

# Panasonic

## Ultra-Low and Cryogenic Freezers

VIP® Series | Twin Guard® Series  
PRO Series | Cryogenic | Chest

[www.panasonic.com/biomedical](http://www.panasonic.com/biomedical)



**Twin Guard® Series**  
MDF-U700VXC-PA



**VIP® Series**  
MDF-U76VC-PA



**-150°C Cryogenic Freezer**  
MDF-C2156VANC-PA

# Give your samples the ultimate protection.

# The Industry's Most Complete **Ultra-Low Storage Solution.**

Offer your samples the advantage of first class cold storage technology with Panasonic ultra-low freezers. Our reputation is built on superior performance and reliability with uniform environment, even with higher ambient temperatures and frequent door openings.

Panasonic ultra-low freezers meet the toughest quality standards for performance, ergonomics and ROI. We are proud to provide your samples with the ultimate and the most reliable protection, helping cutting-edge research in critical fields like medicine, life sciences, pharmaceuticals and biotechnology.

## **Environmentally Friendly Technology**

Always a leader in environmentally friendly technology, Panasonic refrigerators use commercially available HFC refrigerants and CFC-free insulation.

- Compliance of RoHS, Restriction of Hazardous Substance, on all units.
- Panasonic is committed to developing green technologies that provide energy efficiency resulting in lower operational costs with less impact on the environment.

## Table of Contents

- 4** What to look for in an ULT freezer?
- 6** Find the right freezer for your needs.
- 8** Twin Guard® Freezers ( -86°C )
- 15** VIP® Freezers ( -86°C )
- 23** PRO Series Freezers ( -86°C )
- 26** Cryogenic Freezer ( -150°C )
- 28** Chest Freezers ( -80 / -86°C )

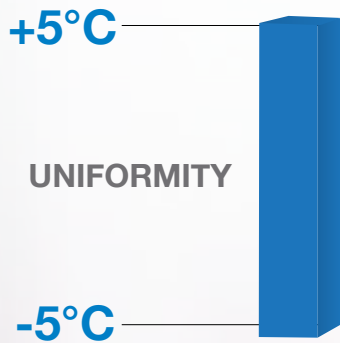


# What to look for in a freezer?

## 1. Reliability

Panasonic products incorporate the latest applied theories and ideas, refrigeration compressors, electronic components, robotic manufacturing and economies-of-scale that directly benefit the customer. Furthermore, Panasonic products are extensively tested to meet the toughest quality standards in the world for performance, ergonomics and cost of ownership. Through the vigorous application of our unique Vertical Component Integration, Panasonic products offer tangible benefits - from performance and reliability to ergonomics and convenience - that no other manufacturer can provide.

Surpasses the customer preference of +/- 5°C\*



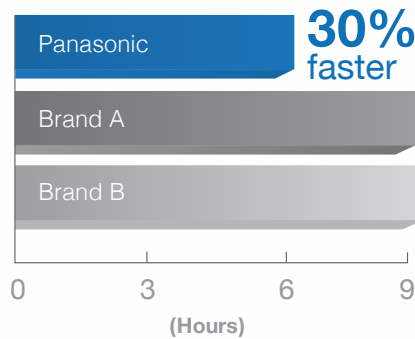
Based on internal validation data tested at -80°C setpoint, in an empty chamber with 23°C ambient temperature.

## 2. Performance

Panasonic Ultra low freezers offer the following advantages:

- Rapid “pull down” – the time needed for your freezer to return to set point after door openings to maintain sample integrity
- Best Temperature Uniformity that ensures all samples are well protected.

Pull down speed from room temp to -80°C



**PRO Series** (-86°C)  
MDF-U7486SC-PA



**Twin Guard® Series** (-86°C)  
MDF-U700VXC-PA



**VIP® Series** (-86°C)  
MDF-U76VC-PA



\* The data may vary depending on the use, circumstances and optional accessories. Validation documents can be provided for each serial number with an additional fee.

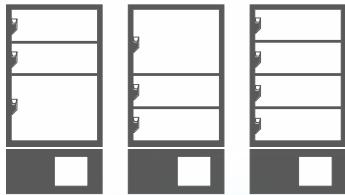
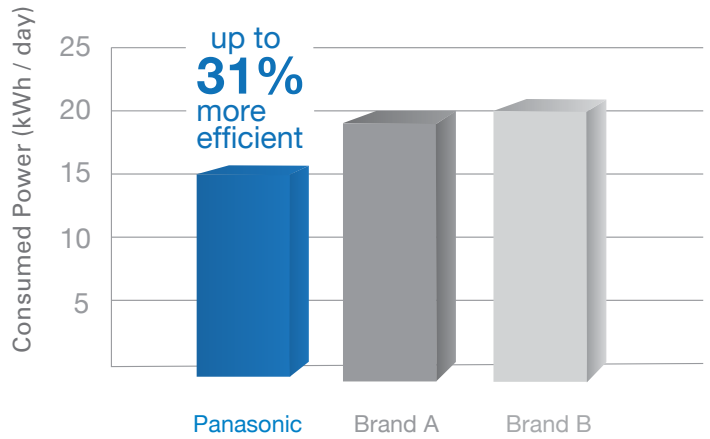
### 3. Energy Efficiency

Panasonic ultra low freezers are insulated with high-performance CFC-free and HCFC-free insulation and new composite techniques to minimize energy consumption and lower operating costs. Beyond highly competitive first costs, Panasonic ultra-low freezers demonstrate the lowest operating costs per cu.ft. (liter) in the worldwide market.

### 4. Footprint / Capacity

Panasonic was the first company to introduce vacuum insulation panels to ultra-low temperature freezers. The Panasonic range of VIP® freezers typically provide 25% more storage capacity for a given floor area saving valuable laboratory space.

The Panasonic patented VIP® vacuum insulation panel thin-wall composite is a high-efficiency design that yields more interior storage volume in a conventional freezer footprint.



#### Superior Footprint

Stainless steel shelf and insulated inner-door combinations create choices of interior compartments that can be arranged for long-term, low access biologicals or short-term, frequently accessed material.

**Models:** MDF-U700VXC, MDF-U500VXC, MDF-U76VA, MDF-U76VC, MDF-U56VC, MDF-U53VA, MDF-U33V.



**Cryogenic Freezer (-150°C)**  
MDF-C2156VANC-PA



**Chest Freezers (-80 / 86°C)**  
MDF-794C0-PA



# Find the right freezer for your needs.

## Twin Guard® Series Freezers

Two independent systems offering double security for your samples.

## VIP® Series Freezers

Most reliable freezer with best performance and maximum energy savings.



## Cryogenic Freezer

Reliable mechanical refrigeration with maximum storage capacity.

## Chest Freezers

Energy efficiency and high performance cooling with space saving design.

## PRO Series Freezers

Optimum performance under optimum budget.

## Twin Guard® Series (-86°C )

Model Number	Temperature Range	Interior Volume	Area Footprint (nominal)	Insulation Type	Storage (2"/51 mm boxes)	Storage (3"/76 mm boxes)	Storage (2ml vials in boxes)	Electrical, 60Hz
MDF-U500VXC-PA	-50°C to -86°C	18.3 cu.ft. 519 L	8.37 sq.ft. 0.67 m <sup>2</sup>	VIP® PLUS	352	224	35,200	208/230V NEMA 6-15
MDF-U700VXC-PA	-50°C to -86°C	25.7 cu.ft. 728 L	9.51 sq.ft. 0.88 m <sup>2</sup>	VIP® PLUS	576	384	57,600	208/230V NEMA 6-15

## VIP® Series (-86°C )

Model Number	Interior Volume	Exterior Dimensions (w x f-b x h)	Area Footprint, Nominal	Insulation Type	Fiberboard Boxes, 2" high (2ml) in Panasonic Racks	Sample Vials, 2ml (2" box), 100-Cell Dividers	Electrical, 60Hz
MDF-U33V-PA	11.8 cu.ft. 333 L	26.4" x 34.1" x 73.2" 670 x 870 x 1860 mm	6.25 sq.ft. 0.58 m <sup>2</sup>	VIP®	216	21,600	115V, AC, 15 amp
MDF-U53VA-PA	18.3 cu.ft. 519 L	30.3" x 34.4" x 78.3" 770 x 870 x 1990 mm	7.24 sq.ft. 0.67 m <sup>2</sup>	VIP®	352	35,200	115V, AC, 20 amp
MDF-U56VC-PA	18.6 cu.ft. 526 L	30.3" x 34.4" x 78.3" 770 x 870 x 1990 mm	7.24 sq.ft. 0.67 m <sup>2</sup>	VIP® PLUS	384	38,400	208/230V, AC, 15 amp
MDF-U76VC-PA	25.7 cu.ft. 728 L	39.8" x 34.4" x 78.3" 1010 x 870 x 1990 mm	9.51 sq.ft. 0.88 m <sup>2</sup>	VIP® PLUS	576	57,600	208/230V, AC, 15 amp
MDF-U76VA-PA	25.7 cu.ft. 728 L	39.8" x 34.4" x 78.3" 1010 x 870 x 1990 mm	9.51 sq.ft. 0.88 m <sup>2</sup>	VIP® PLUS	576	57,600	115V, AC, 20 amp

## PRO Series (-86°C )

Model Number	Volume (cu.ft.)	Exterior Dimensions (w x f-b x h)	Insulation Type	Storage (2"/51 mm boxes)	Storage (3"/76 mm boxes)	Storage (2ml vials in boxes)	Voltage, Power Connection
MDF-U5486SC-PA	17.1 483 L	35.0" x 34.4" x 78.3" 890 x 840 x 1990 mm	Conventional	320	192	32,000	208/230V NEMA 6-15
MDF-U7486SC-PA	23.5 668 L	44.5" x 34.4" x 78.3" 1130 x 870 x 1990 mm	Conventional	480	288	48,660	208/230V NEMA 6-15

## Cryogenic Freezer ( -150°C )

Model Number	Volume (cu.ft.)	Exterior Dimensions (w x f-b x h)	Insulation Type	Storage (2"/51 mm boxes)	Storage (3"/76 mm boxes)	Storage (2ml vials in boxes)	Voltage, Power Connection
MDF-C2156VANC-PA	8.2 231 L	68.1" x 30.1" x 39.8" 1730 x 765 x 1010 mm	VIP® PLUS	150	105	15,000	208/230V NEMA 6-15

## Chest Freezers (-86°C / -80°C )

Model Number	Volume (cu.ft.)	Exterior Dimensions (w x f-b x h)	Insulation Type	Temperature (°C)	Storage (2"/51 mm boxes)	Storage (3"/76 mm boxes)	Storage (2ml vials in boxes)	Voltage, Power Connection
MDF-C8V1-PA	3.0 84 L	21.6" x 27.0" x 37.2" 550 x 685 x 945 mm	VIP® PLUS	-80°C	42	30	4,200	115V NEMA 5-15
MDF-594C-PA	17.2 487 L	79.1" x 30.3" x 42.1" 2010 x 770 x 1070 mm	Conventional	-86°C	351	243	35,100	208/230V NEMA 6-15
MDF-794C-PA	24.8 701 L	101.2" x 30.3" x 42.1" 2570 x 770 x 1070 mm	Conventional	-86°C	507	351	50,700	208/230V NEMA 6-15

MDF-U500VXC-PA

## Twin Guard® Series

MDF-U700VXC-PA



### **Innovative Design:**

Two independent systems allowing the unit to run continuously at  $-65^{\circ}\text{C}$  in the unlikely event of one compressor failure.

