

Thermo Scientific
HERAfreeze HFU -80C Series Upright ULT Freezers

PART 1 – GENERAL

1.1 DESIGN AND PERFORMANCE CRITERIA

- A. Ultra Low Temperature Freezer manufactured to operate in a temperature range of -50C to -86C. Must be available in 115V/60 Hz or 208-230V/60 Hz.
- B. The freezer must be constructed using 1” thick vacuum panel insulation in conjunction with environmentally-friendly water blown foam
- C. Door Gasket must provide 7 independent insulation zones along with 4 points of contact to ensure sample security.
- D. Freezer shall be painted with high-impact, scratch resistant powder coat finished interior and exterior to ensure long term viability and maximum interior temperature uniformity.
- E. The perimeter heater to reduce condensation shall be on the door side not on the cabinet side to limit heat introduction into the sample storage area.
- F. The thermal break shall be made of plastic to limit heat leakage into the cabinet
- G. Door latch allows one-handed opening and closing. Handle must include door key lock as well as padlock provision for added security.
- H. Freezer shall have five internal storage compartments with polystyrene insulated inner doors to ensure sample security. Inner doors should have no latches or external magnets and must be removable for easy cleaning without the use of tools.
- I. Freezer shall have a heated pressure equalization port allows rapid re-entry to cabinet.
- J. Freezer shall have two, 1 inch access ports as standard
- K. Freezer shall have a RS485 output, Dry Contacts and 4-20mA output for remote monitoring Purposes.
- L. Freezer door must open at least 180 degrees for easy sample access.

1.2 SUBMITTALS

- A. Submit complete submittal package of product literature, manual, and drawings. Incomplete submittals are not acceptable, will be considered non-responsive, and will be returned without review.

1.3 QUALITY ASSURANCE

- A. ULT freezer must be built to, and contain the registration mark for, UL, cUL, (60 Hz models) and CE (50 Hz models) standards for safety and performance.

1.4 QUALIFICATION

- A. Manufacturer – Company must have 10 years documented experience in the construction of ULT freezers.
- B. ULT Freezer – Shall be registered for UL, cUL, (60 Hz models) and CE (50 Hz models) standards.

1.5 WARRANTY

- A. Manufacturer’s warranty against defects in material and workmanship covering parts must be available for a period of 2 years covering parts and labor, with an additional 3 year warranty on the compressor (parts only).
- B. Standard exceptions for air filters, batteries, and gaskets shall apply.
- C. Extended manufacturer’s warranty options should be available at additional charge if required

PART 2 – PRODUCT

2.1 MANUFACTURERS

- A. Thermo Scientific

2.2 HERAfreeze HFU Series ULT Freezer Capacity

- A. Model HFU300 – 14.9 cu ft capacity: Footprint 7.05 sq ft: 300 – 2” boxes
- B. Model HFU400 – 19.4 cu ft capacity: Footprint 8.46 sq ft: 400 – 2” boxes
- C. Model HFU500 – 24.1 cu ft capacity: Footprint 9.92 sq ft: 500 – 2” boxes
- D. Model HFU600 – 28.8 cu ft capacity: Footprint 11.38 sq ft: 600 – 2” boxes
- E. Model HFU700 – 33.5 cu ft capacity: Footprint 12.85 sq ft: 700 – 2” boxes

2.3 HERAfreeze HFU Series ULT Freezers Dimensions

- 1. Exterior Dimensions (H x W x D)
 - A. Model HFU300 – 78” x 27.0” x 37.6” (198.1 x 68.6 x 95.5 cm)
 - B. Model HFU400 – 78” x 32.4” x 37.6” (198.1 x 82.2 x 95.5 cm)
 - C. Model HFU500 – 78” x 38.0” x 37.6” (198.1 x 96.5 x 95.5 cm)
 - D. Model HFU600 – 78” x 43.6” x 37.6” (198.1 x 110.8 x 95.5 cm)
 - E. Model HFU700 – 78” x 49.2” x 37.6” (198.1 x 125.1 x 95.5 cm)
- 2. Interior Dimensions (H x W x D)
 - A. Model HFU300 – 51.23” x 17.78” x 28.29” (130.11 x 45.16 x 71.86 cm)
 - B. Model HFU400 – 51.23” x 23.13” x 28.29” (130.11 x 58.74 x 71.86 cm)

