

# Panasonic

Panasonic... the new name for SANYO

## VIP Series -86°C Ultra-low Freezers

**MDF-U33V / MDF-U55V / MDF-U74V / MDF-U76V**

perfect balance between performance and efficiency



**Securing samples,  
changing lives**

- Industry leading -86°C preservation for uniformity, reliability and reduced footprint.
- New Panasonic Cool Safe refrigeration system designed to deliver energy-saving, high performance cooling.
- Secure storage for valuable research and clinical samples.

# Advanced solutions for biological safety, sample security,

Panasonic VIP ultra-low freezers represent the industry's most complete combination of refrigeration, control, alarm, monitoring and accessibility for product safety at  $-86^{\circ}\text{C}$ . Ideal for sample storage in repositories, hospitals, clinics and medical research facilities, the VIP Series is designed to reduce energy consumption.



## VIP Series ULT Freezers

Panasonic VIP Series ultra-low freezers maintain internal temperatures as low as  $-86^{\circ}\text{C}$ . All models use Panasonic uniquely designed compressors for ultra-low temperature applications. Manufactured with space-saving VIP vacuum insulation panels, they are ideally suited for use in laboratories and hospitals for long-term preservation. Whatever your preservation needs are, Panasonic provides the right equipment for the right application.

### Enhanced Performance

Panasonic VIP Series upright freezers offer advanced cabinet design, electronics, refrigeration and critical components for enhanced product security, better performance and cost effective operation at  $-86^{\circ}\text{C}$ .

The Panasonic cascade refrigeration system uses Panasonic designed compressors specific to ultra-low applications for high-performance, reliability and peace of mind. Refrigeration components are carefully selected and

matched for optimum operation under demanding laboratory environments.

- Increased cooling capacity improves temperature recovery after door openings.
- The evaporator coil surrounding the chamber interior is strategically designed to provide optimum temperature uniformity from top-to-bottom.
- Quieter operation is achieved through condenser fan blade design, noise reduction insulation, anti-vibration systems and internal compressor noise reduction.

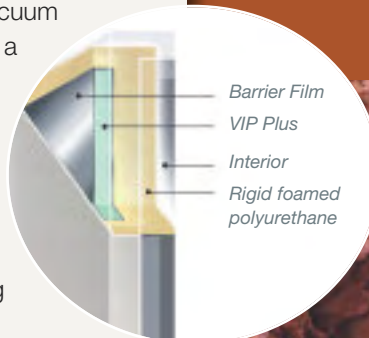


# performance and energy savings

- Voltage boost and surge protection devices provide dependable operation over wider power ranges and environmental conditions.
- The rear ventilation cover combines with the aerodynamically designed and positioned components in the refrigeration compartment to provide superior airflow, drastically reducing the load on the freezer and contributing to improved durability.

## Patented VIP Vacuum Insulation Panel

The combination of multiple high-performance vacuum panels with high-density foam insulation provides a reduced wall thickness for maximum interior volume. Panasonic VIP ULT freezers provide up to 30% more storage capacity than a conventionally insulated freezer without increasing the footprint. The MDF-U76V features next generation VIP PLUS vacuum panels for increased energy efficiency and cooling performance.



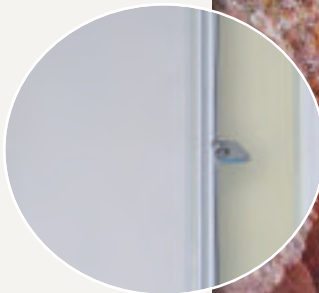
## Panasonic Heat Exchanger Design Increases Energy Efficiency<sup>1</sup>

Every traditional ultra-low freezer design utilizes a heat exchanger. By increasing the efficiency of the heat exchanger through an improved new design incorporating more surface area contact at critical points in the refrigeration system, we are able to improve the overall efficiency and reduce compressor running time. This along with other improvements to the heat exchanger translates to a substantial increase in energy efficiency.

## Inner Doors Improve Uniformity

High-strength, sealing, insulated inner doors help minimize change in interior temperatures during routine door openings and ensure maximum chamber uniformity.

Easy-In/Easy-Out Panasonic inner door latches seal firmly against the cabinet with one hand operation.



## Microprocessor Control

Comprehensive setpoint, alarm, monitoring and diagnostic functions supervised by Panasonic-built microprocessor controller with digital display of all functions.

A Status Alert feature constantly monitors ambient and system conditions and notifies the user of any abnormalities before a problem occurs.