### **Patented VIP® PLUS Vacuum Panel:**

Uniform temperatures with energy efficient and space efficient refrigeration.

### **Ergonomic Design:**

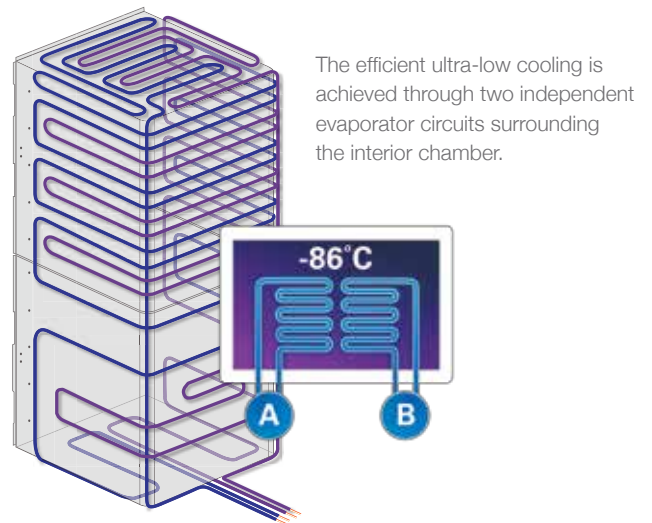
One-handed outer and inner door latches and compressors to minimize sound.

# Security Now Comes with **Two.**

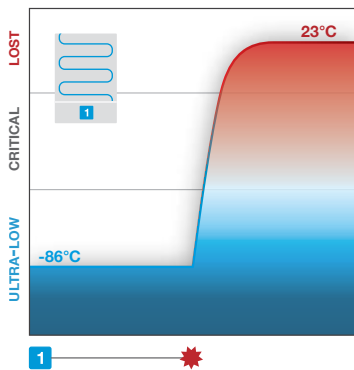
What makes Twin Guard® Series  
a product you can trust?

# The Most Dependable Ultra-Low Freezers for Long-Term Storage

The Panasonic Twin Guard® Series satisfies the industry demand for safe, long-term storage for the most high-valued materials. Two independent refrigeration systems, combined with optional liquid nitrogen or liquid CO<sub>2</sub> back-up systems, offer a circle of protection unmatched in the marketplace. Developed for use with conventional inventory racks and boxes, the Twin Guard® Series is ideal for storage of sensitive stem cells, embryos, cell lines, and other rare specimens.

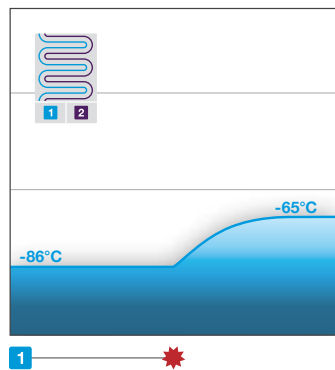


## Traditional Freezer



Freezer relies on a single system, causing a complete shut-down when failure occurs

## Twin Guard® Series



Second independent system kicks in to maintain ultra-low temperatures in the event of a failure

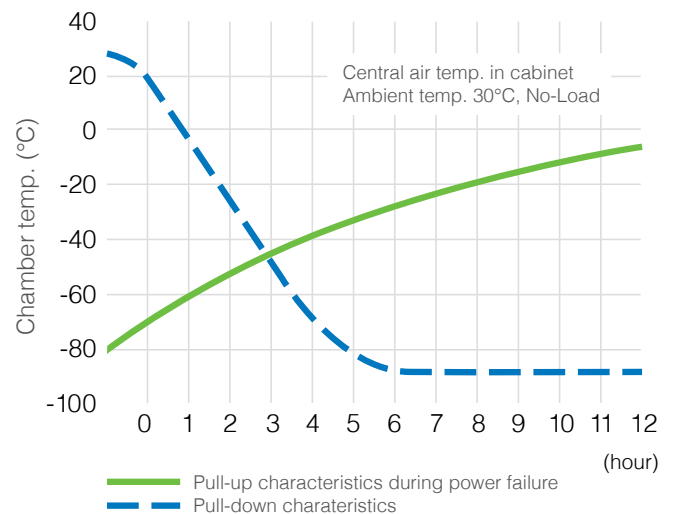
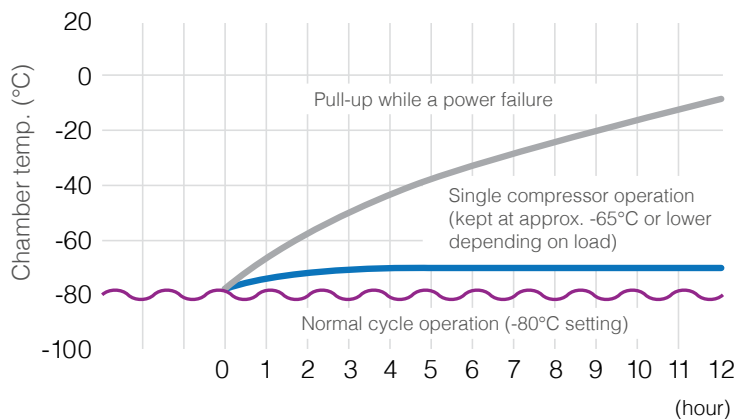
### KEY

- SINGLE COMPRESSOR SYSTEM FAILURE
- ULTRA-LOW
- SAMPLE LOSS
- SINGLE COMPRESSOR SYSTEM
- SECOND COMPRESSOR SYSTEM

## Ultimate Protection

Give your samples the ultimate protection of patented Twin Guard® technology – **two independent systems** can individually sustain ultra-low temperatures in the event of a failure, so you can rest easy knowing your valuable work is in good hands.

## Performance & Recovery





# What is Twin Guard® Technology



The Panasonic MDF-U500VXC and MDF-U700VXC Twin Guard® Series ultra-low freezers are designed for -86°C storage of high-value biologicals. Ideal for critical material storage in repositories, highly secure BSL 3/4 labs, GMP facilities, hospitals, clinics and medical research facilities. The Twin Guard® Series introduces the concept of dual, independent, autocascade refrigeration systems contained within a single cabinet.



1. Panasonic patented VIP® PLUS vacuum insulation panel cabinet construction for high insulating value and increased interior volume in the same footprint.
2. Easy-In/Easy-Out door latch for smooth, one-handed operation, positive seal against gasket.
3. Integrated, microprocessor-based control system and LCD display information center includes comprehensive set-point, alarm, monitoring, diagnostic and communications functions.
4. Insulated, sealed, and gasketed inner doors seal inside to offer additional protection, improve uniformity.
5. New air-cooled super condenser energy transfer technology maintains optimum condenser air flow and eliminates the need for an air filter or reducing the requirement for periodic maintenance.
6. High impact, recessed casters and leveling feet simplify installation.
7. Cool Safe compressors are specifically designed for one-compressor, autocascade applications.
8. Twin Guard® Series redundant refrigeration -86° Dual Cool circuits offer two systems in one, each providing back-up for the other, or working together for fast recovery or energy savings
9. Multiple access ports permit insertion of independent probes, instrumentation or liquid nitrogen or liquid CO<sub>2</sub> back-up injectors.
10. CFC-refrigerants are highly efficient, environmentally safe, non-ozone depleting.
11. A vacuum relief valve is mounted in the left wall to ensure easy access to chamber following door closure.
12. Standard remote alarm contacts and optional communication port available.

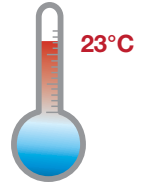
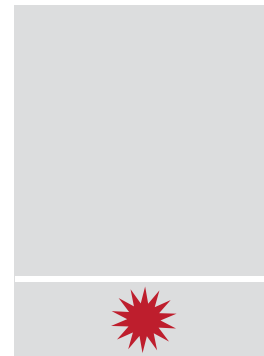
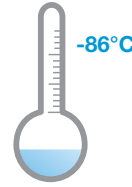
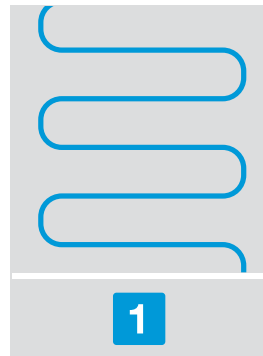
A vacuum relief valve is mounted in the left wall.



The Panasonic ergonomic design features a high-security Easy-In / Easy-Out door latch designed for simplicity and safety. Also allows for one handed operation.

## Traditional freezer

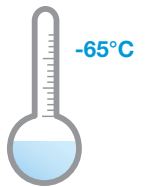
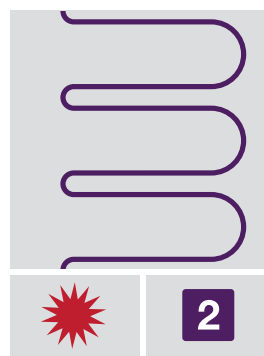
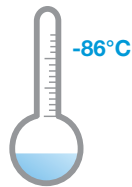
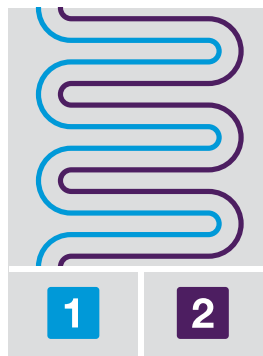
Freezer relies on a single compressor system, causing a complete shut-down when failure occurs. Temperature quickly rises to room temperature.



