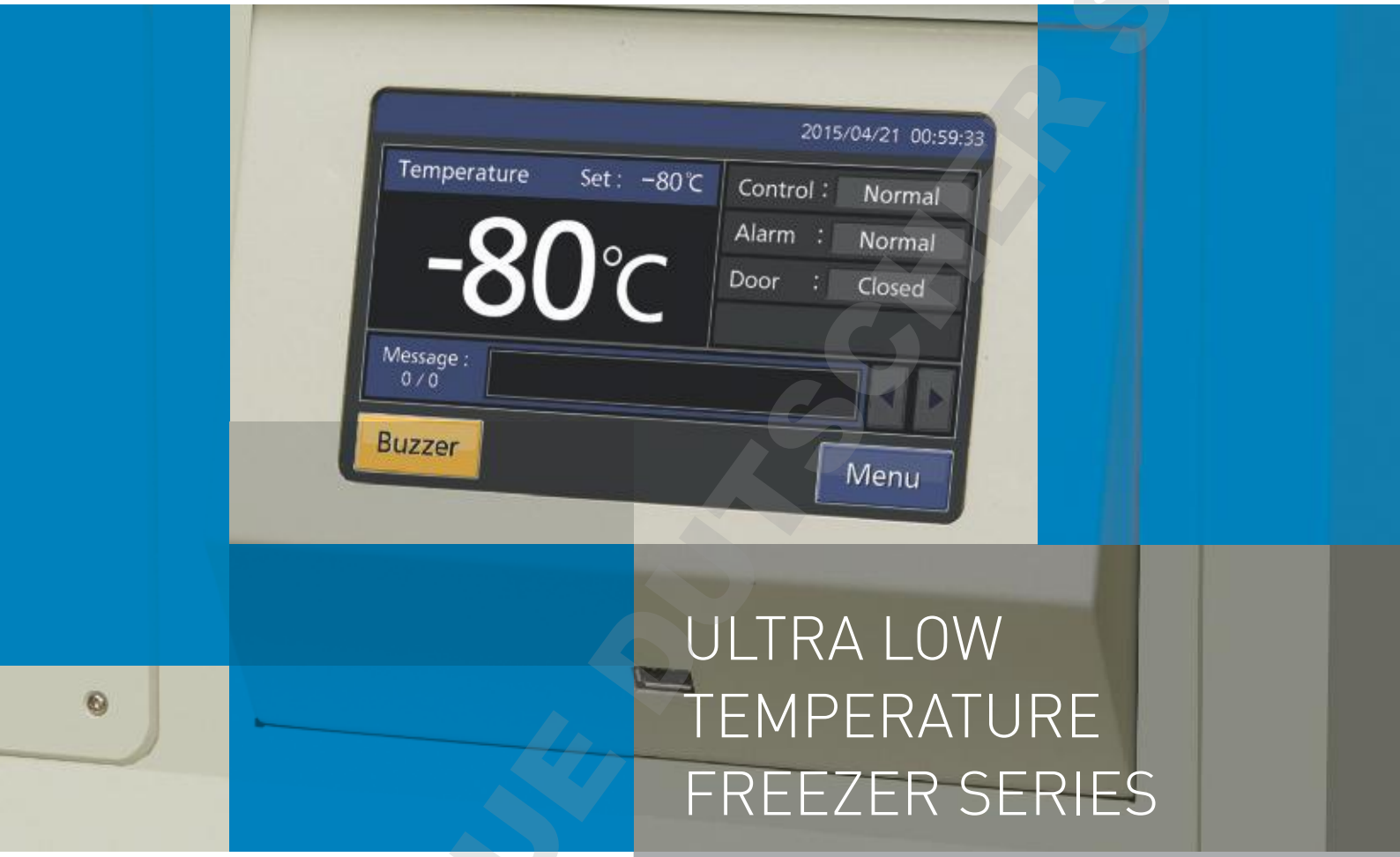
Life Science

Panasonic



ULTRA LOW TEMPERATURE FREEZER SERIES

TwinGuard

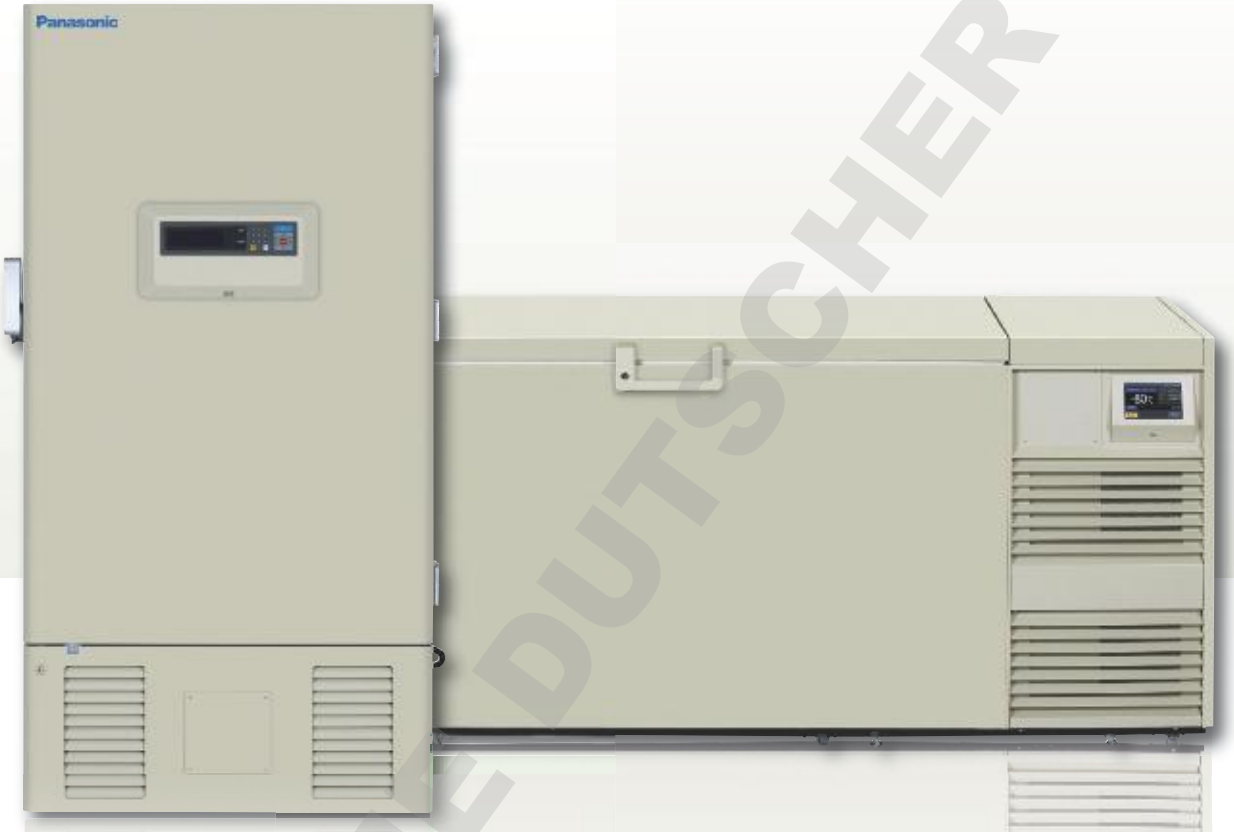
Models:
MDF-U500VX-PE | MDF-U700VX-PE
MDF-DC500VX-PE | MDF-DC700VX-PE

Panasonic's **Twin***Guard* -86˚C freezers deliver the unsurpassed level of safety and sample security that is critical for valuable biological samples alongside exceptional ease of use and data monitoring.

www.biomedical.panasonic.eu

Discovery powered by precision

ULTRA LOW TEMPERATURE FREEZERS



Twin*Guard* Upright Freezers

519 litres Freezers - 352 2"boxes
728 litres Freezers - 528 2"boxes

MDF-U500VX-PE
MDF-U700VX-PE

Twin*Guard* Chest Freezers

575 litres Freezers - 416 2"boxes
715 litres Freezers - 520 2"boxes

MDF-DC500VX-PE
MDF-DC700VX-PE

The Safest Ultra-Low Temperature Freezers for Long-Term Storage of Critical Biologicals

The Panasonic **Twin***Guard* series satisfies the industry demand for safe, long-term storage of biological material. Two independent refrigeration systems combined with optional liquid CO_2 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, high-value samples.

In the case of unexpected failure of one of the cooling circuits, the other circuit will maintain the freezer continuously in the -70°C range.

Scientific Applications

- Temperature sensitive samples such as therapeutics and biospecimens.
- Samples needing to retain viability such as stem cells, engineered tissue, organs, vaccines, hybrodmas, cancer cells or fibroblasts.
- Longitudinal study samples.
- Important medical research samples.
- Valuable pharmaceutical products.
- Clinical trial samples.
- Pathogenic samples within high security laboratories.

MEDICAL DEVICE DIRECTIVE

MDF-U700VX, MDF-DC500VX and MDF-DC700VX Freezers are certified as a Class IIa Medical Device (93/42/EEC and 2007/47/EC) for medical purposes of storing cells, tissues, organs and embryos.

Medical Device Directive

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.

CE 0123

Twin*Guard* SERIES

LCD touch panel
(MDF-DC500VX and MDF-DC700VX)

ULTIMATE SAMPLE PROTECTION

The Dual Cooling System offers the highest level of protection through the use of two independent refrigeration systems. If one system unexpectedly fails the other can maintain the freezer in the -70˚C range.