<sup>1</sup> Applies to models MDF-U55V, MDF-U76V

perfect balance  
between performance  
and efficiency



# Medical device certification

Panasonic has become one of the first companies in our industry to introduce Medical Device certification to underline our strong commitment to product design, quality and safety.

In 2010, Panasonic was awarded certification by TÜV-Süd to manufacture blood bank refrigerators, freezers and incubators as Class IIa Medical Devices according to the directives 93/42/EEC and 2007/47/EC. At the same time our quality systems were updated to the latest ISO9001 and ISO13485 standards.

The use of refrigeration products and cell culture

incubators for the preservation and cultivation of cells and tissues for human use in transfusion, regenerative medicine and cell therapy is set to expand.

In anticipation of these developing technologies and possible changes in the regulatory landscape, Panasonic began to introduce Medical Device certified products in 2011. The first models to be certified include the:

- MDF-U55V, MDF-U74V and MDF-U700VX ultra-low freezers.
- MBR-305GR Blood bank refrigerator.
- MCO-19AIC CO<sub>2</sub> Incubator with rapid Hydrogen peroxide vapour decontamination option.



Panasonic Healthcare Co., Ltd, Gunma Factory is certified for:  
**Quality management system: ISO9001**  
**Medical devices quality management system: ISO13485**

## VIP Series Features, Benefits and Performance Advantages

What It Is	What It Does	Why It Is Important
Energy-Efficient Refrigeration	Microprocessor control over all cooling functions delivers cooling on demand.	Optimizes run time to minimize energy consumption.
Panasonic Cool Safe Compressors	Specific to ultra-low applications. Reduces compressor temperatures internally and externally.	Increases compressor longevity and reliability. Reduces heat output and lowers HVAC loads in room.
Environmentally Friendly Refrigerants	Eliminates potential for ozone depletion while maintaining cooling capacity.	Complies with the Montreal Protocol and IEC for safety and efficiency.
Integrated Control Center	Combines all control, alarm, monitoring and data management functions into a single system.	High visibility LED display provides a convenient user interface to setpoints, alarm parameters, internal diagnostics, communications and security.
Structural Enhancement	Integrates inventory management, access and site installation.	Cabinet design features include high-strength, lockable door latches and doors, latchable inner doors, adjustable shelves and locking casters to simplify operation and installation, and to satisfy local codes.
Compliant to International Standards	Assures quality standards, safety and performance criteria are met or exceeded.	Essential for compliance with CE, RoHS, and other third-party standards and recommended practices.
Ergonomic Design	One-handed outer and inner door latches and quiet-running compressors improve convenience, minimize sound.	Easy access to controls, displays and inventory racks, while low noise operation permits a wider choice of installation locations.

## VIP Series design



### Cabinet Construction

The cabinet features a patented Panasonic VIP vacuum insulated panel design which optimizes interior volume in the smallest footprint possible. The high-tech, composite thin-wall cellular construction combines the vacuum panel insulation with polyurethane foam for structural stability and high insulation values to optimize ultra-low temperature performance and minimize energy use.