**COMPRESSOR FAILURE**

## Panasonic Twin Guard® freezer

Second independent compressor system kicks in to maintain ultra-low temperatures in the event of a failure. Temperature remains at -65°C.



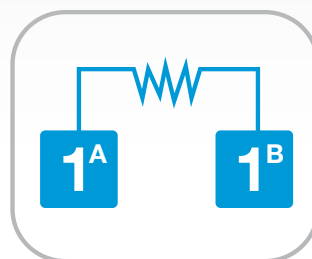
**COMPRESSOR FAILURE**

## So, what is a compressor?

Simply put, a compressor is what runs your freezer. It's the heart of the whole system, keeping your freezer at ultra-low temperatures. The compressor is tied to refrigeration coils that run throughout the unit to maintain those even, sub-zero temperatures.

### Traditional

Compressors are traditionally made up of two parts: a high stage and low stage. These parts rely on one another to operate, so if there is a problem with either part, the entire system shuts down.



### Panasonic

With Panasonic's patented Twin Guard technology, 2 compressors are completely separated from one another, with no reliance on the other to operate. So if one of them fails, the other is unaffected and your freezer will keep operating at ultra-low temperatures.



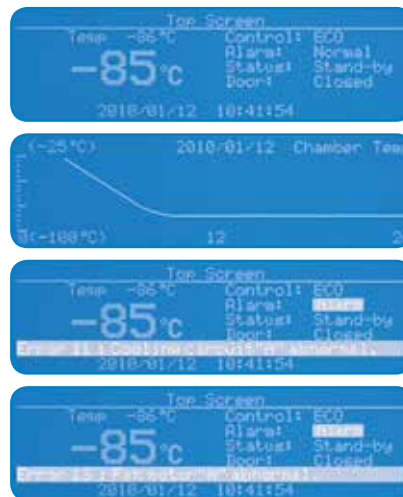
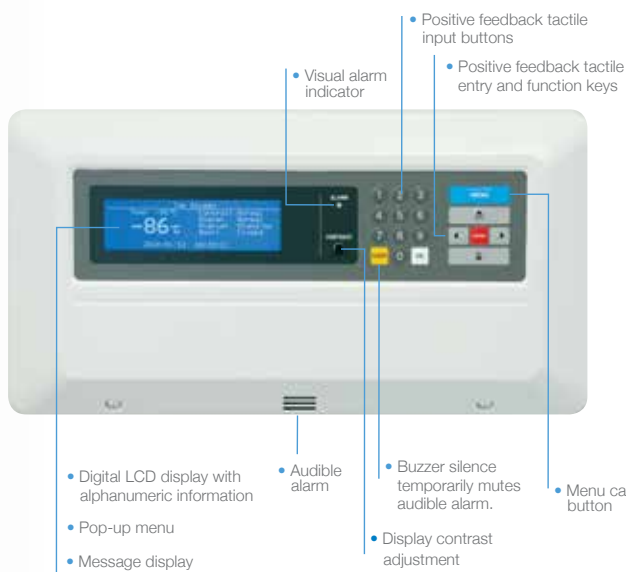
# Optimal Capacity & Footprint

Panasonic Twin Guard® series freezers offer a **large storage capacity of 576 2" boxes**, while maintaining a small footprint with reduced energy usage. This leads to a lower energy requirement per box stored, saving you money in ongoing operational costs.

Model Number	Temperature Range	Interior Volume	Area Footprint (nominal)	Storage (2"/51 mm boxes)	Storage (3"/76 mm boxes)	Storage (2ml vials in boxes)	Electrical, 60Hz
MDF-U500VXC-PA	-50°C to -86°C	18.3 cu.ft. 519 L	8.37 sq.ft. 0.67 m <sup>2</sup>	352	224	35,200	208/230V NEMA 6-15
MDF-U700VXC-PA	-50°C to -86°C	25.7 cu.ft. 728 L	9.51 sq.ft. 0.88 m <sup>2</sup>	576	384	57,600	208/230V NEMA 6-15

# Sample Security, Alarms & Monitoring

The Twin Guard® series is managed by an integrated microprocessor controller with LCD information center to simplify all freezer functions.



All performance attributes are displayed on a large, visually intuitive alphanumeric display.

Internal temperature log files are expressed in graphical form over time.

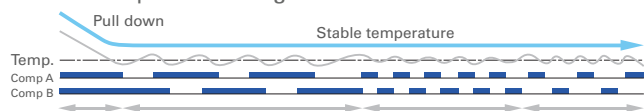
Out-of-compliance events are announced by visual and audible warnings. Error codes quickly identify problem sources and permit fast diagnosis and remediation.

Alarm & Safety Features	Events	Visual	Audible	Signal to Alarm Contact
Status Alert	Inefficient system operation, abnormal ambient, low voltage or heavy loading.		None	None
High Temperature (Up to +40°C)*	Interior chamber cools beyond high temp set-point	Notification of error on graphical display	Intermittent tone. Time delay of 15 minutes after reaching alarm set-point avoids false alarms. Intermittent tone.	Yes
Low Temperature (Up to -40°C)*	Interior chamber warms beyond low temp set-point			Yes
Power Failure	Loss of power		Intermittent Tone	Yes
Control Temperature Sensor Failure	Sensor probe disconnect short circuit or failure		Solid Tone	Yes
Door Alarm	Door open	Notification of error on graphical display	Solid tone sounds after 2 minutes	Yes

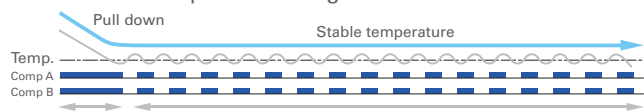
\*Extended range is important for GxP applications to reduce potential incident event reporting. The integrated microprocessor control aggregates information from the entire system and compares to normal or set-point values. Out-of-compliance events are announced by visual and audible warnings, and remote alarm when connected to an external system.

## Eco Mode vs. Normal Mode

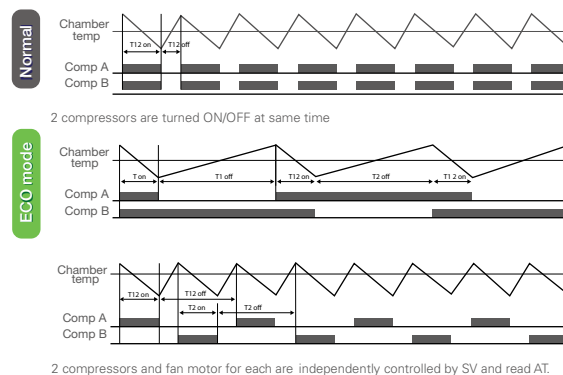
### ECO mode operation image



### NORMAL mode operation image



This chart shows the repeatable cycling wave form of normal mode vs. eco mode. Normal mode is for strict GMP applications.



The Panasonic Twin Guard® Series Freezer can be set for Normal or EcoMode operation. EcoMode establishes an overlapping cycle to reduce energy consumption.

# Technical Specifications

## Description

Model Number	MDF-U500VXC-PA	MDF-U700VXC-PA
Temperature Set-point Range	-50°C to -86°C	
Design Cooling Performance -86 Dual°Cool (both compressors)	-86°C (ambient temperature 30°C)	
Single System Cooling Performance (Indefinite)	-65°C (ambient temperature 30°C)	

## Cabinet Design and Construction

Cabinet Insulation	Patented VIP® PLUS composite wall	
Exterior Dimensions (w x f-b x h)	35.5" x 40" x 78.3" 770 x 870 x 1990 mm	42.5" x 40" x 79.1" 1010 x 870 x 2010 mm
Interior Dimensions (w x f-b x h)	25.6" x 23.6" x 54.3" 630 x 600 x 1380 mm	34.3" x 23.6" x 55.1" 870 x 600 x 1400 mm
Volume	18.3 cu.ft. 519 liters	25.7 cu.ft. 728 liters
Shelves	3, adjustable, stainless steel (4 compartments)	
Access Port	Diameter = 0.5"/17mm; 3 locations	
Vacuum Release Port	Standard, Manual	

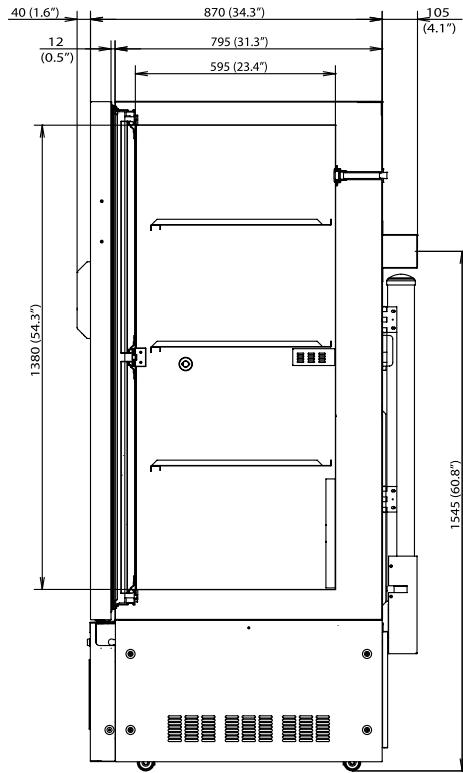
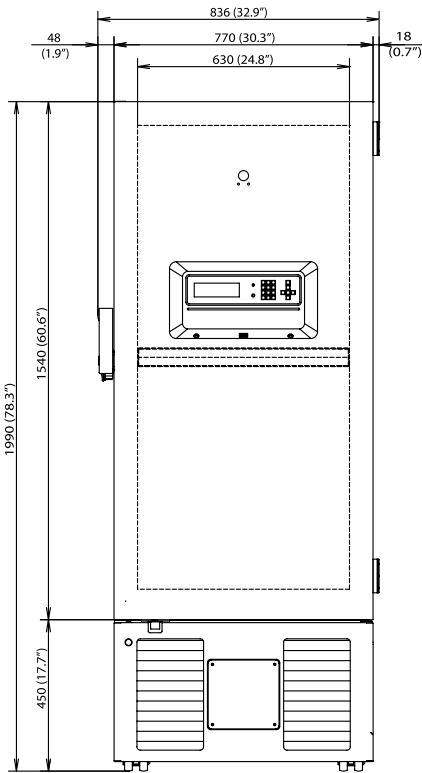
## Refrigeration System

