![PHCbi logo]

MDF-DU503VHA-PA

VIP® ECO SMART

ENERGY STAR® Certified
Natural Refrigerant -86°C Freezer

MDF-DU503VH-PA, 220V
MDF-DU503VHA-PA, 115V

18.6 cu.ft. | 528 L

ECO natural refrigerants · IC+ inverter controlled · VIP PLUS vacuum insulation · EZlatch door handle · electronic door lock

Independently tested and documented, the ENERGY STAR® Certified VIP® ECO SMART delivers the lowest daily energy usage of any ultra-low temperature freezer of its size: 4.99 kWh per day[1]. Purpose-designed for the temperature uniformity and stability required for the life sciences.

Performance and Reliability

Next generation engineering harnesses the power of inverter compressor technology to yield greater temperature uniformity. Reserve refrigeration power delivers fast temperature recovery following door openings. Performance and reliability is never compromised when it comes to storing your valued products.

Efficient Energy Consumption[1]

This freezer delivers lower energy consumption without compromising performance. The VIP ECO SMART uses 30% less energy than other leading ENERGY STAR listed freezers.

- 0.27 kWh/cu.ft. Daily Energy Consumption
- 4.99 kWh/day, Steady State at -80°C
- 4.06 kWh/day, Steady State at -70°C

Temperature Uniformity
- ±3.0°C at -80°C
- ±3.0°C at -70°C

Security Control and Monitoring

An eye level, door mounted 10.1-inch high resolution LCD touchscreen allows full user control. A USB port makes transferring logged data to a PC convenient. All performance attributes are displayed and an internal temperature log can be expressed in graphic form over time.

Frost Mitigation

Simplified one-handed operation maintains the integrity of the door seal to assure energy efficiency, resulting in less frost build up and maintenance. Perimeter heater under the gasket allows for gentle warmth reducing ice buildup. The EZlatch handle is the centerpiece of a holistic access and frost mitigation system.

Natural Refrigerants

Natural refrigerants minimize environmental impact and allow for greater efficiency, resulting in less energy consumption and less heat output.

Controlled Freezer Access

Know who entered the freezer and when. Track how long the door was open.

3 Ways to Lock
- Facial recognition
- Keypad
- Proximity card (Optional)*

*Available in the US and Canada only

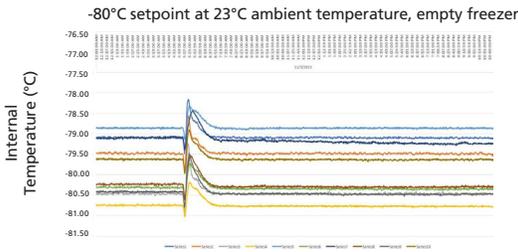**PHC Corporation of North America**

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The outer door gasket is easily removed and replaced without tools while the freezer remains in operation.

Model MDF-DU503VHA-PA shown with three shelves supplied standard. Additional shelves available.
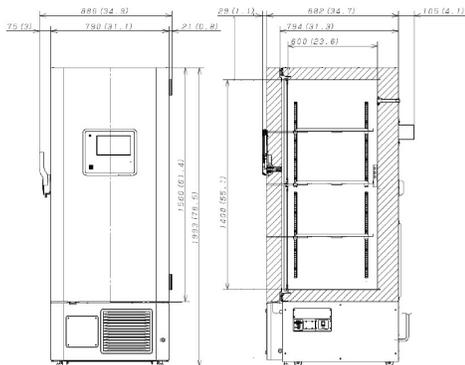
SMART Performance

Inverter driven compressors with SMART control allow for superior uniformity by only running compressors at slower speed under steady state conditions. Proprietary algorithms give the control that allows extremely tight uniformity.