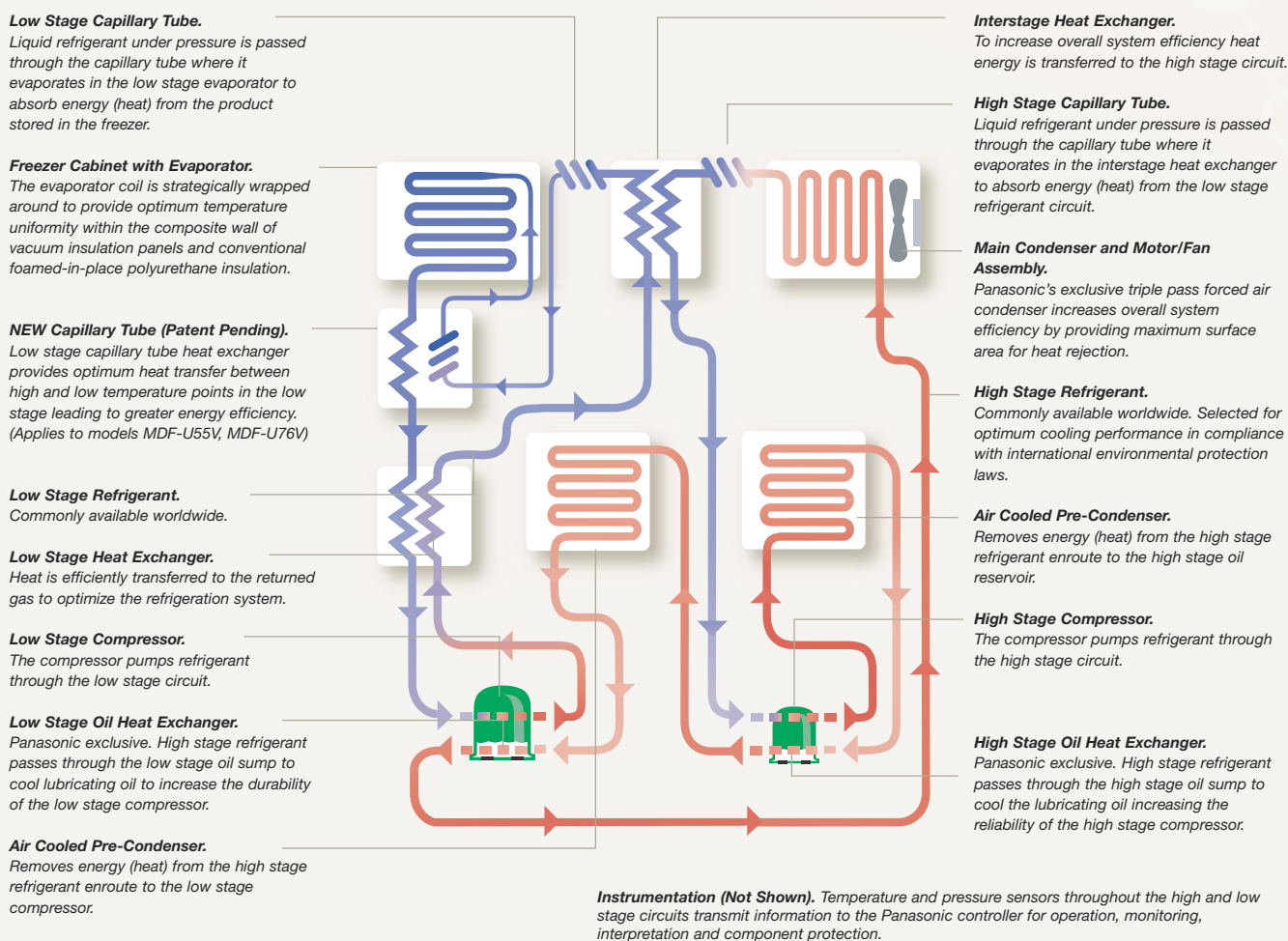
- The outer door closes uniformly against multi-point gaskets to form a tight seal and prevent moisture migration leading to frost or ice build-up.
- Ice build-up is further prevented by a heated outer door gasket and a 'hot-line' circulating hot refrigerant gas around the door frame.
- An Easy-In/Easy-Out outer door latch permits one-handed operation.
- A universal keyed door lock prevents the outer door from opening. There is also provision to use a conventional padlock.
- Two independent and foamed-in-place insulated inner doors minimize exposure during routine door openings, and are easily removed for defrosting.
- The interior freezer compartment is sub-divided by adjustable shelves to accommodate standard inventory racks (see Options). Shelf brackets are incrementally adjustable.
- Optional half-inner door accessories are available for field-installation. For a four-door configuration order two sets of half inner doors.
- Rounded interior corners aid cleaning when required.
- Multiple access ports permit use of back-up injection tubes, probes, leads or instrumentation.



# Energy efficient cascade cooling system

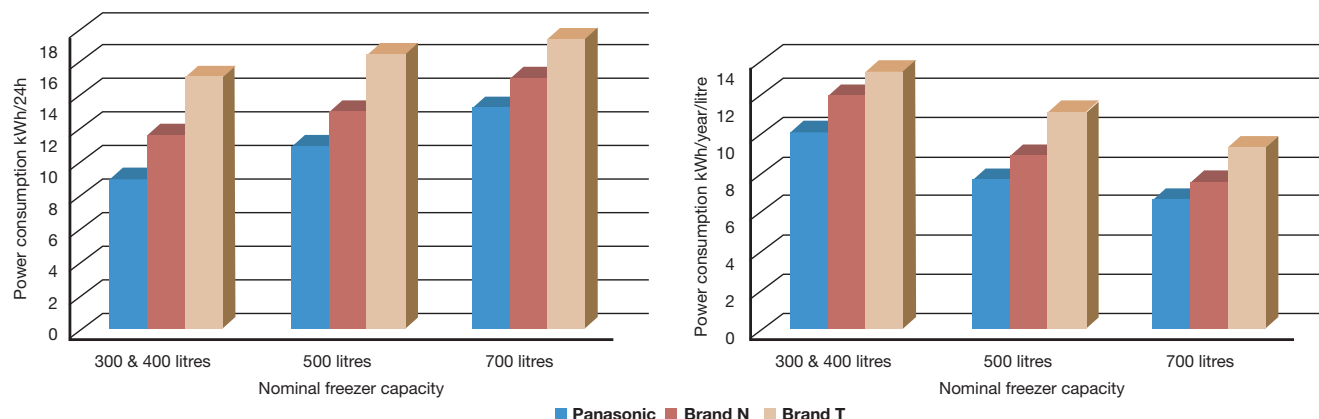
One of the most important concepts in designing a superior energy saving ultra-low freezer is how efficiently heat is exchanged between the high and low stage circuits. By providing optimum heat exchange pathways in the design, it not only increases efficiency of the system, leading to greater energy savings, but it will also have an effect of reducing stress on the compressors, leading to greater overall system reliability. Panasonic's new capillary tube heat exchanger is but the latest step in increasing the available heat exchange areas in the system. This patent pending innovation significantly increases the efficiency of the entire system.

