



# MODEL VAULT100™

Upright Ultra-Low Temperature Freezer



# Stirling

ULTRACOLD



Shown with optional inventory racks and five shelving units (standard). Interior dimensions accommodate optional inventory racks up to five standard boxes deep. Removable shelves are adjustable on 1/2" (12.7 mm) centers.

## Making the industry's best-performing ULT freezer even better

- First ULT freezer with a -100°C to -20°C temperature range
- Best steady-state temperature adherence in the market: +/-3°C (9-position) uniformity and +/-2°C (single-position) stability at -80°C
- When operating at setpoints down to -100°C, your samples may never be exposed to temperatures above -70°C during or after a typical door opening
- An updated interface shows freezer health analytics
- Designed with a 360-degree sustainability approach
- Largest storage volume per sq. ft. of floor space
- Accepts universal power

## The VAULT100™ delivers strategic advantages across your entire research organization

### Protecting your Research Materials

- Modulated cooling capacity eliminates on/off cycling
- 100% adaptive control - faster temperature pull-down and recovery
- Advanced Stirling engine technology with only two moving parts – no compressors to fail!
- Freezer warranty – six year engine and thermosiphon protection, plus all labor and parts

### Protecting the Environment

- Uses up to 70% less energy than legacy compressor-based units
- Uses up to 45% less energy than similar sized ENERGY STAR® rated freezers
- Uses EPA SNAP-approved 100% natural refrigerants
- Waste reduction processes and environmentally friendly foam insulation blowing agent used in product manufacturing
- Significantly smaller operating carbon footprint than legacy compressor-based systems

### Protecting your Operating Budget

- Reduces electric utility costs up to 70% when replacing legacy compressor-based freezers
- Significantly reduces heat output and HVAC cost of operations
- Reduces floor space, facilities, infrastructure, and backup power cost
- Lowest ongoing maintenance requirements and service costs

# MODEL VAULT100™ Specifications

## → Application, rating and electric data

<b>Application</b>	Storage of general (non-flammable) laboratory materials
<b>Storage Volume</b>	795 liters (28 cu.ft.)
<b>Storage Capacity</b>	600 standard 2" boxes in optional racks, Optional 700-box system, available separately
<b>Temperature Range</b>	-100°C to -20°C (-148°F to -4°F) adjustable to 1°C increments
<b>Electric Power</b>	120-240VAC at 50/60Hz (All other regions)
<b>Power Plugs Available</b>	NEMA 5-15P plug requires standard NEMA 5-15R receptacle (120V); Length: 3048 mm (120 in.), or NEMA 6-15P plug requires standard NEMA 6-15R receptacle (240V); Length: 2997 mm (118 in.) <i>Specify when ordering</i>
<b>Maximum Power (Current)</b>	1200 watts (10 amps @120V, 5 amps @240V), nominal
<b>Auto-Voltage Capability</b>	120-240VAC at 50/60Hz (accepting universal inputs)
<b>Electric Supply Rating</b>	15 amp or greater grounded circuit
<b>Certification/ Agency Listing</b>	cULus, CE, and ENERGY STAR®
<b>Noise</b>	< 42 dB(A) at 1 meter from front of freezer in steady state operation
<b>Indoor/Outdoor Use</b>	Indoor use only
<b>Application Environment</b>	Non-corrosive, non-flammable, non-explosive
<b>Ambient Operating Temp</b>	5°C to 35°C (41°F to 95°F)
<b>Useful Life</b>	15 years, nominal

## → Controller

<b>Interface</b>	Graphic user touchscreen interface with touchscreen inputs
<b>Controller Type</b>	Microprocessor with touchscreen input and display
<b>Security</b>	Optional PIN requirement built in
<b>Warm and Cold Alarms</b>	Fully adjustable
<b>Control Sensor</b>	One RTD (PT100 Class A)
<b>Event Log</b>	All alarms, door openings, setpoint changes, power outage (Recording in a system memory for 12 months)
<b>Dry Contacts</b>	Normally Closed, Normally Open and Common; activated by power outage or any alarm condition
<b>Temperature Log</b>	12 months available graphically and electronically from a system memory (downloadable)
<b>Battery Back-up</b>	24-hour battery back-up for touchscreen and temperature display
<b>Internet Connectivity</b>	Optional Ethernet connection transmitting in BACnet™
<b>Defrost Method</b>	Adjustable gasket heater as needed.