Refrigeration Technique	Panasonic -86 Dual°Cool independent, redundant cooling systems with automatic switchover
Compressors	Per system: Single, hermetically-sealed 1100W Panasonic Cool Safe compressor, air-cooled
Refrigerant	Environmentally safe HFC refrigerant
Air Exchange	Dual condenser fans with particulate trap; no filters are required
Cycle Options	Standard or energy-saving EcoMode operation

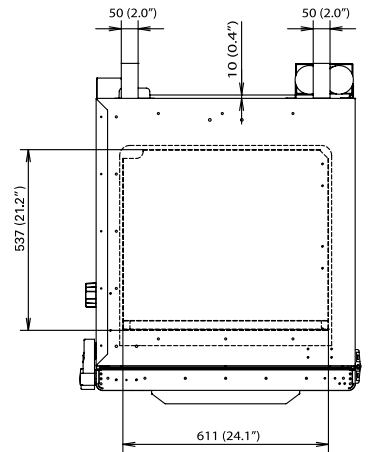
## Controls, Alarm, Monitoring

Controller	Panasonic microprocessor-based, door-mounted control with graphical LCD information center
Data Management	Internal data log with log file memory
Communications	Data can be transmitted via RS485, optional 4-20 mA
Alarms	High/Low temperature, door ajar, power failure, remote alarm contact, part replacement notification, fan motor lock, individual cooling circuit check
Remote Alarm Contacts	Standard; normally open or normally closed, dry contacts
Electrical	208V-230V, AC, 60Hz, 1 phase, NEMA 6-15, 15 amp separate breaker recommended

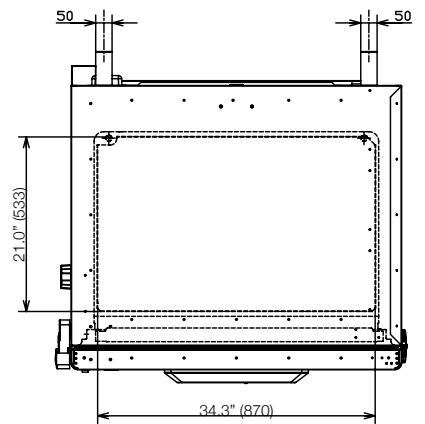
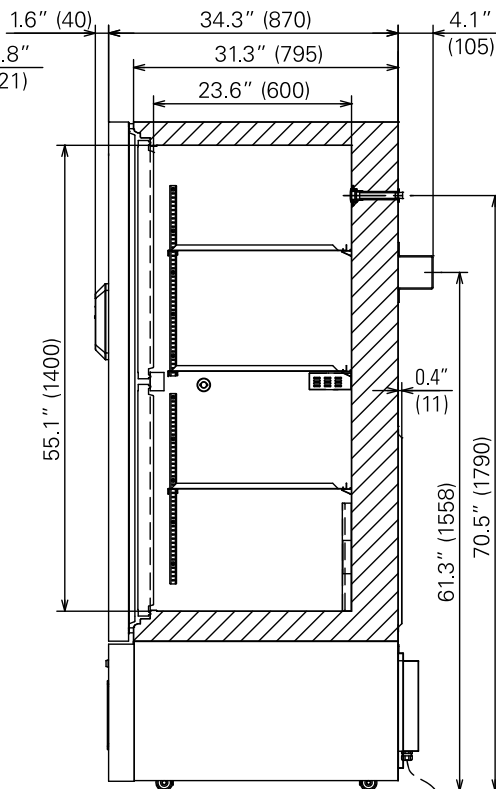
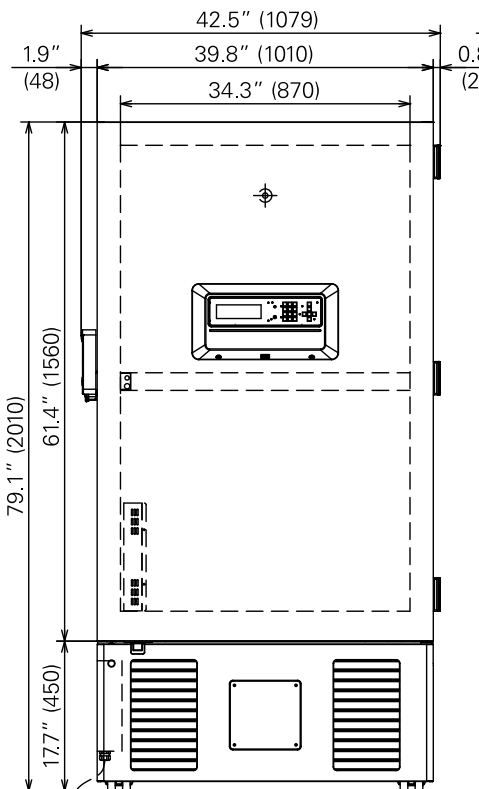
### MDF-U500VXC



## Dimensional Drawings

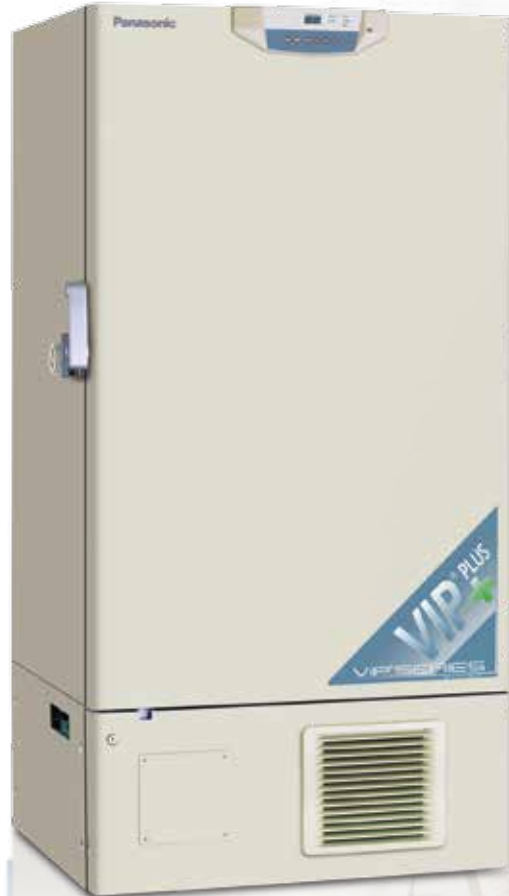


### MDF-U700VXC



MDF-U56VC-PA

**VIP® Series**  
MDF-U76VC-PA



# Leading Performance with Greater Energy Savings.

What makes VIP® Series so green?

---

*Thinking Green:* Environmentally friendly refrigerants,  
RoHS compliant and low-noise operation.

---

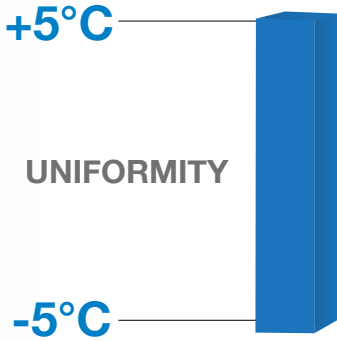
# What makes VIP® Freezers so **Reliable**?

Panasonic VIP® ultra-low freezers represent the industry’s most complete combination of refrigeration, control, alarm, monitoring and accessibility for product safety at -86°C. Ideal for material storage in repositories, hospitals, clinics and medical research facilities, the VIP® Series freezers are designed to reduce energy consumption and offer optimal performance.

## Uniformity you can trust

Combination of patented VIP® plus vacuum insulation panel with Panasonic designed compressors specific to ultra-low applications, result in unmatched uniformity, that surpasses the strictest protocols, no matter where your samples are stored within the unit.

Surpasses the customer preference of +/- 5°C\*



Based on internal validation data tested at -80°C setpoint, in an empty chamber with 23°C ambient temperature.

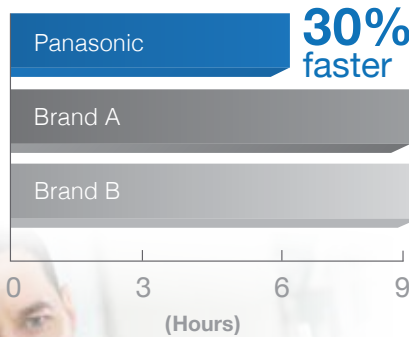
## Performance

Panasonic compressors employs a unique orientation of components that increases compressor longevity and refrigeration capacity while reducing operating pressure and discharge temperatures – a key component that yields better reliability.

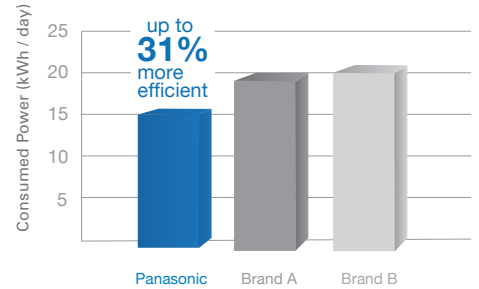
## Validated temperature recovery

Increased reserve cooling capacity improves temperature recovery after door openings

Pull down speed from room temperature to -80°C



## Energy Savings



## Energy Efficient Cascade Cooling

Panasonic cascade refrigeration system and the new improvements in the heat exchanger design drastically increase the efficiency of the entire system. The end result is less energy consumption, while improving the overall efficiency and reliability of the freezer.

\* The data may vary depending on the use, circumstances and optional accessories. Validation documents can be provided for each serial number with an additional fee.

# VIP® Series -86°C Freezer

## Energy Efficient Cascade Cooling System

### NEW! High Efficiency Heat Exchanger

Low stage capillary tube heat exchanger provides optimum heat transfer between high and low temperature points in the low stage leading to greater energy efficiency.

### Low Stage Refrigerant

Commonly available worldwide, R508. Industry Standard.