The end result is less energy consumption, while improving the overall efficiency of the freezer.



## Power Consumption Comparison

Space-saving vacuum insulation panel ultra-low upright freezers



Published data. Freezer set-point -80°C, ambient temperature of 20-25°C, 50Hz power supply. Power consumption will depend on loading and operating conditions.

## Eco Friendly Technology – helping to reduce running costs and environmental impact.

Panasonic space-saving VIP ultra-low freezers offer 'best in class' energy efficiency, whilst delivering exceptional cooling performance and durability for storing valuable research and clinical samples.

- A microprocessor controller oversees the refrigeration system to regulate cooling cycles, reducing energy consumption.
- Energy efficient Panasonic Cool Safe compressor technology for lower internal compressor

temperatures and reduced air-conditioning loads.

- A new low stage capillary tube heat exchanger provides optimum heat transfer leading to greater operating efficiency (Models MDF-U55V, MDF-U76V).
- Advanced cabinet insulation technology for increased energy efficiency and cooling performance.
- Components are compliant with the RoHS directive on the use of hazardous substances in electrical and electronic equipment.
- Commercially available, non-HCFC refrigerants.
- Integrated noise reduction features.

## Water Cooled Option

Now a water cooled condenser option is available for facilities equipped with chilled recirculating water systems. This option utilizes the cascade refrigeration design to reuse energy produced by an ultra-low freezer while delivering additional energy-savings and high performance cooling. Ideal for material storage in repositories, hospitals, clinics and medical research facilities, the water cooled system provides a range of benefits.

- Energy efficiency
- Cost saving
- Re-use of energy
- Faster recovery time
- Improved sample security

### How It Works

#### Phase 1

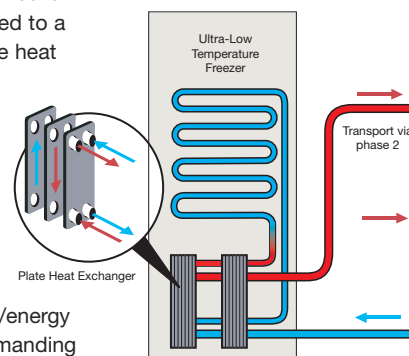
Heat generated from the freezer compartment is transferred to a water circuit using a plate heat exchanger.

#### Phase 2

Transport the absorbed heat/energy from the freezer.

#### Phase 3

Possibility to re-use heat/energy for other heat/energy demanding systems.



# VIP Series features

Multiple access ports permit insertion of independent probes, instrumentation or liquid Nitrogen or liquid CO<sub>2</sub> back-up injectors.

Vacuum relief valve (Available on MDF-U76V)

Remote alarm contacts and optional communication port available; see Options.

Universal keyed door lock offers added security.

Temperature recorder (optional) mounts easily in pre-engineered mounting space.

High impact, recessed casters and leveling feet simplify installation.

Panasonic designed Cool Safe compressors are specifically designed for ultra-low temperature applications.

Commercially available HFC refrigerants are highly efficient, environmentally safe and non-ozone depleting.

Front access to washable, electrostatic condenser air filter for routine cleaning.

Easy-In/Easy-Out door latch for smooth, one-handed operation, positive seal against gasket. Provision for padlock.

Insulated and gasketed inner doors seal inside to offer additional protection and uniformity. Inner door latches are standard.

## Integrated Microprocessor Control System

The Panasonic microprocessor control system is secure, easy to use and comprehensive. Setpoint, alarm parameters and self-diagnostic functions are accessed through a tamper-resistant keypad. The control panel is door-mounted and angled for easy access.