ENHANCED USE & INTELLIGENT SECURITY

Freezers are managed and monitored by an integrated microprocessor controller with a comprehensive alarm system and diagnostic functions. Status and control of parameters are accessible via an LCD information centre.
The chest models are updated with a touch panel that allows full user control, even with gloved hands, and a USB port for convenient transfer of logged data to a PC.

FILTERLESS DESIGN

The filterless construction of the freezers reduces routine maintenance time by eliminating the need for regular cleaning of filters.

TEMPERATURE SENSITIVITY

Securely store valuable and irreplaceable samples with the utmost confidence. Exceptional uniformity and greatly reduced risk of sample degradation as a result of temperature fluctuation during freezer failure.

SUPERIOR FOOTPRINT

Panasonic ultra-low temperature freezers with space-saving VIP insulation offer outstanding energy efficiency, whilst delivering exceptional cooling performance and durability for storing valuable research and clinical samples.

- 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.

DUAL COOLING SYSTEM

TWIN GUARD dual cooling system

Within **Twin***Guard*'s independent systems, efficient ultra-low cooling is achieved through two independent evaporator circuits surrounding the interior chamber.

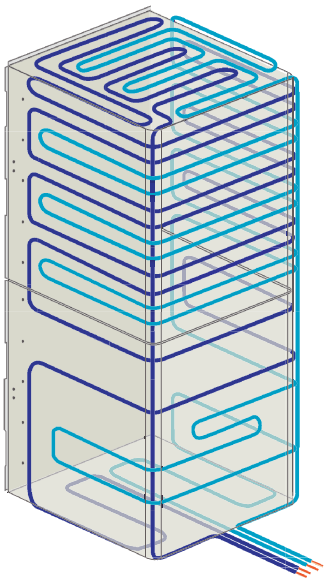
VIP®PLUS INSULATION

VIP PLUS vacuum insulation

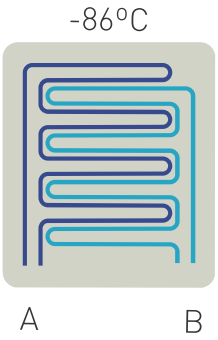
The use of highly efficient **VIP** Plus insulation ensures the most efficient use of space for up to 30%* more 2" box storage capacity.

*MDF-DC500VX compared with previous equivalent Panasonic models.

Two independent evaporator circuits



Dual Cooling System
Upright freezers

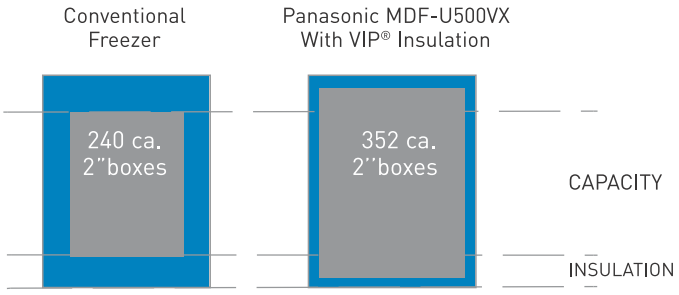


- The Dual Cooling System offers the highest level of security through the use of two independent refrigeration systems. If one system unexpectedly fails the other can maintain the freezer at the -70°C range.

Innovative design

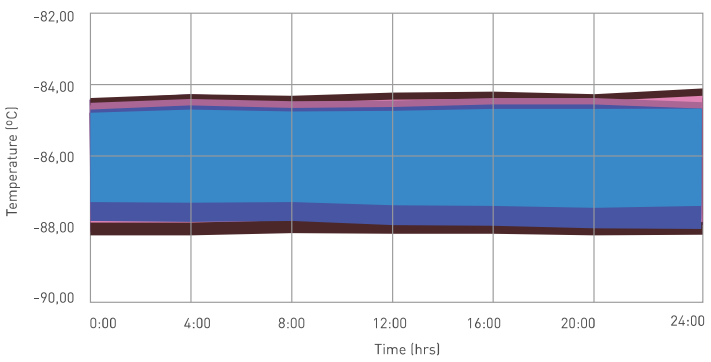
Panasonic was the first company to introduce vacuum insulation panels to ultra-low temperature freezers. The Panasonic freezers with VIP insulation typically provide 30% more storage capacity for a given floor area saving valuable laboratory space. The Panasonic patented VIP® vacuum insulation panel thin-wall composite is a high-efficiency design that yields more interior storage volume in a conventional freezer footprint.

Which freezer will you choose?



TEMPERATURE UNIFORMITY

Uneven interior temperatures can lead to a loss in sample integrity. Panasonic freezers with uniform, stable temperatures and quick recovery times provide the best protection for your samples, ensuring reliable preservation while guarding against degradation.