### Low Stage Compressor

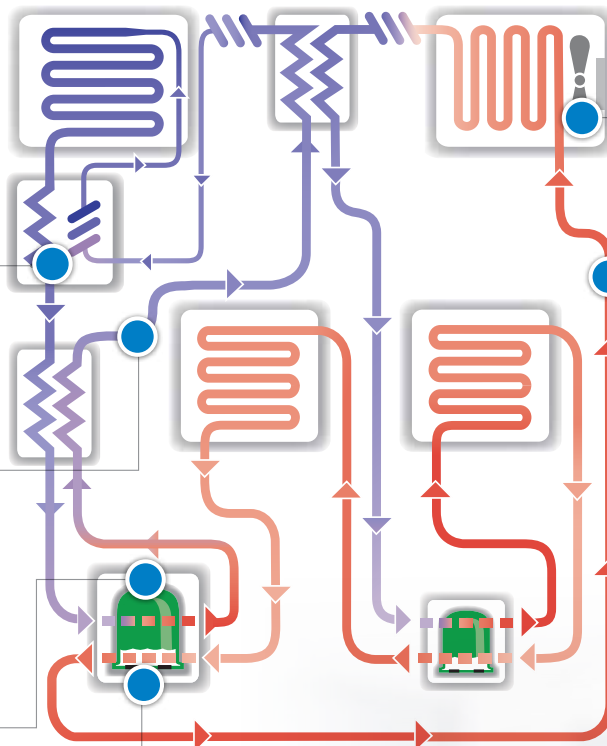
Compresses and pumps refrigerant through the low stage circuit.

### Oil Heat Exchanger

Panasonic exclusive high stage refrigerant passes through both compressor oil sumps to cool lubricating oil resulting in high-stage refrigerant being used to increase the durability of the compressors.

### Instrumentation (Not Shown)

Temperature and pressure sensors throughout the high and low stage circuits transmit information to the Panasonic 'Status Alert' central controller for operation, monitoring, interpretation and component protection.



### Main Condenser and Motor/Fan Assembly

Panasonic's exclusive triple pass forced air condenser increases overall system efficiency by providing maximum surface area for heat rejection.

### High Stage Refrigerant

Commonly available worldwide. Selected for optimum cooling performance in compliance with international environmental protection laws.





# VIP® Features



1. Easy-In/Easy-Out door latch for smooth, one-handed operation, positive seal against gasket. Padlock provision standard.
2. Integrated, microprocessor-based control system and LED display includes comprehensive set-point, alarm, monitoring, diagnostic and communications functions.
3. Insulated and gasketed inner doors seal inside to offer additional protection and improve uniformity. Inner door latches are standard. Doors can be easily removed for defrosting.
4. Front access to washable, electrostatic condenser filter for routine condenser air filter cleaning.
5. High impact, recessed casters and leveling feet simplify installation.
6. New generation Panasonic designed Cool Safe compressors are specifically designed for low temperature applications.
7. Multiple access ports permit insertion of independent probes, instrumentation or liquid N<sub>2</sub> or liquid CO<sub>2</sub> back-up injectors.
8. Commercially available HFC-refrigerants are highly efficient, environmentally safe and non-ozone depleting.
9. Remote alarm contacts and optional communication port available; see Accessories.
10. Vacuum relief valve (Available on the MDF-U56VC, MDF-U76VC, and MDF-U76VA)

The Panasonic ergonomic design features a high-security Easy-In/Easy-Out door latch designed for simplicity and safety. Also allows for one handed operation.

## Optional Accessories

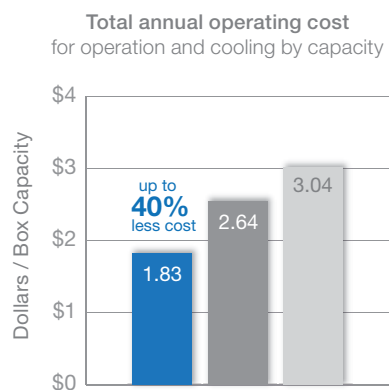
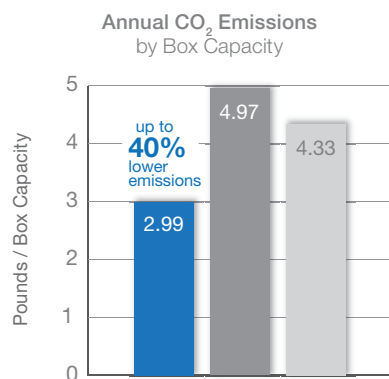


- A. Inventory Rack Systems:** Panasonic freezers are available with a variety of inventory racks to meet specific applications. Freezers can be ordered with full-load inventory systems by selecting one catalog number.
- B. The Digital Temperature Recorder:** The recorder mounts on the cabinet door and is programmable to capture and store non-corruptible data points for downloading to an independent data management system to meet criteria outlined in U.S. FDA 21CFR Part II directives. An independent probe is placed in the interior chamber.
- C. Touch-Screen Display:** A touch-screen digital display with full color graphing capabilities of your complete temperature history is at your fingertips with scrolling and zoom. The touch screen monitor fits on the front panel of your Panasonic equipment either in place of the recorder or at eye level and is designed to work without software. Software is optionally available if you wish to download your data to PC via USB or flash memory for archiving to meet criteria outlined in U.S. FDA 21CFR Part 11 directives.
- D. Circular Recorder, Strip Chart Recorder and Recorder Mounting Bracket**
- E. CO<sub>2</sub> Backup System and LN<sub>2</sub> Backup System**

# Options & Accessories

Water Cooled Condenser	Description
Water Pressure & Temperature	Maximum Water Pressure: 150psig, Minimum Water Pressure Differential: 15psig, Maximum Water Temperature: 30°C
Connections	Typically ½" compression fittings on inlet and outlet but can be customized for customer needs
Required Water Flow Rate (Maximum)	Tower Water: 11.4 liters per minute
Installation	Qualified technician required at time of installation to balance water flow requirements. Efficiencies can be easily obtained regarding water usage by balancing the water flow to optimum usage and freezer efficiency dependent upon the specific site installation

Accessory	Description	Catalog Number
Half Inner Door	Set of two; Field Installed; replaces half inner door; for a four-door configuration order two sets	MDF-5ID-PW (MDF-U53VA), MDF-5ID1-PW (MDFU-56VC), MDF-7ID1-PW (MDF-U76VC / MDF-U76VA)
Digital Temperature Recorder	Auxiliary Data Logger	HAMSTERDT2
Liquid CO <sub>2</sub> Back-Up System	Auxiliary back-up in event of power failure	CVK-UB2(I)-PW
Liquid N <sub>2</sub> Back-Up System	Auxiliary back-up in event of power failure	CVK-UBN2-PW
Chart Recorder	Circular Chart Temperature Recorder, 7 Day	MTR-C954
Chart Paper	6" Diameter, 7 Day Chart	C7100386REV
Replacement Pen, Red / Blue	Felt tip pens, 6 per pack	R252 / R253
Digital Touch Panel Recorder	Programmable digital temperature recorder	FT560SN
Data Logging Software	For use with touch panel recorder	A016
21 CFR Part 11 Compliant Software	For use with touch panel recorder	A026

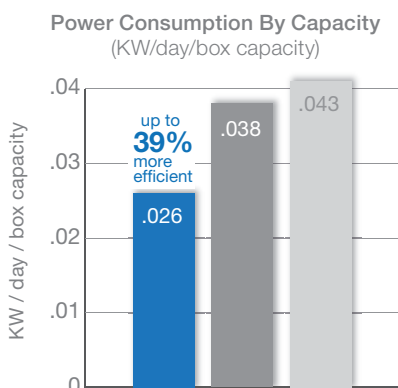


Cost is an average for operating freezer including cost to remove heat from the room generated by the freezer.

## Energy Performance

### Less Emission

VIP® freezers help the environment by **reducing carbon footprint.**



### More Efficient

Panasonic VIP® freezers provide **reduced operational cost** for highly efficient sample storage.

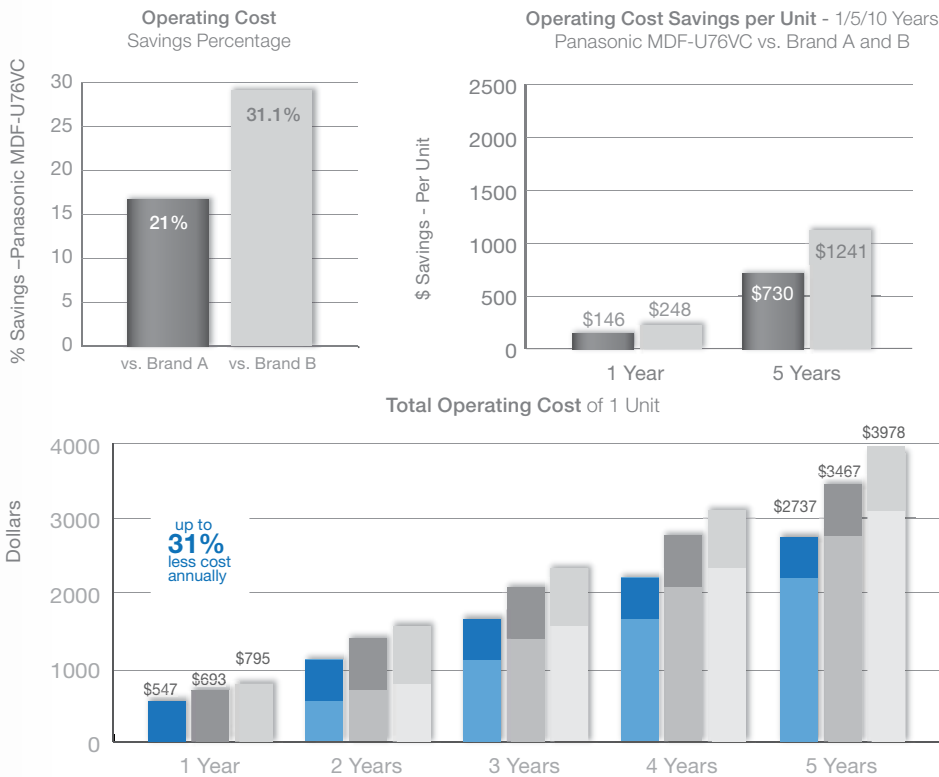
### Operating Cost

Panasonic freezers **emit less heat** into the laboratory, minimizing air conditioning costs.

# Operating Analysis

The superior energy efficiency of Panasonic VIP® Series Ultra-Low Freezers leads to significant annual cost savings. Lower kW usage combined with lower heat rejection leads to savings on freezer operation costs plus associated HVAC costs to remove heat from the room generated by the freezer. With an industry-leading capacity of up to 576 2" boxes, the energy-saving advantages of this efficient Panasonic system extend to lower per-unit storage costs regardless of the preferred inventory configuration.

