



MDF-MU549DH  
MDF-MU549DHL

## -40°C Biomedical ECO Freezer with Natural Refrigerants



479 L

### -40°C biomedical ECO freezer with separate temperature controls for the 2 completely independent chambers

The unit provides environmental savings and flexibility while maintaining the quality of the samples during preservation. Such flexibility includes height-adjustable shelf trays, separate top and bottom chambers with independent temperature settings and separate doors that prevent cold air leakage.

### Natural Refrigerants and Inverter Technology

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.

### 2 independently controlled temperature chambers

Top and bottom chambers are equipped with 2 independent refrigeration circuits. This enables separate temperature settings and defrosting for the two chambers.



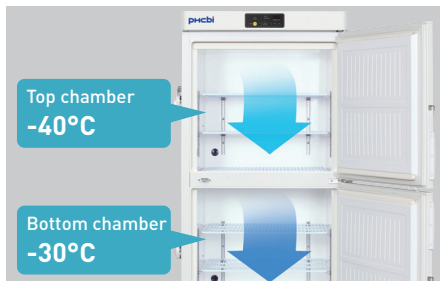
### Height-adjustable shelf trays

The unit features completely height-adjustable shelf trays, accommodating chamber containers of various sizes.



### Energy efficient performance

Natural refrigerants, compressors and integrated electronics combine to lower operating costs. Freezer operation is managed by effectively balancing temperature performance and energy management.



### Double chamber allows multi-purpose storage

2 completely independent chambers each with its own temperature control make storage possible of samples with different storage temperature requirements. Moreover, independent temperature control allows for defrosting each chamber separately without having to relocate samples.



### Safe & Secure Sample Storage

To securely preserve the valuable samples, multiple safety features include 2 separate doors that reduce cold in-chamber air leakage when taking samples in/out and high/low abnormal temperature alarms. In addition to a standard door lock, a latch with a padlock is also available.

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### Inverter Compressors

While conventional freezers use a single-speed compressor's on/off cycle, the unit uses inverter compressors that can run at different speeds to maximise cooling performance under different conditions. Combined with hydrocarbon refrigerants, these compressors ensure the most efficient energy use and reduced heat output.

### Versatile Alarm Functions

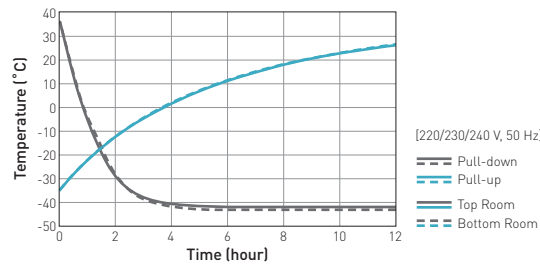
Alarms for high/low temperatures and an error code display with self-diagnostic functions inform users of any abnormalities such as power failures for prompt actions that avoid damaging valuable samples.

### Easy Disposal of Defrosting Water

Manual defrosting becomes easy using the drain hose that is attached to the main unit (hose usually stowed away when not in use).

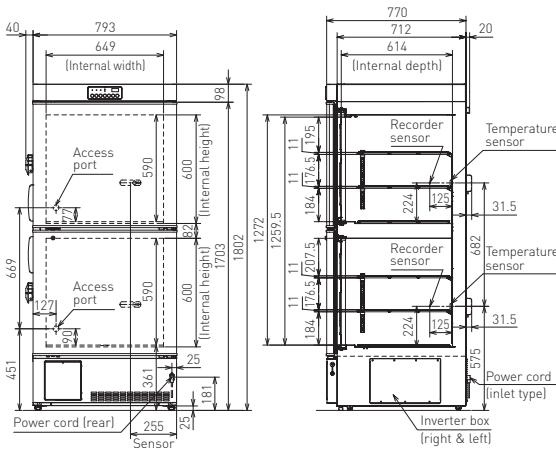
### Performance Data

#### AT35°C Pull-down & Pull-up Temperature<sup>2)</sup>



### Dimensions

Unit: mm



(220/230/240 V, 50 Hz)



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.



Freezers, Refrigerators, Incubators, and Drying and Sterilising Equipment for Medical use

The management of the design, development, production and distribution 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

DISTRIBUTED BY:

**Sheng Chuan 聖川實業有限公司**

電話：02-2980-7936 傳真：02-8988-3071

地址：新北市三重區五華街1巷26號1樓

信箱：service@sagevision.com.tw

網站：http://sagevision.com.tw/



Model Number	MDF-MU549DH-PE	MDF-MU549DH-PK	MDF-MU549DHL-PE
External dimensions (W x D x H) <sup>1)</sup>	mm 793 x 770 x 1802		
Internal dimensions (W x D x H)	mm 649 x 614 x 600 [per chamber] x 2		
Volume	litres 479		
Net weight	kg 165		
<b>Performance</b>			
Cooling performance <sup>2)</sup>	°C -40		
Temperature setting range <sup>2)</sup>	°C -45 to -18		
Temperature control range <sup>2)</sup>	°C -40 to -20		
<b>Control</b>			
Controller	Microprocessor, non-volatile memory		
Display	LED		
Temperature sensor	Thermistor		
<b>Refrigeration</b>			
Compressors	W 2 x 400 (Used in upper chamber and lower chamber respectively)		
Refrigerant	HC		
Insulation material	PUF		
Insulation thickness	mm 70		
<b>Construction</b>			
Exterior material	Painted Steel		
Interior material	Painted Steel		
Outer door	qty 2		
Outer door lock	Yes		
Shelves	qty/mm 6 (W624 x D510)		
Max. load - per shelf	kg 30		
Access port	qty 2 (1 per chamber)		
Access port position	Back		
Access port diameter	Ø mm 30		
Casters	qty 4 (2 levelling feet)		
<b>Alarms</b> (V = Visual Alarm, B = Buzzer Alarm, R = Remote Alarm)			
Power failure	V-B-R		
High temperature	V-B-R		
Low temperature	V-B-R		
<b>Electrical and Noise Level</b>			
Power supply	V 220/230/240	220	220/230/240
Frequency	Hz 50	60	50
Noise level <sup>3)</sup>	dB [A] 42		
<b>Accessories</b>			
Accessories	qty 1 Key set / 1 Defrost spatula		
<b>Options</b>			
Temperature recorders	- Circular type	MTR-G85C-PE	
		- Chart paper: RP-G85-PW - Ink pen: PG-R-PW - Recorder housing: MDF-S740T-PW (for top side) MPR-S7-PW (for lower front)	
- Continuous strip type	MTR-4015LH-PE		
	- Chart paper: RP-40-PW - Recorder housing: MPR-S30-PW (for unit lower front) *Unit left top mounting hardware included in recorder kit		
Storage container	MDF-055C-PW (2 pcs/set)		
Inner dimensions	mm W280 x D552 x H157		
<b>Optional Communication Systems</b>			
Digital interface [RS232C/RS485] <sup>4)</sup>	MTR-480-PW		
Ethernet interface [LAN] <sup>4)</sup>	MTR-L03-PW		
<b>Quality Management System</b>			
Certification	ISO13485		ISO9001

<sup>1)</sup> External dimensions of main cabinet only, excluding handles and other external projections.  
<sup>2)</sup> Air temperature measured at freezer centre, ambient temperature 35°C, no load.  
<sup>3)</sup> Nominal value - Background noise 20 dB[A]  
<sup>4)</sup> Only for MTR-5000 (data acquisition system) users.

• 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.

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