

-86°C ULTRA-LOW TEMPERATURE FREEZERS SERIES

The patented *TwinGuard*[®] series delivers an unsurpassed level of temperature performance and sample protection, critical in the preservation of biological samples.

TwinGuard[®]

Models:

MDF-U500VXC-PA | MDF-U700VXC-PA

MDF-DC700VXC-PA

TwinGuard®

-86°C ULTRA-LOW TEMPERATURE FREEZERS



TwinGuard® Upright Freezers

MDF-U700VXC-PA

MDF-U500VXC-PA

25.7 cu.ft. (728 L) Freezer

18.3 cu.ft. (519 L) Freezer

Capacity (qty) = 576 2"Boxes

Capacity (qty) = 352 2"Boxes

TwinGuard® Chest Freezer

MDF-DC700VXC-PA

25.3 cu.ft. (715 L) Freezer

Capacity (qty) = 520 2"boxes



The Dual Cool primary freezer circuit operates at -86°C while the back-up circuit maintains an operating temperature of minimum -65°C in the case of a service event.

Reliable -86°C Ultra-low Temperature Freezers for Long-Term Storage of Critical Samples

The Panasonic patented *TwinGuard*[®] series satisfies the industry demand for safe, long-term storage of sensitive, high-value samples. Two independent refrigeration systems, combined with optional liquid CO_2 back-up systems, offer a layer of protection unmatched in the marketplace.

Scientific Applications

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



TwinGuard® Series



MDF-DC700VXC-PA LCD Touch Panel

ULTIMATE SAMPLE PROTECTION

The Dual Cooling System offers the highest level of sample protection through the use of two independent refrigeration systems. The patented VIP® insulation panel ensures superior temperature uniformity for sample integrity and viability.

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 center. Both upright and chest models are available with LCD 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

This energy transfer technology maintains optimum condenser airflow, eliminating the need for an air filter.

OPTIMAL FREEZER PERFORMANCE

Panasonic **TwinGuard®** ULT series offers rapid pulldown (the time needed for your freezer to return to set point after door openings). [See back page for pulldown information.](#)

SUPERIOR FOOTPRINT

Panasonic's space-saving VIP® PLUS insulation offers outstanding energy efficiency, while delivering exceptional cooling performance and durability for storage of 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.

SAMPLE PROTECTION & OPTIMUM CAPACITY

Models: MDF-U500VXC-PA | MDF-U700VXC-PA | MDF-DC700VXC-PA

PREDICTIVE MAINTENANCE

Unit has compressor protection to determine if the freezer is operating within specifications. External stress on the compressor due to ambient temperature abnormality or excessive load will be displayed for immediate notification.

VIP® PLUS INSULATION

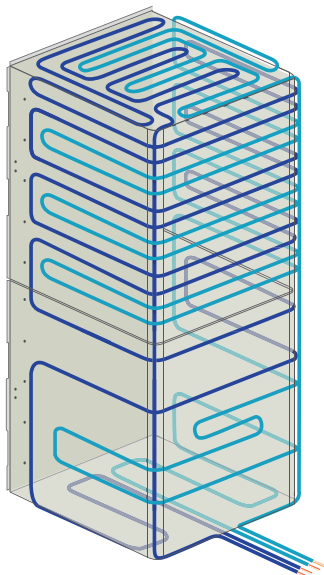


The use of VIP® Plus insulation combined with a newly designed refrigeration system layout ensures up to 30%* more 2" box storage capacity, utilizing less floor space than competitive units.

*Based on a comparison of the MDF-DC700VXC to a competitor's 20 cu.ft. models.

Patented *TwinGuard*® Series Technology

The Dual Cooling System offers the highest level of security through the use of two independent refrigeration systems. If one system has an unexpected service request the other will maintain the freezer at a minimum of -65°C.

