PHCbi

Life Science Innovator Since 1966

Technical Data Sheet

VIP® ECO SMART

MDF-DU703VHA-PA ENERGY STAR® Certified Dual Voltage 115V | 220V Natural Refrigerant -86°C Ultra Low Temperature Freezer

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

General Specifications		
Volume	cu.ft. | liters	25.7 | 729
Temperature Control Range	°C	-40 to -86
External Dimensions (W × D × H) [1]	inches | mm	40.6 × 34.7 × 78.5 | 1030 × 882 × 1993
Internal Dimensions (W × D × H)	inches | mm	34.3 x 23.6 x 55.1 | 870 x 600 x 1400
Footprint	ft² | m²	9.78 | 0.91
Stainless Steel Shelf (adjustable)	qty	3
Power Supply (Dual Voltage)		115V, 60HZ, NEMA 5-15P, 8 ft cord length 220V, 60HZ, NEMA 6-15P, 8 ft cord length
Factory Certification		ISO9001, ISO13485, ISO14001
NRTL Testing Lab Mark		QPS Listed
Net Weight	lbs | kg	723 | 328
Noise Level [2]	dB(A)	46

Storage Specifications		
Racks per Freezer	qty	24
Racks per Shelf	qty	6
2" Boxes per Freezer	qty	576
3" Boxes per Freezer	qty	384

[1] Exterior dimensions of cabinet excluding handle, rear stand-off brackets and other external projections. Consult product web page for doorway entry instructions, less than 36": www.phchd.com/us/biomedical/preservation/ultra-low-freezers/mdf-du703vha-pa

[2] Actual value, background noise 20 dB(A).

Multiple options are available for racking including side opening and front loading trays. The information provided is for the most common racks. We also offer double height racks and other configurations, as well as customized racking for cryoboxes and other containers. Please speak to your local representative for more information.

Refrigeration	
Refrigeration System	Synchronized variable differential cascade system
Compressors	(2) 750 watt – Variable speed compressors (completely enclosed reciprocating type)
Condenser	**High-Stage:** fin and tube type **Low-Stage:** flat plate (brazed plate)
Evaporator	**High-Stage:** patented reverse flow heat exchanger **Low-Stage:** tube on sheet type (cold wall)
Refrigerant	**High-Stage:** R-290 natural refrigerant 135 Grams | 4.76 Ounces **Low-Stage:** R-170 natural refrigerant 85 Grams | 2.99 Ounces

Cabinet Construction	
Insulation	Rigid polyurethane foamed-in-place + VIP Plus® vacuum insulated panels: 3.1" (80 mm) thick
Exterior Material	Painted electrogalvanized steel
Interior Material	Powder coated electrogalvanized steel
Outer Door	Painted electrogalvanized steel exterior, Rigid polyurethane foamed-in-place + VIP Plus® vacuum insulated panels with EZlatch, key lock, with electronic access control [3], and handle can accommodate padlock.
Vacuum Relief	1: in door (auto release)
Inner Doors	2 (insulated, ABS, stainless steel frames, positive latches)

Model MDF-DU703VHA-PA showing insulated inner doors and EZlatch access.