- C. Model HFU500 - 51.23" x 28.75" x 28.29" (130.11 x 73.02 x 71.86 cm)
- D. Model HFU600 - 51.23" x 34.38" x 28.29" (130.11 x 87.31 x 71.86 cm)
- E. Model HFU700 - 51.23" x 40.0" x 28.29" (130.11 x 101.60 x 71.86 cm)

2.3 HERAFreeze HFU Series Control Requirements

- A. Freezer shall allow for set-point security control that blocks specific users from changing freezer set point or alarms through the use of a user name and password control. Unit shall allow for up to 150 users.
- B. Freezer shall have an energy savings operation mode that can be activated by the user without affecting power to the freezer.
- C. Freezer shall have a high performance operating mode that can be activated by the user without loss of power to the freezer.
- D. Freezer shall have an on-board data logger that allows for a minimum of 10G of data storage
- E. Freezer shall record all door openings and log the time the door was open and door was closed. Data must be available from the display for a minimum of 10 days. Data must also be downloadable via a USB port.
- F. Power management system shall show incoming line voltage, indicate low or high line voltage and provide voltage correction of up to +/- 10% of rating. Line voltage should be logged for a period of up to 15 years and be downloadable via a USB port.
- G. Freezer shall log all power interruptions and provide audio and visual notifications.
- I. Freezer shall have adjustable power recovery time delay that allows user to set a time delay between 0.1 and 30 minutes after power failure.
- H. Freezer shall have an adjustable extreme ambient alarm to protect against unsafe ambient operating conditions. Ambient alarm shall have a visual and audible notification when active.
- J. Freezer shall display temperature in Celsius or Fahrenheit
- K. Freezer shall have a graphic display of temperature in the form of a graph that is adjustable for a period of 2, 4 or 6 hours.
- L. Freezer shall have a screen auto off selection that allows the screen to darken between the hours of 9pm and 6am.
- M. Freezer shall have a graphical indication of operating status as well as a redundant LED light.
- N. Freezer shall record number of door openings and date/time of last opening. This counter shall be resettable by the user.
- O. Freezer shall record temperature excursions including actual temperature, warmest temperature and coldest temperature. This indicator shall be resettable by the user.
- P. Freezer shall display temperature of evaporator inlet, evaporator outlet, heat exchanger, first stage suction, second state suction, second stage sump, liquid line and condenser air inlet. This

display shall display in a graphical as well as pictorial view to allow for diagnostic troubleshooting.

- Q. Freezer shall record events in an event log viewable on the freezer display. This log shall include the event type, date and time. Event log data shall be downloadable via a USB port and viewable in standard programs such as MS Excel
- R. Freezer shall notify customer to perform preventative maintenance tasks including filter change and backup battery test.
- S. Display language shall be selectable between English, Spanish, Italian, German and French.
- T. Display shall notify user if a power failure, high temperature or low temperature alarm occurred in the past and has since corrected itself. User must acknowledge past alarm to ensure cargo security.
- U. Freezer must recognize if line voltage and frequency does not match freezer specification and alert user.

2.4 – OPTIONS AND ACCESSORIES

A. Options

- a. CO2 or LN2 back-up system
- b. Inkless or ink chart recorder
- c. Card key access
- d. Stainless steel interior

B. Accessories

- a. Racks
- b. Shelf kit
- c. Access key pack
- d. Chart paper
- e. Replacement air filters
- f. Replacement battery
- g. Cryo Gloves
- h. Alarm delay module
- i. Remote alarms
- j. Seismic restraint kit

PART 3 – EXECUTION

1.01 INSTALLATION

- A. Install equipment level and plumb, according to manufacturer's written instructions.
 - 1. Verify utility services are in required locations and are ready for use before installation of equipment.
 - 2. Install equipment with access and maintenance clearances that comply with manufacturer's written installation instructions and requirements of authorities having jurisdiction.
 - 3. Complete equipment assembly where field assembly is required.
 - 4. Connect equipment to utilities.

5. Remove all packing materials from the site.