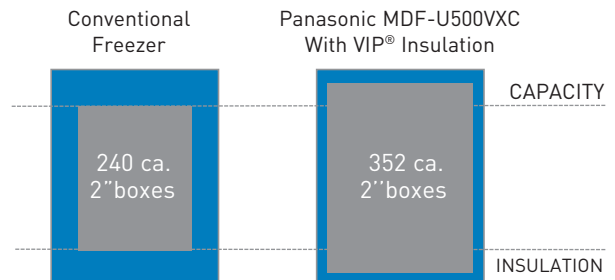


Dual Cooling System in Upright Freezers (MDF-U500VXC & MDF-U700VXC)

Innovative Design

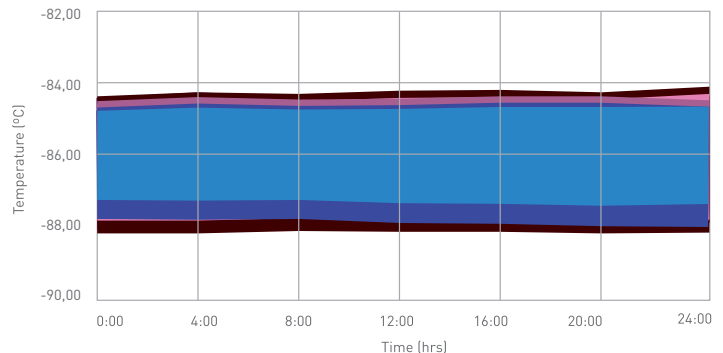
Panasonic was the first manufacturer in the life science industry to introduce vacuum insulation panels (VIP®) for ultra-low temperature freezers. The Panasonic patented VIP® Plus insulation typically provides 30% more storage capacity for a given floor area, saving valuable laboratory space. This thin-wall composite is a high-efficiency design that yields more interior storage volume than can be found in a conventional freezer footprint.

Which freezer would you choose?



TEMPERATURE UNIFORMITY

Uneven internal 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-U700VXC 9 Point Temperature Mapping

SAMPLE PROTECTION

Models: MDF-U500VXC-PA | MDF-U700VXC-PA | MDF-DC700VXC-PA

RELIABLE -86°C ULTRA-LOW TEMPERATURE FREEZERS FOR LONG-TERM STORAGE OF CRITICAL BIOLOGICALS

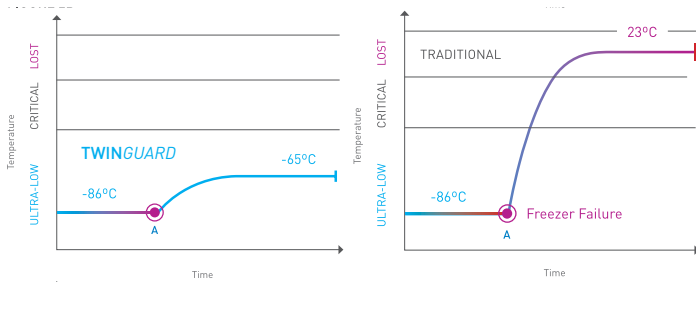
The Panasonic **TwinGuard®** series was developed to offer ultimate protection for valuable samples such as those in the pharmaceutical and biotechnology sectors, research institutes, blood and tissue banks or clinical applications.