ENERGY STAR

PHC Corporation of North America

VIP® ECO SMART -86°C Ultra-Low Temperature Freezer

ENERGY STAR – Certification Number 4790599804

MDF-DU703VHA-PA

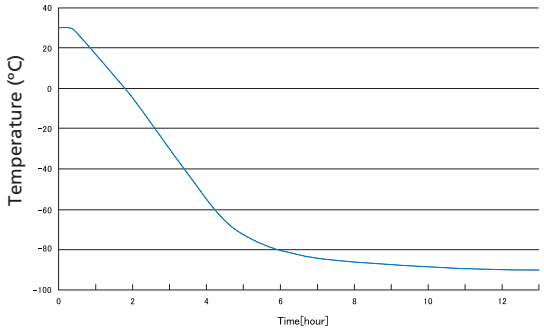
Performance Characteristics	
24°C Ambient, empty chamber, measured at center of chamber	
Energy Consumption [1]	
Daily Consumption (6× door openings) [2]	
Setpoint -70°C | Setpoint -80°C	4.9 kWh/day | 6.01 kWh/day
Steady State (no door openings)	
Setpoint -70°C | Setpoint -80°C	4.5 kWh/day | 5.4 kWh/day
MDEC (max. daily energy consumption)	
Steady State	5.4 kWh/day/25.7 cu.ft. = 0.21 kWh/day/cu.ft.
Performance	
Interior Uniformity	
Setpoint -70°C | Setpoint -80°C	±3°C | <±3°C
Average Steady State Temperature [4]	
Setpoint -70°C | Setpoint -80°C	-69.42°C | -79.65°C
Temperature Recovery [2] [5]	
Setpoint -70°C | Setpoint -80°C	10 minutes | 8 minutes
Refrigeration System Heat Rejection [6]	
Setpoint -70°C | Setpoint -80°C	640 BTU/Hr | 768 BTU/Hr
Pull-Down Time from 20°C Ambient	
Setpoint -70°C | Setpoint -80°C	4.5 hours | 5 hours

[1] Energy consumption per day, EPA Test, Version 1.1, Section 7, Reporting, G2c.
[2] Based on inner door opening time of 15 seconds per ENERGY STAR testing protocol with all mapped temperature points to within ±5C of setpoint.
[3] Calculation of ENERGY STAR based on performance of setpoints -70°C or -80°C.
[4] Overall average for all recorded interior temperature measurements at setpoints of -70°C or -80°C.
[5] Temperature recovery to ±5°C of setpoint.
[6] Based on standard calculations.

Based on independent, third-party testing at time of publication. ENERGY STAR test results for submitted products can be compared for performance across the competitive market. Results are published on the ENERGY STAR website at www.energystar.gov. See Certification Number 4790599804. Detailed test results are available, including additional tests at ambient temperature of 20°C and 30°C.

Temperature Pull-Down [7]

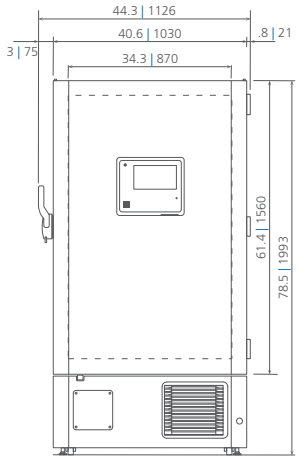
@ 30°C Ambient Temperature — Pull-down



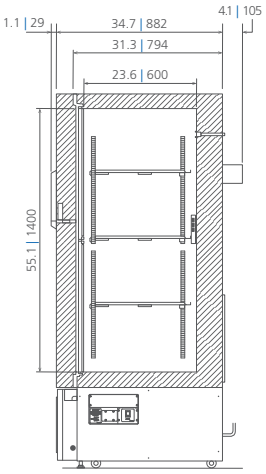
[1] The data reflects performance metrics rather than official product specifications. Results from technical data sheet tests should not be used to establish regulatory parameters for specific customer applications.
[2] The performance of the freezer will depend on factors such as the volume of customer products, storage configuration, selected options, operating conditions, test methods, and adherence to recommended maintenance practices.
[3] Ongoing product improvements may lead to changes or omissions in this technical data sheet without prior notice. PHC Corporation of North America disclaims responsibility for any damage, injury, loss, or expenses arising from the misuse of the information provided.

Dimensions — inches | mm

Front View

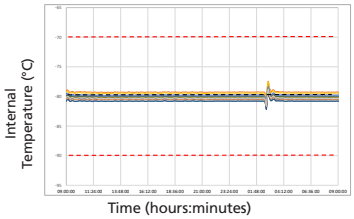


Side View



Temperature Uniformity Data [7]

-80°C Setpoint at 23°C Ambient Temperature, Empty Freezer



Lines represent actual data at multiple interior locations.

[7] Data points available upon request.

Specifications are subject to change without notice.
For latest specification information contact PHC Corporation of North America at info@us.phchd.com.

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