MDF-U700VX; 9 POINT TEMPERATURE MAPPING

SAMPLE PROTECTION

Models: MDF-U500VX-PE | MDF-U700VX-PE | MDF-DC500VX-PE | MDF-DC700VX-PE

THE SAFEST ULTRA-LOW FREEZER FOR LONG-TERM STORAGE OF CRITICAL BIOLOGICALS

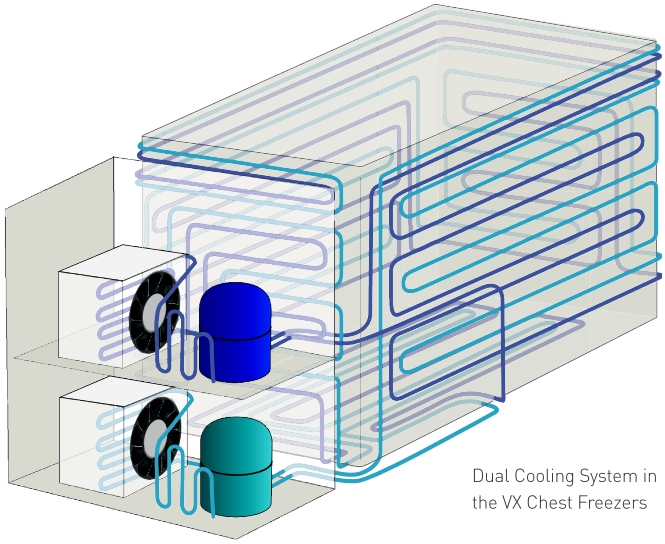
The Panasonic **Twin***Guard* series was developed to offer ultimate protection for valuable samples such as those in the pharmaceutical and biotechnology sector, research institutes or blood and tissue banks.

An advanced Dual Cooling System provides an unparalleled level of safety and added peace of mind through the use of two independent refrigeration systems that reliability maintain an ultra-low temperature environment, even if an unexpected failure should occur in one cooling circuit.

Discover Twin*Guard* -86°C refrigeration system

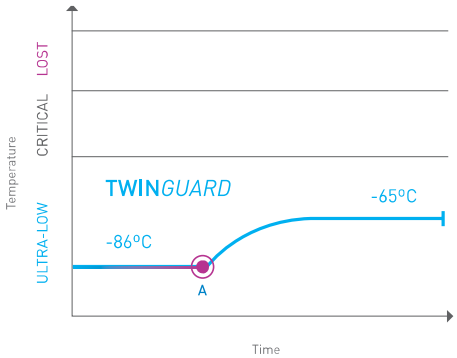
- Each refrigeration circuit includes a closed-loop cold-wall evaporator configured in parallel to the other.
- If a component, such as a compressor, fails in a conventional ULT freezer with single or cascade refrigeration circuits with mutually dependent high and low stage systems, the whole system will fail and the freezer will eventually rise to room temperature, putting samples at serious risk of degradation.
- Independent compressors, evaporators and cooling fans in **Twin***Guard* freezers ensure back-up status at all times, eliminating system failure due to failure of a component.
- An unique ECO mode deploys both systems in overlapping cycles to maintain -86°C and to reduce energy consumption.
- Evaporator coils embedded in the patented, high-tech, Panasonic VIP PLUS vacuum-insulated thin-wall cabinet are strategically oriented to deliver the best temperature uniformity throughout the freezer at all times, even if only one system is active.
- Panasonic-designed Cool Safe compressors feature innovative refrigerant feedback processes to reduce compressor temperature, thereby extending compressor life and minimizing heat output.

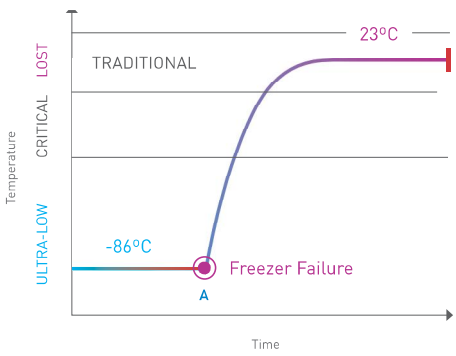
Two independent refrigeration systems



Dual Cooling System in the VX Chest Freezers

PERFORMANCE DATA **TWIN***GUARD* FREEZERS IN CASE OF COMPRESSOR FAILURE

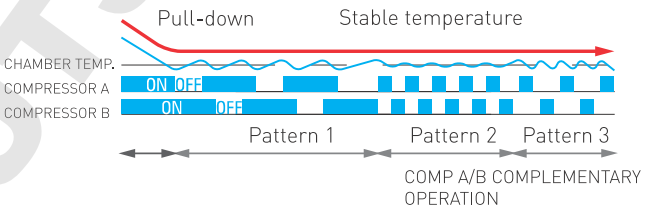




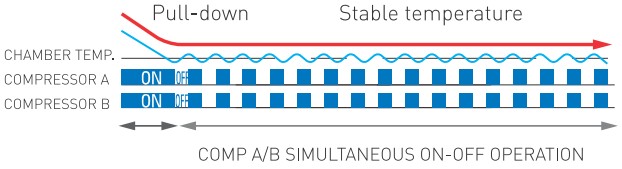
INDUSTRY FIRST INTELLIGENT ECO MODE OPERATION

The Panasonic **Twin***Guard* series freezer can be set to Normal or ECO mode operation, depending on the requirements of the user. Although both refrigeration systems are completely independent, ECO mode establishes an overlapping cycle to significantly reduce energy consumption while maintaining optimum interior uniformity for protection of high value materials.
Normal mode maintains the most repeatable, cycling wave form for the strictest of GMP applications.