Discover TwinGuard® -86°C Preservation System

TwinGuard® Upright -86°C Freezers

Performance Data TwinGuard® Freezers in Case of Compressor Failure

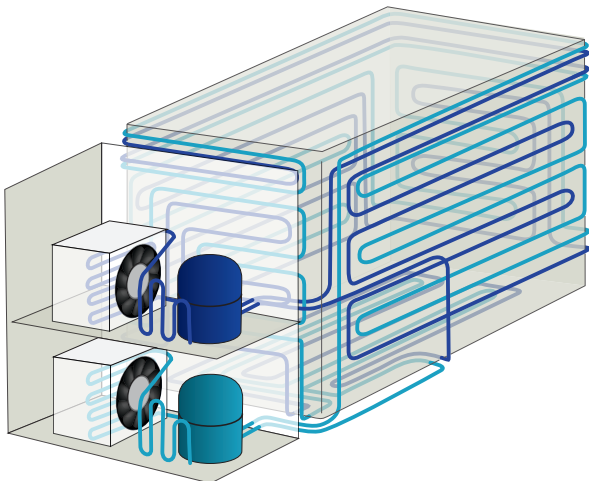


Patented TwinGuard® Technology

- 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 TwinGuard freezers ensure back-up status at all times, eliminating system failure due to failure of a compressor.
- A 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 provide temperature uniformity throughout the freezer at all times, even if only one system is active.
- Panasonic-designed Dual Cool compressors feature innovative refrigerant feedback processes to reduce compressor temperature, thereby extending compressor life and minimizing heat output.

TwinGuard® Chest -86°C Freezers

Dual Cooling System in the TwinGuard® Chest Freezers

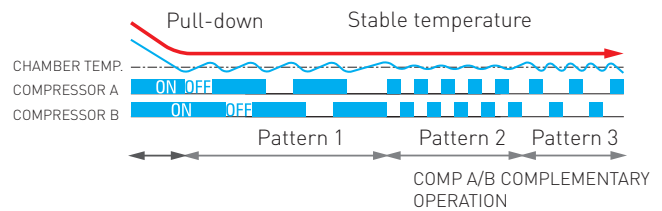




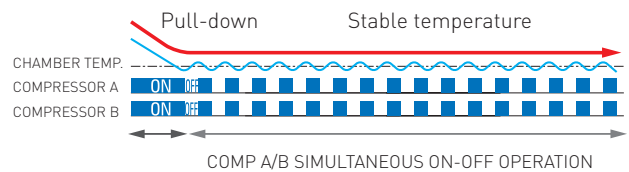
INDUSTRY FIRST INTELLIGENT ECO MODE OPERATION

The Panasonic **TwinGuard®** series freezers 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 optimal 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 Performance	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 or lid 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.

CABINET CONSTRUCTION

Models: MDF-U500VXC-PA | MDF-U700VXC-PA



- 1 Multiple access ports permit insertion of independent probes, instrumentation or liquid CO₂ 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 Dual Cool compressors are specifically designed for ultra-low temperature applications.
- 9 High impact, recessed casters and levelling 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 TwinGuard® Technology	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 case of a service event maintaining the freezer at a minimum of -65°C.
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 sq.ft. 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. 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 ISO9001 and 4001, RoHS and other third-party standards and recommended practices.



MDF-DC700VXC-PA LCD Touch Panel

MICROPROCESSOR CONTROL WITH TOUCH SCREEN DISPLAY

The **TwinGuard®** 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 **TwinGuard®** upright and 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. These 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.