The concept of High Density Storage is enabled by advances in Panasonic Cool Safe compressor design. The cost per 2" box of interior storage space is significantly lower in a Panasonic ultra-low freezer, generating immediate return on investment based on first costs, operating costs and maintenance costs over time.



## Sample Security, Alarms & Monitoring






The Panasonic microprocessor control system is secure, easy to use and comprehensive. Set-point, alarm parameters and self-diagnostic functions are accessed through a tamper-resistant keypad protocol. Control inputs are managed with convenient push buttons on a unitized, sealed control overlay. The panel is door-mounted and angled for easy access.

- Status alert function uses predictive intelligence to determine if freezer is operating within specifications under existing environmental conditions.
- Panasonic exclusive Ni-MH battery powers control memory and alarm functions during power failure.
- Adjustable compressor start-up delay sequence delays re-start after building power failure; allows facility power to reach equilibrium to permit smooth compressor start-up.
- Digital display defaults to actual chamber temperature. Display mode changes when set-point, alarm parameters, programming and diagnostic functions are performed.
- Alarm indicator lamp glows when freezer is in alarm condition; alarm ringback is factory set for 30 minutes, adjustable in 10 minute increments from 10 to 60 minutes.
- Filter indicator lamp glows when electrostatic filter requires removal for cleaning.
- Audible alarm.
- Door alarm indicator has 2 minute delay until audible alarm activates; delay time is adjustable.
- Set-point entry advances digital display to next position.
- Set-point entry advances digital to next value from 0 to 9.
- Buzzer silence temporarily mutes audible alarm.
- Alarm test verifies readiness of alarm function and Ni-MH battery charge.
- Press to set temperature; set button is also used for other diagnostic functions.
- Adjustable alarm set-points are factory set 10°C above and below set-point. Alarm parameters are adjustable by pressing up or down arrow keys and following the prompt.

# Optimal Capacity & Footprint

The concept of **High Density Storage** is enabled by advances in Panasonic Cool Safe compressor design. The cost per 2" box of interior storage space is significantly lower in a Panasonic VIP® ultra-low freezer, generating immediate return on investment based on first costs, operating costs and maintenance costs over time.

## Maximum Sample Storage Capacity

Description	MDF-U33V-PA	MDF-U53VA-PA	MDF-U56VC-PA	MDF-U76VC-PA	MDF-U76VA-PA
Model Number					
Rack Positions, Standard Configuration	 3 Columns 4 Rows	 4 Columns 4 Rows	 4 Columns 4 Rows	 6 Columns 4 Rows	 6 Columns 4 Rows
Fiberboard Boxes, 2" high (2ml) in Racks	216	352	384	576	576
Sample Vials, 2ml (2" box), 100-Cell Dividers	21,600	35,200	38,400	57,600	57,600
Fiberboard Boxes, 3" high (4ml) in Racks	144	224	256	360	384
Sample Vials, 4ml (3" box), 100-Cell Dividers	14,400	22,400	25,600	38,400	38,400
Standard Microplate with Foil Tape, in Racks	1,298	2,112	2,112	3,456	3,456
Standard Microplate with Cover Lid, in Racks	1,008	1,632	1,632	2,596	2,596
<b>Fully Loaded Inventory Systems</b>	<b>Catalog Number</b>	<b>Catalog Number</b>	<b>Catalog Number</b>	<b>Catalog Number</b>	<b>Catalog Number</b>
<b>Maximum Vial Capacity</b> Includes full quantity of storage racks, boxes and dividers					
Sliding Drawer Inventory Racks 2" High Boxes (2ml Sample) 100-Cell Divider	(6) GRD442A (6) GRD452SS	(8) GRD462SS (8) GRD452SS	(8) GRD443A (8) GRD452SS	(24) GRD462SS	(24) GRD462SS
Sliding Drawer Inventory Racks, 3" High Boxes (4ml Sample) 100-Cell Divider	(12) GRD433A	(8) GRD443A (8) GRD433A	(8) GRD443A (8) GRD452SS	(18) GRD443A (6) GRD433A	(24) GRD443A
<b>Individual Storage Rack System</b>	<b>Catalog Number</b>	<b>Catalog Number</b>	<b>Catalog Number</b>	<b>Catalog Number</b>	<b>Catalog Number</b>
<b>Sliding Drawer Sample Racks for Fiberboard Storage Boxes</b> (Boxes Not Included)					
Sliding Drawer Rack, for 2" high (2ml sample) boxes; holds 6 boxes high x 4 boxes deep		GRF462SS Capacity 8	GRF462SS Capacity 16	GRF462SS Capacity 24	GRF462SS Capacity 24
Sliding Drawer Rack, for 2" high (2ml sample) boxes; holds 5 boxes high x 4 boxes deep	GRD452SS Capacity 6	GRD452SS Capacity 8			
Sliding Drawer Rack, for 2" high (2ml sample) boxes; holds 4 boxes high x 4 boxes deep	GRD442A Capacity 6				
Sliding Drawer Rack, for 3" high (4ml sample) boxes; holds 4 boxes high x 4 boxes deep		GRD443A Capacity 8	GRD443A Capacity 8	GRD443A Capacity 24	GRD443A Capacity 24
Sliding Drawer Rack, for 3" high (4ml sample) boxes; holds 3 boxes high x 4 boxes deep	GRD433A Capacity 12	GRD433A Capacity 8	GRD433A Capacity 8		
<b>Standard Cellular Inventory Racks for Fiberboard Storage Boxes</b> (Boxes Not Included)					
Inventory Rack for 2" (2ml sample) boxes; 6 boxes high x 4 boxes deep		GRF462SS Capacity 8	GRF462SS Capacity 16	GRF462SS Capacity 24	GRF462SS Capacity 24
Inventory Rack for 2" (2ml sample) boxes; 5 boxes high x 4 boxes deep	GRF452SS Capacity 6	GRF452SS Capacity 8			
Inventory Rack for 2" (2ml sample) boxes; 4 boxes high x 4 boxes deep	GRF442A Capacity 6				
Inventory Rack for 3" (4ml sample) boxes; 4 boxes high x 4 boxes deep		GRF443A Capacity 8	GRF443A Capacity 8	GRF443A Capacity 24	GRF443A Capacity 24
Inventory Rack for 3" (4ml sample) boxes; 3 boxes high x 4 boxes deep	GRF433A Capacity 12	GRF433A Capacity 8	GRF433A Capacity 8		

# Technical Specifications

## Description

Model Number	MDF-U33V-PA	MDF-U53VA-PA	MDF-U56VC-PA	MDF-U76VC-PA	MDF-U76VA-PA
Interior Volume	11.8 cu.ft. 333 L	18.3 cu.ft. 519 L	18.6 cu.ft. 526 L	25.7 cu.ft. 728 L	25.7 cu.ft. 728 L
Area Footprint, Nominal	6.25 sq.ft. 0.58 m <sup>2</sup>	7.24 sq.ft. 0.67 m <sup>2</sup>	7.24 sq.ft. 0.67 m <sup>2</sup>	9.51 sq.ft. 0.88 m <sup>2</sup>	9.51 sq.ft. 0.88 m <sup>2</sup>
Electrical, 60 Hz	115V, AC, 15 amp	115V, AC, 20 amp	208/230V, AC, 15 amp	208/230V, AC, 15 amp	115V, AC, 20 amp

## Patented VIP® Construction

Insulated Inner Door	Steel-framed, high impact plastic with foam-in place insulation				
Inner Door Configuration	2	2 (4 optional)	2 (4 optional)	2 (4 optional)	2 (4 optional)
Door Gaskets	Multi-point compression gaskets				
Condenser Filter, Easy Cleaning	Electrostatic filter standard, front accessible for easy access, no tools required				
Rounded Interior Corners	Simplify Cleaning				
Shelf Brackets	Incrementally adjustable				
Casters	High-impact 4 with leveling feet				
Seismic Restraints	Standard; hard connection to facility wall				
Access Ports	Multiple ports allow use of injection tubes, probes, leads, instrumentation				






## Dimensions & Weight

Interior (w x f-b x h)	19.3" x 23.6" x 44.9" 490 x 600 x 1140 mm	24.8" x 23.6" x 54.3" 630 x 600 x 1380 mm	24.8" x 23.6" x 55.1" 630 x 600 x 1400 mm	34.2" x 23.6" x 55.1" 870 x 600 x 1400 mm	34.2" x 23.6" x 55.1" 870 x 600 x 1400 mm
Exterior (w x f-b x h)	26.4" x 34.1" x 73.2" 670 x 870 x 1860 mm	30.3" x 34.4" x 78.3" 770 x 870 x 1990 mm	30.3" x 34.4" x 78.3" 770 x 870 x 1990 mm	39.8" x 34.4" x 78.3" 1010 x 870 x 1990 mm	39.8" x 34.4" x 78.3" 1010 x 870 x 1990 mm
Net Weight, Empty	562 lbs 255 kg	660 lbs 290 kg	672 lbs 305 kg	805 lbs 365 kg	820 lbs 373 kg

## Refrigeration System, HFC Refrigerants, Panasonic Cool Safe High Performance Compressors

High Stage	1 HP	½ HP	1 HP	1 HP	1 HP
Low Stage	¾ HP	1 HP	1½ HP	1½ HP	1½ HP
Voltage Booster, Built-In	Not Available	Not Available	Standard	Standard	Not Applicable
Sound Abatement	Standard	Standard	Standard	Standard	Standard

## Refrigeration System, HFC Refrigerants, Panasonic Cool Safe High Performance Compressors

Power, AC, 1 Phase	115V	115V	208-230V	208-230V	115V
Recommended Breaker, Dedicated	15 amp	20 amp	15 amp	15 amp	20 amp
NEMA Plug / Receptacle	5-15P/5-15R 	5-20P/5-20R 	6-15P/6-15R 	6-15P/6-15R 	5-20P/5-20R 



**PRO Series**  
MDF-U7486SC-PA



MDF-U5486SC-PA



# Insulated for Reduced **Carbon Footprint**

What makes PRO Series freezers so efficient?

---

*Thinking Green:* Environmentally friendly refrigerants,  
RoHS compliant and low-noise operation.

---

# PRO Series -86°C Freezer Performance Advantages

Panasonic's conventionally insulated PRO Series ultra-low freezers provide energy savings while minimizing carbon footprint throughout the laboratory without compromising performance. It also maintains the internal temperatures as low as -86°C. All models use Panasonic-designed compressors for ultra-low temperature applications. Manufactured with foam-in-place insulation to maximize interior temperature uniformity, they are ideally suited for use in hospitals and laboratories for long-term preservation and storage of specimens and components, as well as material testing.



