz, 26 FLA
<b>Ambient Operating Temperature</b>	+18°C to +30°C
<b>Air Cooled Condenser Requirements</b>	+18°C to +30°C
<b>Water Cooled Condenser Requirements</b>	Tower Water 85°F (29.5°C), Max. flow rate 7gpm (26.5 l/min).  Chilled Water 45°F (7.2°C), Max. flow rate 3.5 gpm (13.25 l/min).

### Dimensions

<b>Interior Dimensions (W x D x H)</b>	34" x 27.5" x 43" 863.6 x 698.5 x 1092.2 mm
<b>Exterior Dimensions (W x D x H)</b>	75" x 38" x 80" 1901.5 x 960.4 x 2028.8 mm
<b>Net Weight</b>	1,010 lbs. (459 Kg)
<b>Shipping Weight</b>	1,597 lbs. (726 Kg)

### Performance Data

<b>Pull Down Empty Chamber</b>	< 38 minutes from +25°C to -80°C
<b>Door Open Recovery @ -80°C</b>	< 10 minutes
<b>100L Load +25°C to -80°C</b>	< 12 Hours
<b>Uniformity Air Temperature</b>	+/- 2.0°C
<b>Uniformity Product Temperature</b>	+/- 1.0°C

### Refrigeration System

<b>Heat Transfer</b>	Convection, Air Flow Evaporator
<b>High Stage</b>	R-404A
<b>Low Stage</b>	R-508B
<b>Defrost</b>	Auto defrost program, EZ1 Key Touch
<b>Heat of Rejection – Air Cooled</b>	38,000 BTU/hr (11 Kw/hr)
<b>Heat of Rejection – Water Cooled</b>	1,700 BTU/hr (0.5 Kw/hr)

### Controller

<b>Programmable Controller</b>	Watlow PID
<b>Sensor</b>	RTD PT100 Din A
<b>Dry Contacts</b>	Standard (C, NO, NC)

### Additional Services/Options

- Validation IQ/OQ/PQ
- Temperature Mapping
- Custom Programming
- Door Ajar Alarm
- Lockable Front cover
- Bunded Tray/Containment Shelf