SPECIFICATIONS

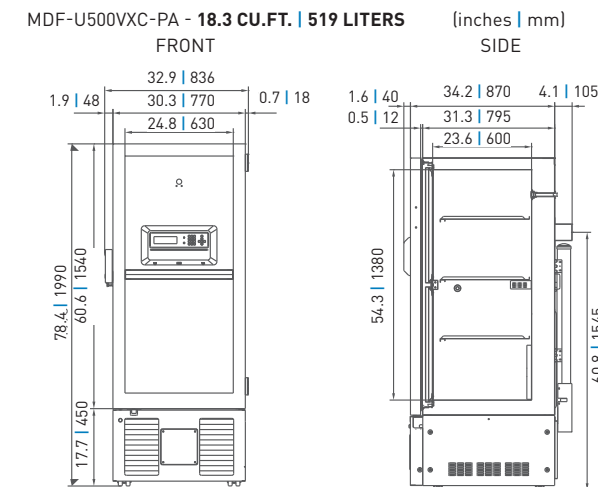
Model Number	TwinGuard® Upright Freezers		TwinGuard® Chest Freezers
	MDF-U500VXC-PA	MDF-U700VXC-PA	MDF-DC700VXC-PA
Dimensions			
External Dimensions (WxDxH) ¹⁾	inches mm	30.3 x 34.3 x 78.3 770 x 870 x 1990	39.8 x 34.3 x 79.1 1010 x 870 x 2010
Internal Dimensions (WxDxH)	inches mm	24.8 x 23.6 x 55.1 630 x 600 x 1380	34.3 x 23.6 x 55.1 870 x 600 x 1400
Volume	cu.ft. litres	18.3 519	25.7 728
Net Weight	lbs. kg	723 328	844 383
Capacity	2" Boxes 3" Boxes	352 224	576 384
Performance			
Cooling performance ²⁾	°C	-86	-86
Temperature Setting Range	°C	-50 ~ -90	-50 ~ -90
Temperature Control Range ²⁾	°C	-50 ~ -86	-50 ~ -86
Control			
Controller		Microprocessor non-volatile memory	Microprocessor non-volatile memory
Display		LCD Alpha Numeric	LCD Touch Screen
Temperature Sensor		Pt-1000 Platinum RTD	Pt-1000 Platinum RTD
Refrigeration			
Refrigeration System		Independent Dual-Cooling	Independent Dual-Cooling
Compressor	W	1100 (qty = 2)	1100 (qty = 2)
Refrigerant		HFC mixed	HC / HFC mixed
Insulation Material		PUF / VIP PLUS	PUF / VIP PLUS
Insulation Thickness	inches mm	2.76 70 (except rear)	2.8 / 70 (except rear)
Construction			
Exterior Material		Painted steel	Painted steel
Interior Material		Painted steel	Stainless Steel
Outer Door Lock		Y	Y
Inner Door / Lid	qty	2 (insulated) and sealing	3 (Formed Styrene)
Shelves	qty	3	-
Max. Load - per Shelf	lbs. kg	110 50	-
Vacuum Release Port		Y	-
Access Port	qty	3	1
Access Port Position		Back/bottom x 2	Back
Access Port Diameter	inches mm	0.7 17	0.7 17
Casters	qty	4 (2 leveling feet)	6 (3 leveling feet)
Alarms		(V = Visual Alarm, B = Buzzer Alarm, R = Remote Alarm)	(V = Visual Alarm, B = Buzzer Alarm, R = Remote)
Power Failure		V-B-R	V-B-R
High Temperature		V-B-R	V-B-R
Low Temperature		V-B-R	V-B-R
Filter		Filterless design	Filterless design
Door / Lid Open		V-B	V-B
Electrical and Noise Level			
Power Supply	⊕ V	208 / 230 NEMA 6-15 60Hz single phase	208 / 220 NEMA 6-15 60Hz single phase
Noise Level ³⁾	dB(A)	53	52
Options			
Liquid CO ₂ back-up		CVK-UB21-PW	MDF-UB5-PW
Liquid N ₂ back-up		CVK-UBN2-PW	-
Small Inner Door Kit	Set of 2	MDF-5ID-PW (max 2) ⁴⁾	MDF-7ID-PW (max 2) ⁴⁾
Optional Temperature Recorders			
Circular Type (6" / 7 Day Circular)		MTR-C954	MTR-C954
Chart Paper		C6282169REV	C6282169REV
Ink Pen		R252	R252
Stand Alone Recorder		MTR-C958	MTR-C958
Optional Communication Systems			
Monitoring		LabAlert® Monitoring System	LabAlert® Monitoring System

1) Exterior dimensions of main cabinet only, excluding handle and other external projections - See dimensions drawings on opposite page
 2) Air temperature measured at freezer centre, ambient temperature +30°C, no load