The Panasonic ergonomic design features a high-security Easy-In/Easy-Out door latch designed for simplicity and safety. The outer door latch closes smoothly with a single-hand action over a cam action bearing. The outer door can be secured with an independent padlock provided by customer.



Inner Door Latches provide single-hand access.

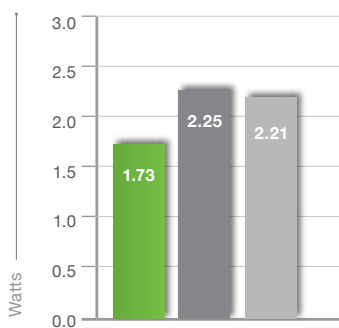


1. The insulation used in Panasonic's PRO Series ultra-low temperature freezers is high density rigid, foamed-in-place polyurethane. This design prevents the insulation layers from distortion and cracking that might occur due to temperature differences inside and out.
2. Ergonomic one handed Easy-In / Easy Out outer door latch will accept a padlock.
3. Microprocessor-based controller.
4. Remote alarm contacts can be connected to independent monitoring system.
5. Insulated sealing inner doors help maintain interior temperature during routine openings. Two inner doors are standard.
6. "Eagle Beak" inner door latches.
7. Easy front access to washable, electrostatic condenser filter for routine condenser air filter cleaning.
8. High impact recessed casters simplify installation.
9. Panasonic designed compressors specifically designed for low temperature use offer maximum reliability.
10. Multiple access ports permit independent probes, instrumentation or liquid CO<sub>2</sub> back-up system injection.
11. Vacuum release port.

Panasonic microprocessor-based controller includes comprehensive set-point, alarm, monitoring and diagnostic functions.

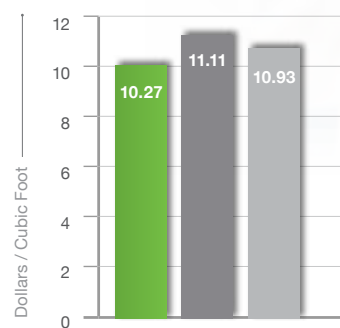
# PRO Series Comparative Energy Performance

Power Consumption by Capacity  
(KW/day/box Efficiency)



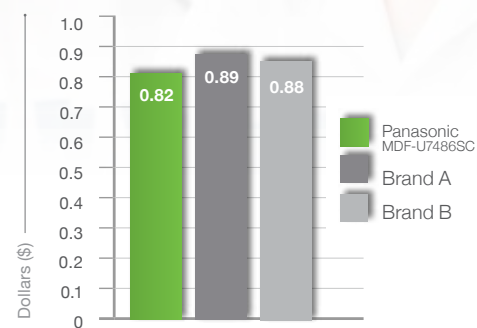
Panasonic freezers provide reduced operational cost for highly efficient sample storage\*.

Total Annual Electrical Cost  
per Box Capacity



Panasonic freezers emit less heat into the laboratory, minimizing air conditioning costs\*.

Annual CO<sub>2</sub> Emissions  
by Box Capacity



Panasonic freezers help the environment by reducing carbon footprint\*.

\*Based on internal performance data. Tested in 25°C ambient environment. Freezer cycling at -80°C. Cabinet volume, 25 cu. ft. Average cabinet temperature based on temperature mapping (15 thermocouples).

## Technical Specifications

### Description

Model Number	MDF-U5486SC-PA	MDF-U7486SC-PA
--------------	----------------	----------------

### Refrigeration System, HFC Refrigerants, Cool Safe High Performance Compressors

High Stage	1100 W	1100 W
Low Stage	1100 W	1100 W
Voltage Booster, Built-In	Standard	Standard
Sound Abatement	Standard (< 51dB(A))	Standard (< 51dB(A))

### Construction

Shelf	Stainless steel, adjustable 3 shelves
Access Port	.066" (17 mm) diameter,
Refrigerants	HFC refrigerants
Alarm	High/low temp, Power failure, Filter check, Battery check
Remote Alarm Contact	N.O. and N.C., allowable contact capacity: DC30V, 2A



## Cryogenic Freezer MDF-C2156VANC-PA

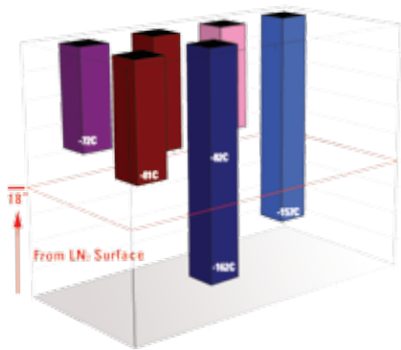


# Temperature Uniformity for Long-term Storage

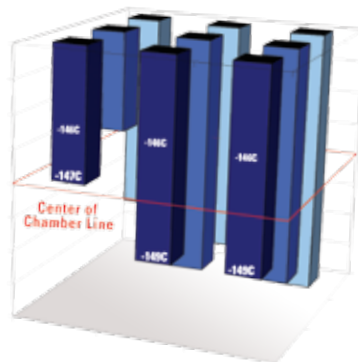
What keeps our Cryogenic freezer so stable?

Panasonic Cryogenic freezer maintains uniform temperature of  $-150^{\circ}\text{C}$  for stable, long-term preservation of cells and tissue. Panasonic VIP® PLUS Cryogenic Series  $-150^{\circ}\text{C}$  ultra-low temperature freezer achieves more storage capacity than a conventionally insulated freezer without increasing footprint.

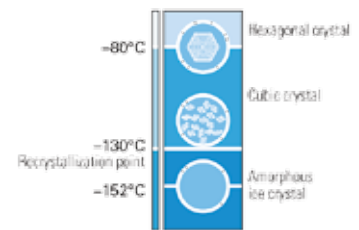
Liquid Nitrogen freezer ( Vapor Phase)



Panasonic MDF-C215VANC  
mechanically refrigerated cryogenic freezer



Recrystallization Mechanism



### Uniform Cryogenic Temperatures

$\pm 5^{\circ}\text{C}$  uniformity\* in a mechanically refrigerated design promotes better top-to-bottom uniformity than liquid nitrogen vapor-phase storage, without the concern of cross-contamination often associated with liquid nitrogen (liquid phase storage).

Based on internal validation data tested at  $-150^{\circ}\text{C}$  setpoint, in an empty chamber with  $23^{\circ}\text{C}$  ambient temperature.

Comparison of temperature distribution in a liquid nitrogen freezer (vapor phase) and Panasonic's MDF-C2156VANC mechanically refrigerated cryogenic freezer. Graph shows temperatures at different locations within the chamber. This data demonstrates that 100% of the MDF-C2156VANC-PA storage space maintains uniform storage temperatures safely below  $-130^{\circ}\text{C}$ , while temperature in  $\text{LN}_2$  vapor system is dependent on storage location.

\* The data may vary depending on the use, circumstances and optional accessories. Validation documents can be provided for each serial number with an additional fee.

# Product Features

- Patented revolutionary vacuum insulation cabinet construction reduces wall thickness and achieves more storage capacity than a conventionally insulated freezer without increasing the footprint.
- The newly developed refrigeration system and the freezer structure offer a quiet environment.
- Achieves 50% higher energy conservation than conventionally insulated model.
- The temperature inside the freezer can be set and monitored easily by means of precise microprocessor temperature control with an LCD graphic display. The controller utilizes a platinum RTD sensor which is extremely precise and durable.
- Status Alert monitors ambient and system conditions continuously and notifies of any abnormalities before a problem can occur. In case of power failure or an irregular rise in temperature, a rechargeable, high capacity battery-operated indicator lamp and alarm will be activated.
- Graphic LCD panel with pop-up menu function on control panel provides a precise visual display and allows intuitive operation.
- VIP® PLUS offers superior performance in insulating properties providing unsurpassed uniformity in the chamber- top to bottom, side to side, front to back.
- The MDF-C2156VANC is equipped with LN<sub>2</sub> backup system as standard to prepare for any contingency. The built-in LN<sub>2</sub> back-up system is self activated if a power outage occurs. This feature helps ensure that the contents will be protected in the event of any power failure.



# Technical Specifications

Description	
Model Number	MDF-C2156VANC-PA
Temperature Range	-125°C to -150°C (1°C increments)
Max Cooling Performance	-150°C (ambient temp 30°C)
Uniformity	±7°C at -150°C (empty chamber, ambient temp 24°C)
Capacity	8.2 cu.ft. 231 liters
Exterior Dimensions (w x f-b x h)	68.1" x 30.1" x 39.8" 1730 x 765 x 1010 mm
Interior Dimensions (w x f-b x h)	29.9" x 19.5" x 24.2" 760 x 495 x 615 mm
Net Weight	Approx.715lbs (325kg)
Access Port	40mm diameter, 1 location
Compressor	Hermetic type, 1100W (high stage side) 1100W (low stage side)
Refrigerants	HFC Free
Alarm	High/Low temperature, power failure, filter check, self diagnosis, lid check
Remote Alarm Contact	Allowable contact capacity DC 30V, 2A
Power Requirements	208V-230V, 1 phase, 60Hz NEMA 6-15R (15 Amp) Receptacle

## Chest Freezers MDF-794C-PA



MDF-C8V1-PA



# Space-Saving Stability

What makes Chest freezers compact yet equally effective?

All ultra-low chest models use Panasonic-designed compressors for ultra-low temperature applications. Manufactured with foamed-in-place insulation, they are ideally suited for use in hospitals and laboratories for long-term preservation and storage of specimens and components, as well as materials testing.

## Product Features

### Microprocessor Controls

Comprehensive set-point, alarm, monitoring and diagnostic functions based on Panasonic-built microprocessor controller with digital display of all input/output functions.

### Panasonic-Designed Refrigeration and Compressors

Designed by Panasonic specifically for rugged ultra-low temperature applications in a laboratory environment; HCFC-free refrigerants only.

High-performance refrigeration system with foam-in-place cabinet insulation maximizes interior temperature uniformity and protects against fluctuating ambient temperatures.

### High Density Blown-In Foam Insulation and Heated Gasket Seal

In ultra-low temperature freezers, effective insulation is critical.