ECO MODE OPERATION IMAGE



NORMAL MODE OPERATION IMAGE



Status	System A and B ON	System A and B ON, Cycling On/Off	System A and B ON, Cycling On/Off	System A ON	System B ON
Function	Maximum Pull-Down and Recovery Capacity	ECO mode	Normal Mode	Back-Up for System B	Back-Up for System A
Performance	Establishes highly uniform -86°C storage temperature; maximizes recovery following door openings and heat load additions in ECO and Normal Mode.	Maintains better energy management at high or low ambient temperatures as well as excellent top-to-bottom uniformity.	Maintains excellent top-to-bottom uniformity. Maintains most repeatable, cycling wave form for the strictest of GMP applications.	Maintains minimum -65°C reserve temperature.	Maintains minimum -65°C reserve temperature.
					

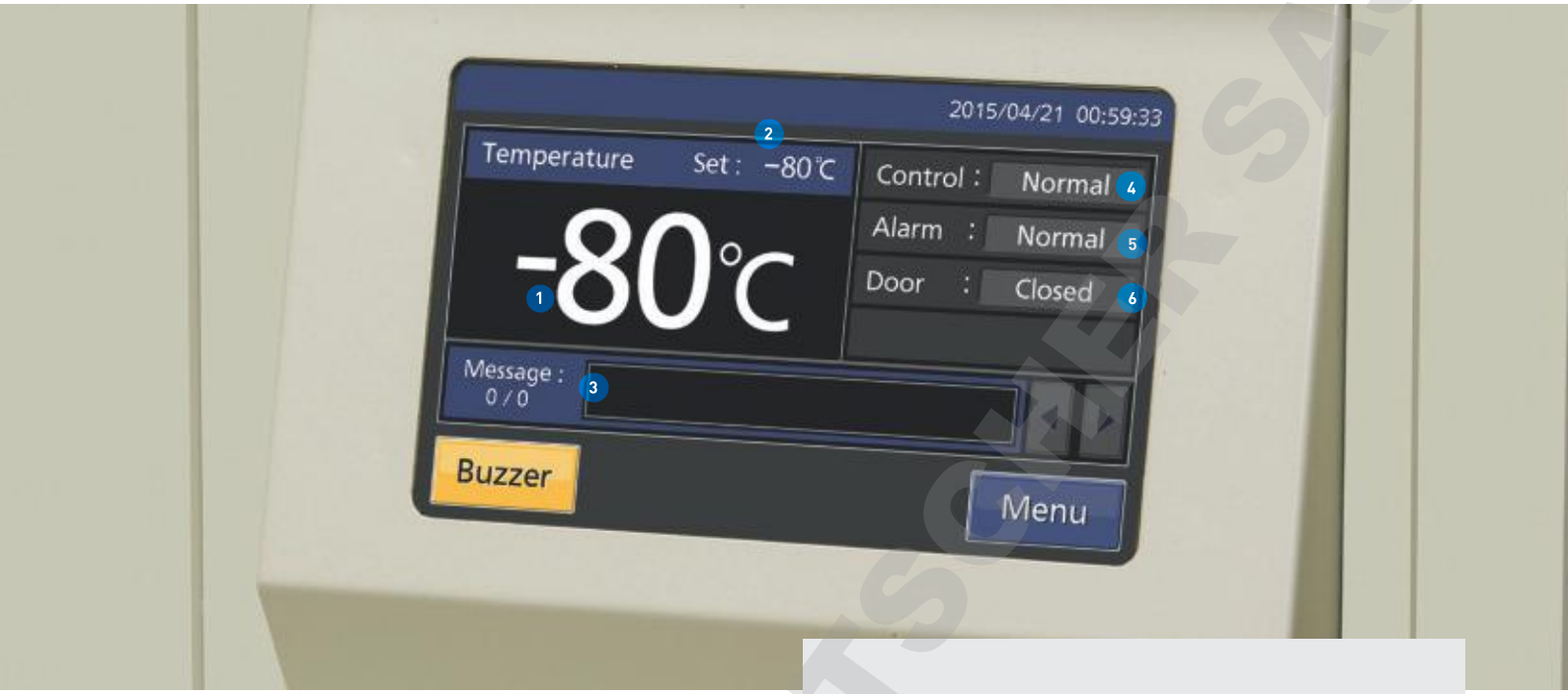
ENHANCED CABINET CONSTRUCTION

Models: MDF-U500VX-PE | MDF-U700VX-PE

1. Multiple access ports permit insertion of independent probes, instrumentation or liquid CO_2 back-up injectors.
2. A vacuum release port allows smooth door opening when the door seal is tightened by negative pressure generated from temperature difference between chamber and ambient
3. Universal keyed door lock offers added security.
4. Remote alarm contacts and optional communication port available; see Options.
5. Insulated and gasketed inner doors seal inside to offer additional protection, improve uniformity. Inner door latches are standard.
6. Easy-In/Easy-Out door latch for smooth, one-handed operation, positive seal against gasket. Provision for padlock.
7. Temperature recorder (optional) mounts easily in pre-engineered mounting space.
8. Panasonic designed Cool Safe compressors are specifically designed for ultra-low temperature applications.
9. High impact, recessed casters and leveling feet simplify installation.
10. An integrated microprocessor controller with LCD information center to simplify all freezer functions.

Various alarms including high/low temperatures, door ajar, power failure alarm and part replacement notification keep samples safe even in an emergency.

What it is	What It Does	Why It Is Important
-86°C **Twin***Guard* Dual Cooling System	Two independent refrigeration systems operate together or individually, depending on loading and operating conditions.	One refrigeration system is available to back-up the other in the event of a component failure maintaining the freezer in the -70°C range.
ECO mode performance	Two independent refrigeration systems running in overlapping cycles.	ECO mode optimizes run time, minimizes energy costs while maintaining optimal performance.