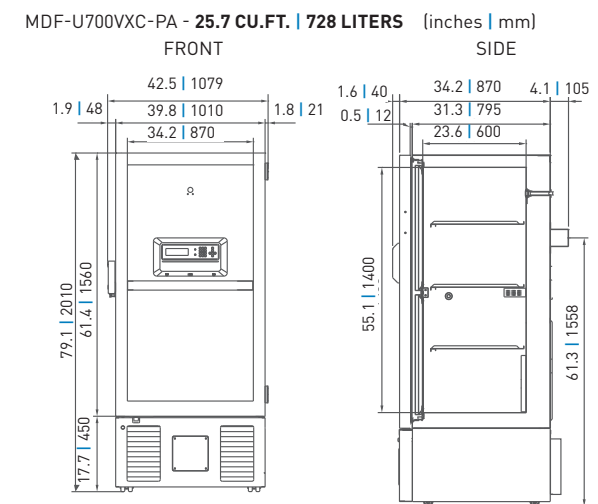
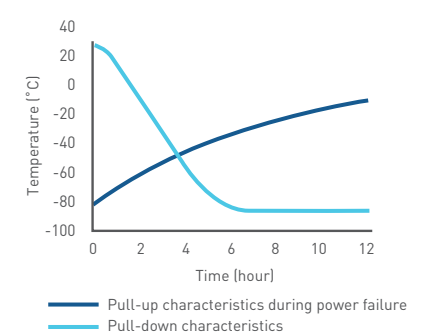
3) Nominal value. Background noise 20dB
 4) Installation of small inner door kit may affect usable storage capacity.

RACK CONFIGURATIONS

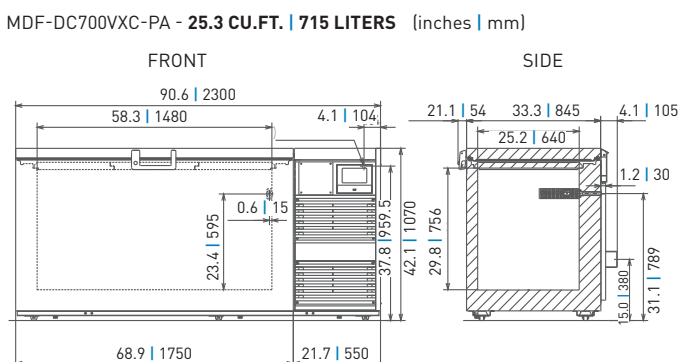
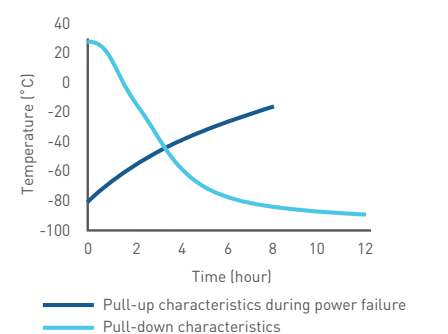
Stainless steel rack	Box type / quantity	Total boxes
MDF-U500VXC-PA		
with trays	2" Cardboard boxes 8 x SDR-524-N + 8 x SDR-624	352
side opening	2" Cardboard boxes 8 x SUR-524-N + 8 x SUR-624-N	352
with trays	3" Cardboard boxes 8 x SDR-334-N + 8 x SDR-434-N	224
side opening	3" Cardboard boxes 8 x SUR-334-N + 8 x SUR-434-N	224
MDF-U700VXC-PA		
with trays	2" Cardboard boxes 24 x SDR-624	576
side opening	2" Cardboard boxes 24 x SUR-624-N	576
with trays	3" Cardboard boxes 24 x SDR-434-N	384
side opening	3" Cardboard boxes 24 x SUR-434-N	384
MDF-DC700VXC-PA		
side opening	40 x SCR-132-N	520
side opening	40 x SCR-093-N	360



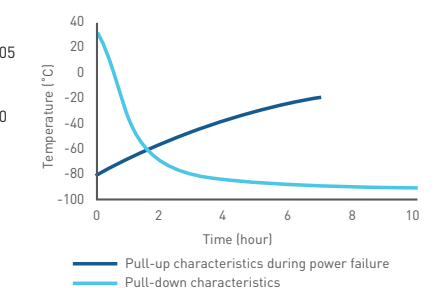
PERFORMANCE DATA MDF-U500VXC-PA



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