Compressor start-up delay sequence delays re-start after building power failure; allows facility power to reach equilibrium to permit smooth freezer start-up.

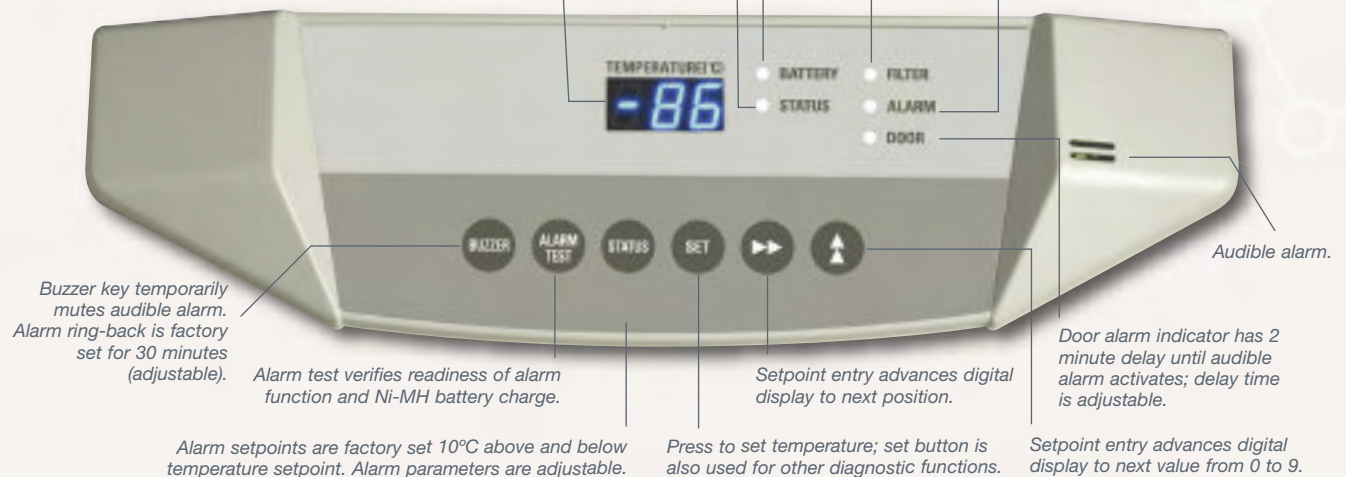
Status alert function uses predictive intelligence to determine if freezer is operating within specifications under existing environmental conditions.

Digital display defaults to actual chamber temperature. Display mode changes when setpoint, alarm parameters, programming and diagnostic functions are performed.

Panasonic Ni-MH battery powers control memory and alarm functions during power failure.

Filter indicator lamp glows when electrostatic filter requires removal for cleaning.

Alarm indicator lamp glows when freezer is in alarm condition.







# Efficient sample management

Organizing the space in your freezer can help to make your work more efficient. Both cost and time savings can result from good sample management. In addition to improving efficiency, choosing the right inventory system will also improve sample handling and reduce the risk of sample deterioration.

An organized freezer will provide you with:

- Time savings - locate, retrieve and replace your samples easily and quickly.
- Cost savings - organized samples and cell lines can help to reduce the number of freezers.
- Added sample security and energy savings - samples are better protected and are less exposed to ambient temperatures as door opening times can be reduced when placing and retrieving samples, which also reduces energy use.

Panasonic's racks are made of stainless steel or anodized aluminum. The aluminum racks are very light, yet sturdy and corrosion free.

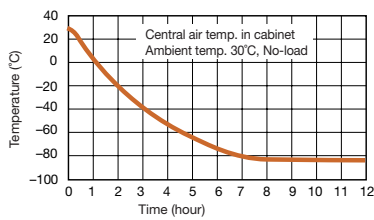
HDR Drawer Systems					
<ul style="list-style-type: none"> <li>● A flexible storage solution to accommodate different sized sample containers.</li> <li>● Allocate drawers to individual users, experiments or sample batches.</li> <li>● Racks are available with a choice of 2, 3 or 4 pull-out drawers per rack.</li> </ul>					
					