Temperature Uniformity Data:

-80°C setpoint at 23°C ambient temperature, empty freezer

Dimensions

Unit : inch | mm

Model Number		MDF-DU503VH-PA	MDF-DU503VHA-PA
External Dimensions (W × D × H) [1]	inches | mm	31.1 × 34.7 × 78.5 | 790 × 882 × 1993	
Internal Dimensions (W × D × H)	inches | mm	24.8 × 23.6 × 55.1 | 630 × 600 × 1400	
Volume	cu.ft. | liters	18.6 | 528	
Net Weight	lbs | kg	531 | 241	
2" box and Racks- Capacity	Box | Rack	384 | 16	
3" box and Racks- Capacity	Box | Rack	256 | 16	
Performance			
Temperature Control Range	°C	-40 to -86	
Uniformity [2]	°C	±3.0 (-80 Set point)	
Power Consumption	kWh/Day	4.99 (-80°C Steady State)	
BTU Nominal	Per Hour	710	
Noise Level [3]	dB(A)	52	
Ambient Temperature Operating Range	°C	+5 to +30	
Control			
Controller		Microprocessor with non-volatile memory, USB connectivity, IoT Ready [4]	
Digital Temperature Display		LCD Touchscreen	
Controller Security		Screen lock w/ password protection, facial recognition, NFC [5]	
Temperature Sensor		RTD	
Refrigeration			
Cooling Method		Cold Wall (Synchronized variable speed cascade system)	
Compressors	High Stage | Low Stage	750 W Variable | 750 W Variable	
Refrigerant Type (Natural Refrigerant)	High Stage | Low Stage	R-290 | R-170	
Insulation		Rigid polyurethane foam (PUF) + VIP Plus vacuum insulated panels	
Construction			
Exterior Material		Painted steel	
Interior Material		Painted steel	
Outer Door	qty	1 lock with set of 2 keys and electronic lock (provision for optional pad lock)	
Inner Doors	qty	2 insulated stainless steel with latch	
Shelves	qty	3 (adjustable)	
Shelf Dimensions (W × D)	inches | mm	24.2 × 21 | 615 × 534	
Max. Load per Shelf	lbs | kg	110 | 50	
Access Ports, Qty, Position, Diameter	qty	3: upper wall (back-up system), bottom left (recorder sensor), bottom right (access) 0.6 in | 17mm	
Casters | Leveling Legs	qty	4 | 2	
Vacuum Release	qty	1 Auto	
Alarms (V= Visual Alarm, B= Buzzer Alarm, R= Remote Alarm, A= Adjustable, L= Logged, D= Settable delay)			
Power Failure		V-B-R-L	
Temperature (High and Low)		V-B-R-L-A	
Sensor Failure		V-B-R-L	
Door Open		V-B-L	
Maintenance Alert		V-L	
Remote Alarm Contacts		DC 30V 2A (normally open, normally closed, common)	
Electrical and Noise Level			
Power Supply		220V, NEMA 6-15P, 60 Hz 8ft cord length	115V, NEMA 5-15P, 60 Hz 8ft cord length
Max Amps		6	8.5
Options			
Circular Type Chart Recorders		MTRC954*	
Chart Paper/ Ink Pen		C7100386REV / R252*	
Backup System		MDF-UB9-PW | MDF-UB9-PW-LN2	
Inner Door Kit with Smaller Doors	qty	(4) MDF-5ID4-PW | (5) MDF-5ID5-PW	
Proximity Cards	qty	(5) MTR-IC-PW	
NFC Module		MTR-NFC-PW	
Optional Communication System			
Wireless, Cloud-Based, Automatic Data Management		LabAlert ®*	
4-20mA Output Module		MTR420MAC- Self Powered | MTR420MAL- Loop Powered*	
Certifications and Warranty			
Certification		QPS Listed and ENERGY STAR	
Warranty [6]		5 years parts and labor	

[1] Exterior dimensions of cabinet excluding handle, rear stand-off brackets and other external projections.
[2] 3rd party testing lab using 9 temperature points with 75°F ambient temperature.
[3] Nominal value, background noise 20 dB(A).
[4] Unit software ready for future IoT options.
[5] NFC is an optional unlock method for Electronic Lock, accessory part number MTR-NFC-PW and MTR-IC-PW; US and Canada only.
[6] Current warranty offered at time of printing and may be subject to change; US and Canada only.

*Manufactured by others

Specifications are subject to change without notice.
For latest specification information contact PHC Corporation of North America at info@us.phchd.com.
Performance data herein is based on independent testing at time of publication.

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