Filterless condenser design	Transfers energy from the refrigeration system with minimal heat output.	Eliminates the need for an air filter and the associated maintenance and cleaning, optimizes heat exchange and minimizes compressor heat build-up over time.
Patented **VIP**®Plus vacuum insulation panels	Combines high-efficiency vacuum panels with conventional polyurethane structural foam and barrier film into a high-tech wall assembly.	Increases interior volume within conventional dimensions offering more storage capacity per m^2 of occupied floor space.
Integrated graphical LCD control center	Combines all control, alarm, monitoring and data management functions into a single door-mounted system controller.	High visibility LCD display provides a convenient user interface to setpoints, current and previous temperature status, alarm parameters, internal diagnostics, communications and security.
Enhanced cabinet construction	Robust cabinet design with high strength lockable doors and lids, Optimized storage using inventory management systems.	Simplifies installation and operation. Exceptional durability under demanding conditions in busy laboratories.
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.



MDF-DC500VX-PE, MDF-DC700VX-PE

MICROPROCESSOR CONTROL WITH TOUCH SCREEN DISPLAY

The **Twin***Guard* series is managed by an integrated microprocessor controller with LCD information center to simplify all freezer functions. Uniform ultra-low temperature is achieved through a combination of performance systems supervised by the controller complete with alarm, programming and diagnostic protocols.
The **Twin***Guard* chest freezers feature a touchscreen display and a USB port which allows logged data to be easily transferred to a PC.

Touch Panel Legend

1. **Present temperature display field:**
   The current chamber temperature is displayed.
2. **Set temperature value display field:**
   The set value of chamber temperature is displayed.
   Default setting: -80°C.
3. **Message display field:**
   Alarms, errors or messages are displayed when a fault occurs.
4. **Control display:**
   The present operation control mode is displayed.
   Normal control: "Normal" is displayed.
   Eco control: "ECO" is displayed
5. **Alarm display:**
   Normal condition: "Normal" is displayed.
   Alarm-activated, buzzer-delayed: "Alarm" is displayed.
   Alarm-activated, buzzer-sounding: "Warning" is displayed.
6. **Outer door (opening / closing display)**

MEETING YOUR FREEZER STORAGE NEEDS

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.

Meeting your freezer storage needs
- High quality racks – designed for safe working and easy access to samples.
- Affordable solutions – making freezer storage cost-effective as well as space-efficient.
- Large selection of products – additional rack types and boxes are available on request.

