



MDF-DU500ZH(A)

MDF-DU700ZH(A)

Natural Refrigerants Ultra-Low Temperature Freezers

-86°C to -40°C



525 L / 725 L

Experience the quality of PHCbi brand ultra-low temperature storage.

The MDF-DU500ZH(A)/DU700ZH(A) FrostLess ultra-low temperature freezers fulfill the stringent requirements of reliability and energy efficiency modern laboratories demand together with reduced frost build-up. The cutting-edge thermal insulation design helps combat frost build-up, reducing freezer stress and delivering high performance.

Natural refrigerants and inverter technology

Naturally occurring hydrocarbon (HC) refrigerants have minimal effect on the environment and are compliant with environmental legislation for climate control. Combined with inverter technology, these refrigerants also provide more efficient cooling without compromising cooling performance, ambient tolerance, and recovery speeds following door openings.

Inner door with vacuum insulation

The freezer interior structure now incorporates an inner door that is equipped with vacuum insulation material. Insulating the cabinet interior and exterior with just the inner door helps reduce frost formation on the inner door surface.



MDF-DU700ZH(A)

Conventional model

ENERGY STAR certified¹⁾

Using smart compressors, natural refrigerants and integrated electronics combine to effectively reduce facility operating costs.

7.9 kWh/day*, steady state at -80°C in a 24°C ambient environment

6.2 kWh/day*, steady state at -70°C in a 24°C ambient environment

Using environmentally friendly and natural refrigerants minimize environmental impact without compromising ultra-low temperature performance, helping achieve sustainability goals.

* 3rd party test lab data

* Measurement data at MDF-DU700ZHA-PA

Energy efficient performance

Natural refrigerants, compressors and integrated electronics combine to lower operating costs compared to existing models by up to 53%* (expected percentage). Freezer operation is managed by effectively balancing temperature performance and energy management.



* Compared to conventional models

Reduced defrosting process on inner door surfaces

Eliminate stress from having to manually defrost the inner door surfaces of the ultra-low temperature freezer. PHC MDF-DU500ZH(A)/DU700ZH(A) models reduce the time-consuming "defrosting" process.



One-time defrosting and wiping time
Conventional model

Approx. 16 min.

MDF-DU500ZH
MDF-DU700ZH

Approx. 7 min.

NB: Frost build-up quantity in the freezer is dependent on the environment where freezer is used.

Data log function

The LCD touch panel conveniently facilitates several operations. Graphic display of temperature history, door opening/closing history, and other events can be checked.



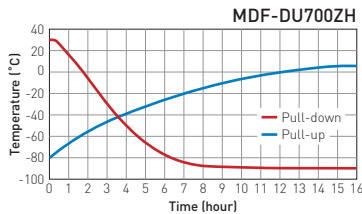
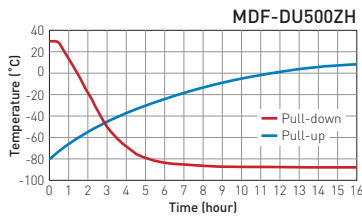
¹⁾ Based on independent third-party testing at time of publication. ENERGY STAR test results for submitted products can be compared for performance across the competitive market. For results see the ENERGY STAR website:
www.energystar.gov/productfinder/product/certified-lab-grade-refrigeration/details/2732254 (DU700ZHA)
www.energystar.gov/productfinder/product/certified-lab-grade-refrigeration/details/3417415 (DU500ZHA)



Natural Refrigerants Ultra-Low Temperature Freezer

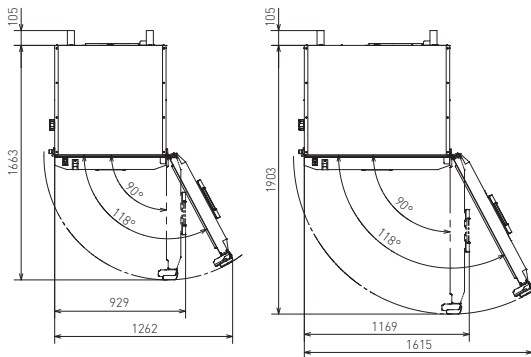
Performance Data

Pull-down & Pull-up Temperature (AT30 °C AC230V/50Hz)