				HDR-218	HDR-222
Freezer model	Rack / quantity	Drawer dimensions (HxWxD)	Drawers / rack	Racks / freezer	Drawers / freezer
MDF-U33V	8 x HDR-32/2	105 x 200 x 555mm	2	8	16
	8 x HDR-32	77 x 200 x 555mm	3	8	24
	6 x HDR-32/4126WD	100 x 145 x 555mm	4	6	24
MDF-U55V	4 x HDR-218 + 4 x HDR-220	125 x 270 x 560mm / 145 x 270 x 560mm	2	8	16
	4 x HDR-222 + 4 x HDR-224	85 x 270 x 560mm / 100 x 270 x 560mm	3	8	24
MDF-U74V / MDF-U76V	4 x HDR-214H + 4 x HDR-216H	135 x 405 x 555mm / 155 x 405 x 555mm	2	8	16
	6 x HDR-218 + 6 x HDR-220	125 x 270 x 560mm / 145 x 270 x 560mm	2	12	24
	6 x HDR-222 + 6 x HDR-224	85 x 270 x 560mm / 100 x 270 x 560mm	3	12	36
	4 x HDR-214/2x2 + 4 x HDR-216/2/2	135 x 190 x 555mm / 155 x 190 x 555mm	4	8	32

    						
All boxes are available in polypropylene (P) or cardboard (A) as 2 inch (1) or 3 inch (2)						
Upright freezer model	Vertical rack type	Box type	Rack/quantity Wesbart (aluminium)	Total boxes	Rack/quantity Tenak (stainless steel)	Total boxes
MDF-U33V-PE	with trays	(P) A1	6 x HCS-32-4584/143 + 6 x HCS-32-5584/143	216	6 x TE-HCS-244COM + 6 x TE-HCS-254COM	216
	side opening	(P) A1	6 x NIR-216U + 6 x NIR-220U	216	6 x TE-NIR-244CLA + 6 x TE-NIR-254CLA	216
	with trays	(P) A2	12 x HCS-32-3804/143	144	12 x TE-HCS-334COM	144
	side opening	(P) A2	12 x NIR-312U	144	12 x TE-NIR-334CLA	144
MDF-U55V	with trays	(P) A1	4 x HCS-519	352		
	with trays	(P) A1	8 x HCS-5584 + 8 x HCS-6564	352	8 x TE-HCS-254COM + 8 x TE-HCS-264COM	352
	side opening	(P) A1	8 x NIR-220U + 8 x NIR-224U	352	8 x TE-NIR-254CLA + 8 x TE-NIR-264CLA	352
	with trays	(P) A2	8 x HCS-4804 + 8 x HCS-3804	224	8 x TE-HCS-334COM + 8 x TE-HCS-344COM	224
MDF-U74V MDF-U76V	side opening	(P) A2	8 x NIR-316U + 8 x NIR-312U	224	8 x TE-NIR-334CLA + 8 x TE-NIR-344CLA	224
	with trays	(P) A1	6 x HCS-519	528		
	with trays	(P) A1	12 x HCS-5584 + 12 x HCS-6564	528	12 x TE-HCS-254COM + 12 x TE-HCS-264COM	528
	side opening	(P) A1	12 x NIR-220U + 12 x NIR-224U	528	12 x TE-NIR-254CLA + 12 x TE-NIR-264CLA	528
	with trays	(P) A2	12 x HCS-4804 + 12 x HCS-3804	336	24 x TE-HCS-344COM	384
	side opening	(P) A2	12 x NIR-316U + 12 x NIR-312U	336	24 x TE-NIR-344CLA	384