- The insulation used in Panasonic ultra-low freezers is two layers of rigid, foamed-in-place polyurethane, placed together to form a double-insulation wall.

- This design prevents the insulation layers from distortion and cracking that might occur due to temperature differences inside and out.
- Frost and icing on the top edges and gaskets are prevented by utilization of a heated mullion, which recycles heat from the refrigeration system without affecting chamber uniformity.

### Built-In Temperature & Power Failure Alarms (Lamp/Buzzer)

In case of power failure or an irregular rise in temperature, a high capacity, rechargeable battery-operated indicator lamp and alarm will be activated.

Optional CO<sub>2</sub> and LN<sub>2</sub> back-up systems are available and are self-activated when a power outage occurs. This equipment helps ensure that the contents will be protected in the event of any power failure or mechanical trouble.

# Technical Specifications

Description	
Model Number	MDF-C8V1-PA
Temperature Range	-60°C to -80°C (-1°C increments)
Max Cooling Performance	-80°C (Ambient Temp 30°C)
Effective Capacity	3.0 cu.ft. (85 liters)
Exterior Dimensions (w x f-b x h)	21.6" x 27.0" x 37.2" / 550 x 685 x 945 mm
Interior Dimensions (w x f-b x h)	15.9" x 19.3" x 16.9" / 405 x 490 x 425 mm
Net Weight	Approx. 148lbs (67kg)
Storage Capacity	2" Box: 42 pcs. (SCR-072 x 6 racks) 3" Box: 30 pcs
Outer Door / Inner Door	Outer Lid: 1 piece; Inner Lid: 1 piece
Insulation	VIP® PLUS rigid polyurethane foam (HC)
Cooling System	115V / 60Hz / 1 Phase NEMA 5-15P Plug
Compressor	Rotary Type
Refrigerant	HFC
Evaporator	Tube on Sheet Type
Alarm System	High / Low Temp. Alarm (±5°C to ±20°C); Power Failure Alarm; Remote Alarm Contact: DC30C, 2A (N.O./N.C.)

Description		
Model Number	MDF-594C-PA	MDF-794C-PA
Temperature Range	-20°C to -86°C	
Cabinet Insulation	Rigid polyurethane foamed-in place	
Exterior Dimensions (w x f-b x h)	79.1" x 30.3" x 42.1" / 2010 x 770 x 1070 mm	101.2" x 30.3" x 42.1" / 2570 x 770 x 1070 mm
Interior Dimensions (w x f-b x h)	50.3" x 19.7" x 30" / 1280 x 500 x 762 mm	72.4" x 19.7" x 30" / 1840 x 500 x 762 mm
Effective Capacity	19.2 cu.ft. (487 Liters)	24.8 cu.ft. (701 Liters)
Exterior Cabinet	Painted Steel	
Interior Cabinet	Stainless Steel	
Inner Sub-Lid	3	4
Net Weight (approx.)	672lbs (303kg)	827lbs (347kg)
Compressor (high stage)	Hermetic type 750W	Hermetic type 1100W
Compressor (low stage)	Hermetic type 750W	Hermetic type 1100W
Evaporator (high stage)	Cascade condenser	
Evaporator (low stage)	Tube on sheet (shared with interior)	
Condenser (high stage)	Fine and tube type	
Condenser (low stage)	Shell and tube type	
Temperature Control	Microprocessor: Keypad input; Temp. input range: -20°C to -86°C (1C increment); Set value memory: nonvolatile memory	
Temperature Display	Digital Display	
Sensor	Platinum Resistance (Pt. 100)	
Alarm System	Selectable high temp. alarm (+10°C & +15°C from set point), Power Failure alarm, Filter check lamp, Remote alarm contact	
Power Requirement	208 / 220V / 60hz built-in voltage booster	

**Thinking Green:** Environmentally friendly refrigerants, RoHS compliant and low-noise operation.

# Product Service and Uptime Assurance

Your Panasonic experience with product safety, reliability and performance is supported by a multi-national network of factory-trained service professionals located in all markets we serve. The serviceability of Panasonic Healthcare products is inherent to all Panasonic product designs and originates in our research and development department. Combined with customer feedback and detailed documentation of field performance, Panasonic product developers incorporate real-world applications into product systems and operating parameters.

From ambient temperature and humidity fluctuations to broad electrical voltage tolerances, Panasonic Healthcare products are expected to withstand demands in the newest of facilities as well as older labs. Central to our product development efforts is the concept of “predictive performance”, a matrix of electronics and control functions that sense component operation in real time, compare performance to accepted norms and report exceptions long before normal wear and tear causes an interruption. As a result, many Panasonic Healthcare products include self-diagnostics that permit authorized service technicians to determine how and when service calls are required.

As Panasonic continues to apply improvements in compressor and electronics to all products, life cycle costs can be extended and downtime minimized. Panasonic service specialists are trained to perform remote and on-site diagnostics, repair and replace worn components and offer preventative maintenance programs suitable to your needs and budget. Panasonic Healthcare also offers training to selected facility biomedical engineers and service staff for authorized in-warranty and post-warranty repairs.

Because Panasonic Healthcare products are sold and serviced worldwide, products acquired in one country under grant or facility-sharing programs are easily supported if moved to facilities in the next city or around the world.



## Validation Services

Panasonic offers a wide range of high-quality validation services for all our equipment. These services include on-site validation, custom validation support packages, factory acceptance testing, and NIST traceable calibration.

Choosing Panasonic as an equipment supplier and validation consultant can greatly reduce the time and cost involved with new equipment.

### Unique Services Panasonic Offers:

- On-site consultation
- Specialized documentation for each individual unit
- Customized testing procedures based on personalized customer requirements
- No charge for documentation when service is purchased
- Quality documents complying with 21 CFR traceable standards
- Free archiving of unexecuted testing protocols

### Pre-Delivery and On-Site Services

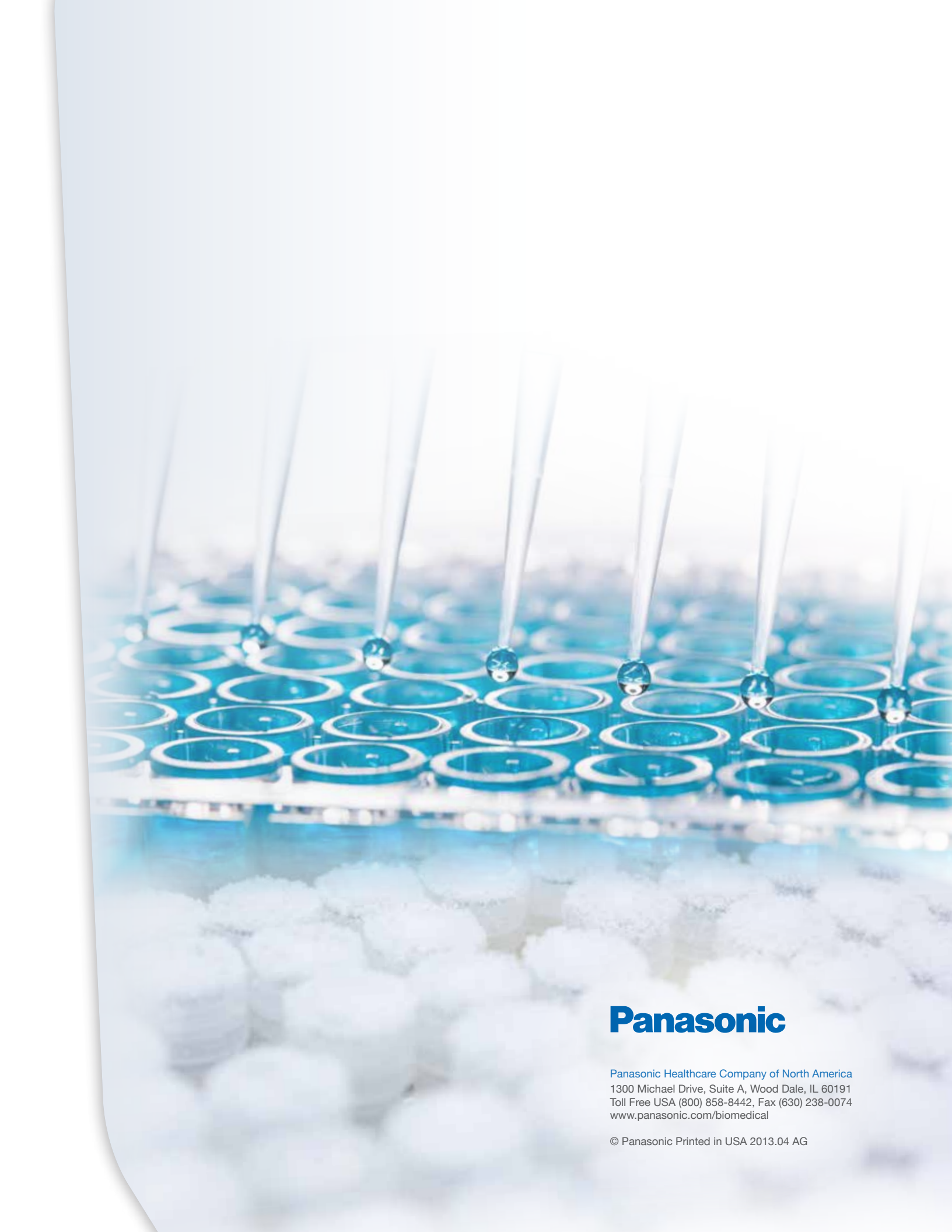
Pre-delivery services include factory acceptance testing, calibration, and temperature mapping. On-site services include installation qualification, operational qualification, performance qualification, calibration and temperature mapping.

### Panasonic Connect

Panasonic's customer-driven service program guarantees local attention from qualified Panasonic service representatives, whenever and wherever you need it.

- New Unit Installation and Training
- Preventative Maintenance
- Warranty and Non-Warranty Repairs
- Calibration/Validation Services
- Refurbishment and Reconditioning
- Customized Service and Warranty Programs
- Loaner Units When Needed
- In-Stock Parts for Immediate Delivery

Prices and conditions may vary by market.



# Panasonic

Panasonic Healthcare Company of North America  
1300 Michael Drive, Suite A, Wood Dale, IL 60191  
Toll Free USA (800) 858-8442, Fax (630) 238-0074  
[www.panasonic.com/biomedical](http://www.panasonic.com/biomedical)

© Panasonic Printed in USA 2013.04 AG