## → Refrigeration system

<b>Cooling Engine</b>	Helium-charged (10-gr) free-piston Stirling engine with continuous modulation
<b>Heat Transport System</b>	Gravity driven thermosiphon
<b>Refrigerant</b>	R-170 (Ethane) 90 grams (3 oz.)
<b>Evaporator</b>	Cold wall (inner liner)
<b>Heat Rejection</b>	Finned heat exchanger with forced air cooling. Air inlet: Right side of top cover, through air filter Air outlet: Left side of top cover, upward
<b>Defrost Method</b>	Manual

## → Performance data

<b>Steady State Energy Use (ENERGY STAR® Final Test Method)</b>	5.8 kWh/day at -80°C (-112°F)
<b>9-Position Temperature Uniformity†</b>	±3°C* (at -80°C)
<b>Single-Position Temperature Stability (Steady State)</b>	±0.2°C* from -80°C setpoint
<b>Door Opening Recovery (Energy Star® Final Test Method)</b>	26 minutes at -80°C
<b>Pull-Down from 25°C Ambient</b>	5.5 hours @ ambient to -80°C (-112°F)
<b>Warm-up Profile</b>	3.8 hours to -60°C at -80°C (Empty Cabinet) 9.3 hours to -40°C at -80°C (Empty Cabinet)
<b>Heat Dissipation</b>	754 Btu/h @ steady state at -75°C. 889 Btu/h with 6 door openings at -75°C.

## → Dimensions and construction

<b>Interior (H x D x W)</b>	1542 H x 706 D x 732 mm W (60.7 x 27.8 x 28.8 in.)
<b>Exterior (H x D x W)</b>	1996 H x 871 D x 915 mm W (78.6 x 34.3 x 36 in.)
<b>Net Weight, Five Shelves No Load</b>	295 kg (650 lbs.)
<b>Shipping (H x D x W)</b>	2134 x 1092 x 1168 mm (84 x 43 x 46 in.)
<b>Shipping Weight</b>	345 kg (760 lbs.)
<b>Insulation</b>	High-performance, vacuum-insulated panels and polyurethane foam using the Ecomate® environmentally friendly, SNAP-compliant blowing agent
<b>Shelves</b>	5 stainless steel, adjustable in 12.7 mm (0.5 in.) increments
<b>Inner Doors</b>	3 insulated with magnetic latches
<b>Options</b>	CO <sub>2</sub> and LN <sub>2</sub> back-up systems, additional shelves, international plug(s), 4-20 mA – Temperature transmitter: 0°C to -100°C (4-20mA), loop power (8 to 35 VDC) is required



† There is no need for special wiring or a 20-amp breaker on a 120V line

‡ ENERGY STAR® Final Test Method

\* Within testing protocol margin of error



Stirling Ultracold 6000 Poston Road, Athens, Ohio 45701, USA  
T 740.274.7900 / 1.855.274.7900 | F 740.274.7901 | [www.stirlingultracold.com](http://www.stirlingultracold.com)

©2024 Stirling Ultracold, Global Cooling, Inc. All Rights Reserved.

Global Cooling technology is manufactured under U.S. and International patents. Stirling Ultracold is a trademark of Global Cooling, Inc. Specifications subject to change without notice. Refer to [www.stirlingultracold.com](http://www.stirlingultracold.com) for the latest specifications.



REDEFINING COLD