# Performance data

## Performance data MDF-U33V

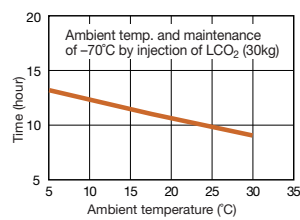
Pull-down characteristics



Pull-up characteristics during power failure

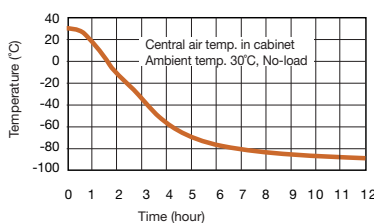


CO<sub>2</sub> backup system operation characteristics

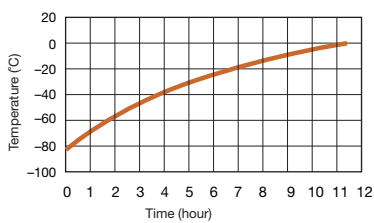


## Performance data MDF-U55V

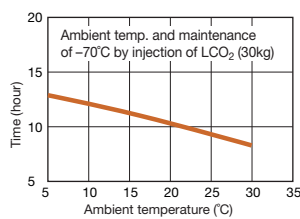
Pull-down characteristics



Pull-up characteristics during power failure

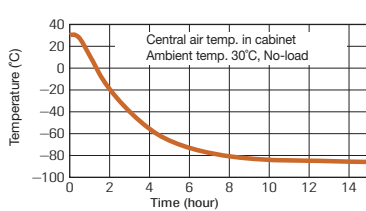


CO<sub>2</sub> backup system operation characteristics

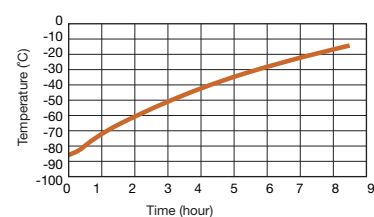


## Performance data MDF-U74V

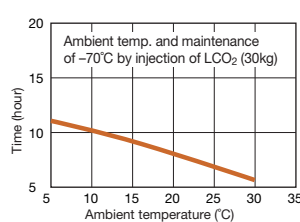
Pull-down characteristics



Pull-up characteristics during power failure

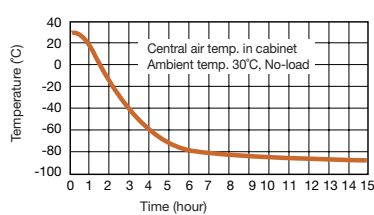


CO<sub>2</sub> backup system operation characteristics

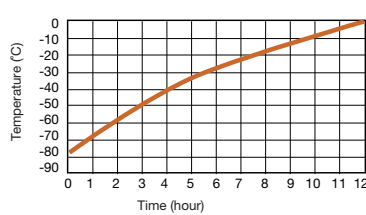


## Performance data MDF-U76V

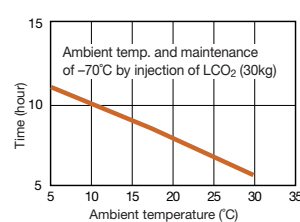
Pull-down characteristics



Pull-up characteristics during power failure



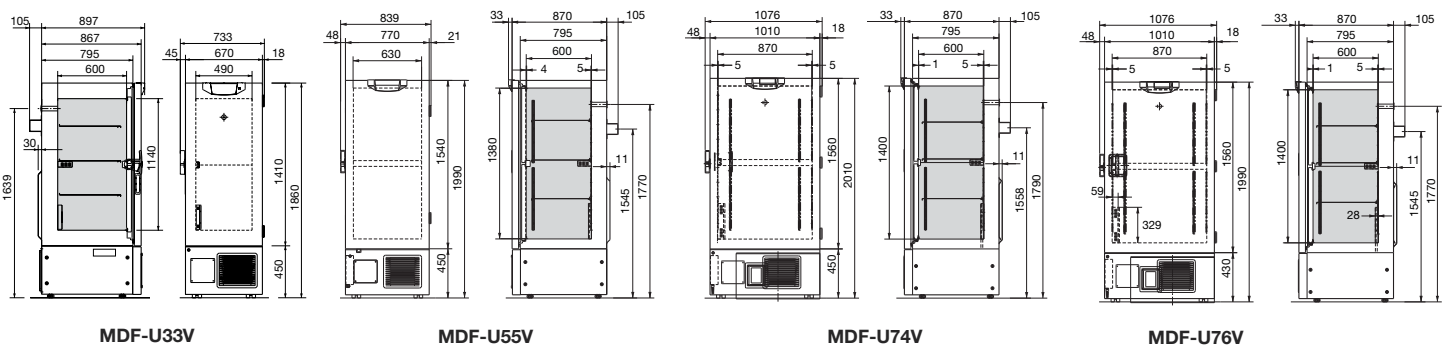
CO<sub>2</sub> backup system operation characteristics



**CE** 0123


The MDF-U55V and MDF-U74V are certified as Class IIa Medical Devices (93/42/EEC and 2007/47/EC) for medical purposes of storing cells, DNA and/or frozen plasma. (For EU countries only)