*For an overview of the racks designed for the **Twin***Guard* series see backpage

SPECIFICATIONS

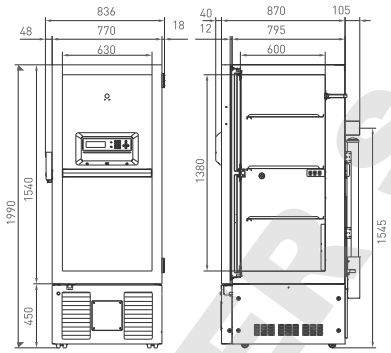
TwinGuard Upright Freezers			
Model Number		**MDF-U500VX-PE**	**MDF-U700VX-PE**
Dimensions			
External dimensions (WxDxH) [1]	mm	770 x 870 x 1990	1010 x 870 x 2010
Internal dimensions (WxDxH)	mm	630 x 600 x 1380	870 x 600 x 1400
Volume	litres	519	728
Capacity	2" boxes	352	528
Net weight (approx)	kg	320	375
Performance			
Cooling performance [2]	°C	-86	
Temperature setting range	°C	-50 ~ -90	
Temperature control range [2]	°C	-50 ~ -86	
Control			
Controller		Microprocessor non-volatile memory	
Display		LCD	
Temperature sensor		Pt-1000	
Refrigeration			
Refrigeration system		Independent Dual-Cooling	
Compressor	W	2 x 1100	
Refrigerant		HFC mixed	
Insulation material		PUF / VIP PLUS	
Insulation thickness	mm	70	
Construction			
Exterior material		Painted steel	
Interior material		Painted steel	
Outer door lock		Y	
Inner door/lid	qty	2 (insulated)	
Shelves	qty	3	
Max. load - per shelf	kg	50	
Max. load - total	kg	150	
Vacuum release port		Y	
Access port	qty	3	
- position		Back/bottom x 2	
- diameter	Ø mm	17	
Casters	qty	4 (2 levelling feet)	
Alarms			
Power failure		V-B-R	
High temperature		V-B-R	
Low temperature		V-B-R	
Filter		Filterless design	
Door open		V-B	
Electrical and Noise Level			
Power Supply		230V 50Hz single phase	
Noise Level [3]	dB(A)	53	
Options			
Liquid CO_2 back-up		CVK-UB2-PW	
Liquid N_2 back-up		CVK-UBN2-PW	
Temperature recorders			
- Circular type		MTR-G85C-PE	
- Chart paper		RP-G85-PW	
- Ink pen		PG-R-PW	
- Continuous strip type		MTR-85H-PW	
- Chart paper		RP-85-PW	
- Ink pen		DF-38FP-PW	
- Recorder housing		MDF-S3085-PW	
Drawers	qty	MDF-50R-PW (max 1)	-
Small inner door kit	set of 2	MDF-5ID-PW (max 2)[4]	MDF-7ID-PW (max 2)[4]
Optional communication systems			
RS485 interface module		MTR-480-PW	

1) Exterior dimensions of main cabinet only, excluding handle and other external projections - See dimensions drawings on website for full details
2) Air temperature measured at freezer centre, ambient temperature +30°C, no load
3) Nominal value. Background noise 20dB
4) Installation of small inner door kit may affect usable storage capacity.

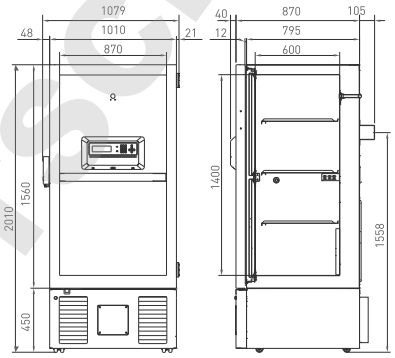
TwinGuard Chest Freezers	
MDF-DC500VX-PE	**MDF-DC700VX-PE**
2010 x 845 x 1070	2300 x 845 x 1070
1190 x 640 x 756	1480 x 640 x 756
575	715
416	520
328	358
-86	
-50 ~ -90	
-50 ~ -86	
Microprocessor non-volatile memory	
LCD Touch Screen	
Pt-1000	
Independent Dual-Cooling	
2 x 1100	
HFC mixed	
PUF / VIP PLUS	
70 / 135	
Painted steel	
Stainless Steel	
Y	
3 (Styrofoam)	
-	
-	
-	
-	
1	
Back	
17	
6 (3 levelling feet)	
V-B-R	
V-B-R	
V-B-R	
Filterless design	
V-B	
230V 50Hz single phase	
52	
MDF-UB5-PW	
-	
MTR-G85C-PE	
RP-G85-PW	
PG-R-PW	
MTR-85H-PW	
RP-85-PW	
DF-38FP-PW	
MDF-S3085-PW	
-	
-	
MTR-480-PW	