Dimensions

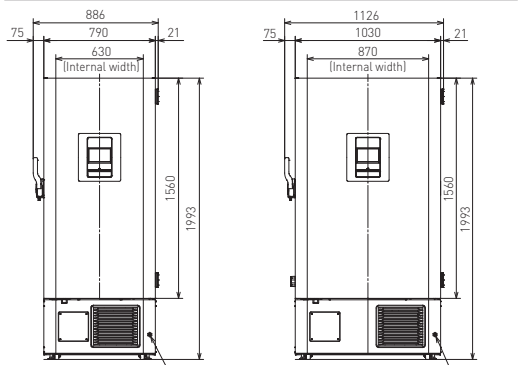
Unit : mm



MDF-DU500ZH
MDF-DU500ZHA

MDF-DU700ZH
MDF-DU700ZHA

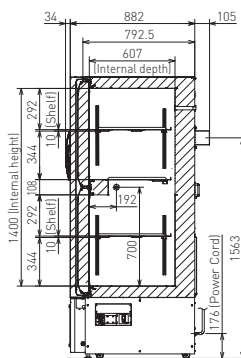
Top view



MDF-DU500ZH
MDF-DU500ZHA

MDF-DU700ZH
MDF-DU700ZHA

Front view



MDF-DU500ZH/MDF-DU500ZHA
MDF-DU700ZH/MDF-DU700ZHA

Side view

Model Number	MDF-DU500ZH-PE MDF-DU500ZHA-PA	MDF-DU700ZH-PE MDF-DU700ZHA-PA
External dimensions (W x D x H) ¹⁾	mm 790 x 882 x 1993	1030 x 882 x 1993
Internal dimensions (W x D x H)	mm 630 x 607 x 1400	870 x 607 x 1400
Volume	liters 525	725
Net weight	kg 248	282
Capacity ²⁾	2" boxes 352	528
Performance		
Cooling performance ³⁾	°C	-86
Temperature setting range	°C	-90 to -40
Temperature control range ³⁾	°C	-86 to -40
Control		
Controller	Microprocessor with non-volatile memory	
Display	LCD Touchpanel	
Temperature sensor	Platinum resistance (Pt 1,000 Ω)	
Refrigeration		
Refrigerant	HC	
Insulation	Rigid polyurethane foamed-in place + Vacuum insulation panel	
Construction		
Exterior material	Painted Steel	
Interior material	Painted Steel	
Outer door	qty	1
Outer door lock		Y
Inner doors	qty	2
Shelves	qty	3 (2 shelves adjustable, 1 dedicated central shelf)
Max. load - per shelf	kg	50
Vacuum release port		1 (manual)
Access port	qty	3
Access port position		back x1, bottom x2
Access port diameter	∅ mm	17
Casters	qty	4 (2 leveling feet)
Alarms (V = Visual Alarm, B = Buzzer Alarm, M = Message, R = Remote Alarm)		
Power failure		B-M-R
High temperature		V-B-M-R
Low temperature		V-B-M-R
Filter		V
Door open		V-B-M
Electrical and Noise Level		
Power supply (Frequency)	V (Hz)	MDF-DU500ZH-PE: 220/230/240 (50) 220/230 (60)
		MDF-DU500ZHA-PA: 115 (60)
		MDF-DU700ZH-PE: 220/230/240 (50) 220/230 (60)
		MDF-DU700ZHA-PA: 115 (60)
Noise level ⁴⁾	dB (A)	52
Options		
Back-up cooling kit		MDF-UB7-PW ⁵⁾
Inventory rack		IR-224U-PW, IR-220U-PW
Temperature recorders	- Circular type	MTR-G85C-PE MTR-G85A-PA MTR-G85C-PE MTR-G85A-PA
	- Chart paper	RP-G85-PW
	- Ink pen	PG-R-PW
	- Continuous strip type	MTR-85H-PW
Recorder sensor cover	- Chart paper	RP-85-PW
	- Ink pen	DF-38FP-PW
	- Recorder fixing	MDF-S3085-PW
Recorder sensor cover		MTR-DU700SF-PW
Optional Communication Systems		
Digital interface (RS232C/RS485)		MTR-480-PW ⁶⁾
Interface board		MTR-420MA-PW ⁶⁾
Ethernet interface (LAN)		MTR-L03-PW ⁶⁾
Energy Efficiency Certification		
ENERGY STAR certification		-PA model: ENERGY STAR certified
Quality Management System		
Certification		ISO9001

- 1) Exterior dimensions of main cabinet only, excluding handle and other external projections.
- 2) Usable storage capacity of 2" boxes when the original 3 trays installed.
- 3) Air temperature measured at freezer center, ambient temperature 30 °C, no load.
- 4) Nominal value - Background noise 20 dB(A).
- 5) Settable range of the injection start temperature is -70°C to -50°C.

- 6) Standard signal and interface cables with a maximum length of 30 meters are recommended.
 - Appearance and specifications are subject to change without notice.
- Caution:** PHC Corporation guarantees this product under certain warranty conditions. However, please note that PHC Corporation shall not be responsible for any loss or damage to the contents of the product.



Preservation Equipment, Experimental Environment Equipment, Dispensary Equipment, Culturing Equipment and Drying & Sterilising Equipment for General Laboratory use
The management of the design, development, production and servicing of the above.



PHC Corporation Biomedical Division is certified for:
Environmental management system: ISO14001

PHC Corporation, Biomedical Division 1-1-1 Sakada, Oizumi-machi, Ora-gun, Gunma 370-0596, Japan

ENERGY STAR Certified

For details see

www.energystar.gov/productfinder/product/certified-lab-grade-refrigeration/details/2732254 (DU700ZHA)
www.energystar.gov/productfinder/product/certified-lab-grade-refrigeration/details/3417415 (DU500ZHA)



PHC Corporation

<https://www.phchd.com/global/biomedical/>

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