## Dimensions



# Specifications



PUF = Rigid polyurethane foamed insulation V = Visual alarm B = Buzzer alarm R = Remote alarm					
MODEL		MDF-U33V-PE	MDF-U55V-PE	MDF-U74V-PE	MDF-U76V-PE
Dimensions					
External dimensions (W x D x H) <sup>2)</sup>	mm	670 x 867 x 1860	770 x 870 x 1990	1010 x 870 x 2010	1010 x 870 x 1990
Internal dimensions (W x D x H)	mm	490 x 600 x 1140	630 x 600 x 1380	870 x 600 x 1400	870 x 600 x 1400
Volume	litres	333	519	728	728
Net weight (approx)	kg	255	290	346	360
Performance					
Cooling performance <sup>1)</sup>	°C	-86			
Temperature setting range	°C	-50 ~ -90			
Temperature control range <sup>1)</sup>	°C	-50 ~ -86			
Control					
Controller		Microprocessor (Non-volatile memory)			
Display		LED			
Temperature sensor		Pt-1000			
Refrigeration					
Refrigeration system		Cascade			
High stage compressor	W	450	450	1100	750
High stage refrigerant		HFC			
Low stage compressor	W	750	750	1100	750
Low stage refrigerant		HFC			
Insulation material		PUF / VIP	PUF / VIP	PUF / VIP	PUF/VIP PLUS
Insulation thickness	mm	70			
Alarms					
Power failure		V-B-R			
High temperature		V-B-R			
Low temperature		V-B-R			
Filter		V	V-B	V-B	V-B
Door open		V-B			
Construction					
Exterior material		Painted steel			
Interior material		Painted steel			
Inner door	qty	2 (Insulated)			
Outer door lock		Yes			
Shelves	qty	3 (Adjustable, stainless steel)			
Max. load - per shelf	kg	50			
Max. load - total	kg	150			
Access port	qty	3	3	3	2
- position		Back/Bottom x 2	Back/Bottom x 2	Back/Bottom x 2	Back/Bottom x 1
- diameter	Ø mm	17			
Casters	qty	4 (2 leveling feet)			
Electrical and Noise Level					
Power supply		230V 50Hz Single phase			
Power consumption <sup>3)</sup>	kWh/24h	9.2	11.1	18.5	13.5
Noise level <sup>4)</sup>	dB (A)	49	52	51	49
Options					
See page 9 for Inventory Racks					
Drawers	qty	MDF-30R (Max 2)	MDF-50R (Max 1)	-	-
Small inner door kit	Set of 2	-	MDF-51D (Max 2)	MDF-71D (Max 2)	MDF-71D (Max 2)
Temperature recorders					
- Circular type		MTR-G85			
- Continuous strip type		MTR-85H			
- Adapter for MTR-85H only		MDF-S3085			
RS485 interface module		MTR-480			
Liquid CO <sub>2</sub> Back-up		CVK-UB2			
Liquid N <sub>2</sub> Back-up		CVK-UBN2			

## Notes:

- 1) Air temperature measured at freezer centre, ambient temperature +30°C, no load.
- 2) Exterior dimensions of main cabinet only - see dimension drawings showing handles and other external projections.

- 3) Typical data - individual units may vary and power consumption will depend on loading and operating conditions. Freezer set-point -80°C, ambient temperature of 20-23°C, unloaded, 230V 50Hz power supply.
- 4) Typical data (background noise: 20 dB).

\*Appearance and specification are subject to change without notice.



# Options

CVK-UB2



MTR-85H



MTR-G85



MDF-50R



## Back-up systems

Liquid CO<sub>2</sub> back-up system  
Liquid N<sub>2</sub> back-up system

CVK-UB2  
CVK-UBN2

## Recorders

Circular temperature chart recorder (-100°C to +40°C)  
Chart paper  
Ink pen  
Strip temperature chart recorder (-100°C to +50°C)  
Chart paper  
Ink pen  
Recorder housing (for MTR-85H)

MTR-G85  
RP-G85  
PG-R  
MTR-85H  
RP-85  
DF-38FP  
MDF-S3085

## Communications

Communications Interface

MTR-480

## Drawers

3 drawer set for MDF-U33V  
3 drawer set for MDF-U55V

MDF-30R  
MDF-50R

## Inner door kits

1 set of 2 inner doors for MDF-U55V  
1 set of 2 inner doors for MDF-U74V/MDF-U76V

MDF-5ID  
MDF-7ID

## Other

Inventory racks  
Water cooled condenser

see page 9  
see page 7

perfect balance between  
performance and efficiency

# Panasonic®

## UK Office

9 The Office Village  
North Road, Loughborough  
Leicestershire LE11 1QJ  
United Kingdom  
Tel. +44(0)1509 265265  
Fax. +44(0)1509 269770  
biomedical.uk@eu.panasonic.com  
www.panasonic-biomedical.co.uk

## Head Office

Nijverheidsweg 120  
4879 AZ Etten Leur  
The Netherlands  
Tel: +31 (0)76 543 38 33  
Fax: +31 (0)76 541 37 32  
biomedical.export@eu.panasonic.com  
www.panasonic.eu/biomedical

## France Office

44, avenue de Valvins, BP 44  
F-77212 Avon Cedex  
France  
Tel. +33 1 60719911  
Fax. +33 1 60711693  
biomedical.fr@eu.panasonic.com