Dimensions

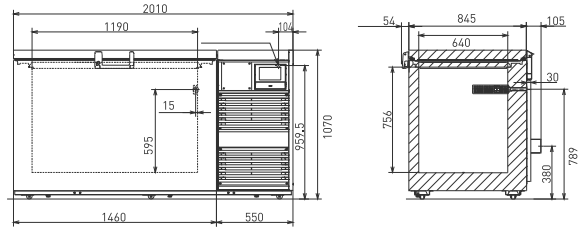
MDF-U500VX - **519 LITRES**



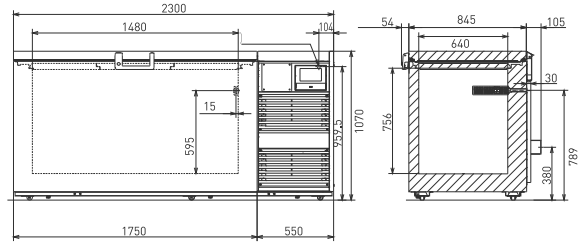
MDF-U700VX - **728 LITRES**



MDF-DC500VX - **575 LITRES**



MDF-DC700VX - **715 LITRES**



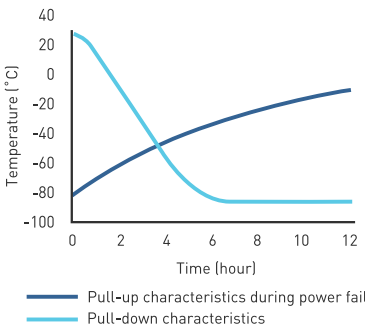
RACK CONFIGURATIONS

Models: MDF-U500VX-PE | MDF-U700VX-PE | MDF-DC500VX-PE | MDF-DC700VX-PE

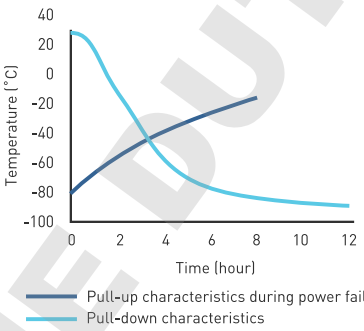
Vertical rack type	Box type	Rack/quantity Aluminium	Total boxes	Rack/quantity Stainless steel		Total boxes
MDF-U500VX-PE						
with trays	(P) A1	4 x HCS-519	352			
with trays	(P) A1	8 x HCS-5584 + 8 x HCS-6564	352	2" Cardboard boxes	8 x SDR-524-N + 8 x SDR-624-N	352
side opening	(P) A1	8 x NIR-220U + 8 x NIR-224U	352	2" Cardboard boxes	8 x SUR-524-N + 8 x SUR-624-N	352
with trays	(P) A2	8 x HCS-4804 + 8 x HCS-3804	224	3" Cardboard boxes	8 x SDR-334-N + 8 x SDR-434-N	224
side opening	(P) A2	8 x NIR-316U + 8 x NIR-312U	224	3" Cardboard boxes	8 x SUR-334-N + 8 x SUR-434-N	224
MDF-U700VX-PE						
with trays	(P) A1	6 x HCS-519	528			
with trays	(P) A1	12 x HCS-5584 + 12 x HCS-6564	528	2" Cardboard boxes	24 x SDR-624-N	576
side opening	(P) A1	12 x NIR-220U + 12 x NIR-224U	528	2" Cardboard boxes	24 x SUR-524-N	576
with trays	(P) A2	12 x HCS-4804 + 12 x HCS-3804	336	3" Cardboard boxes	12 x SDR-334-N + 12 x SDR-434-N	336
side opening	(P) A2	12 x NIR-316U + 12 x NIR-312U	336	3" Cardboard boxes	12 x SUR-334-N + 12 x SUR-434-N	336
MDF-DC500VX-PE						
side opening	(P) A1	32 x NIR-213C	416	32 x SCR-132-N		416
side opening	(P) A2	32 x NIR-309C	288	32 x SCR-093-N		288
MDF-DC700VX-PE						
side opening	(P) A1	40 x NIR-213C	520	40 x SCR-132-N		520
side opening	(P) A2	40 x NIR-309C	360	40 x SCR-093-N		360

Please check specific inventory requirements with your local Panasonic representative to ensure suitability of racks. Other systems, including bespoke racking, are also available.

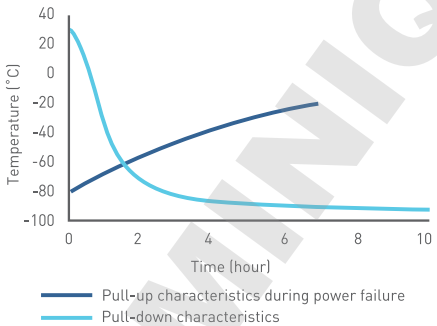
PERFORMANCE DATA MDF-U500VX



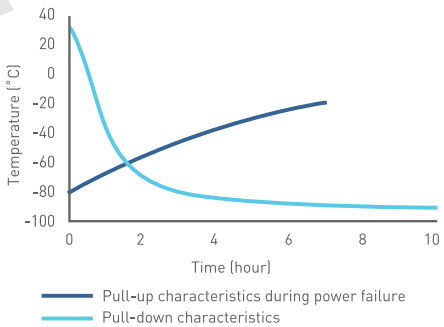
PERFORMANCE DATA MDF-U700VX



PERFORMANCE DATA MDF-DC500VX



PERFORMANCE DATA MDF-DC700VX



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For more information, please visit our website:

www.biomedical.panasonic.eu