



## VIP ECO

Natural Refrigerants Ultra-Low Temperature Freezer

-86°C to -40°C



528 L / 729 L

**Cost-saving and environmentally friendly sample storage within an optimal footprint.**

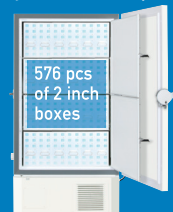
The VIP ECO -86°C to -40°C upright freezer provides maximum sample storage capacity within an optimum footprint. When combined with natural refrigerants to minimise energy consumption, environmental impact is reduced.

### 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 and ambient tolerance and recovery speeds following door openings.

### Efficient Sample Storage

New cabinet design combines an insulated outer door with superior storage efficiency and an inner door designed for uniform temperature distribution. This improves storage efficiency approximately 10 % (576 pcs of 2-inch Cryo boxes can be stored in the MDF-DU702VH, MDF-DU702VHL) while maintaining the same footprint as conventional models.



### Intelligent Interface

The newly developed ergonomic "EZlatch" door handle makes access to stored samples even easier. Intuitive and intelligible large colour LCD touchpanel is provided.



### Energy efficient performance



Natural refrigerants, compressors and integrated electronics combine to lower operating costs by up to 30%\*. Freezer operation is managed by effectively balancing temperature performance and energy management.

\* Compared to conventional models.  
Power source: 230V/240V 50Hz, AT 30°C

### Flexible shelf layout



The inner space offers flexible storage, allowing either three or four shelves\* and chamber bottom to be used. Also, an inner door with four or five small doors (optional) is available.



\* Three shelves equipped as standard.

### Reliable controllability and data log function



Large colour LCD touchpanel is accurately controlled even with a gloved hand, while the USB port makes transferring logged data of product's operational status to a PC convenient.

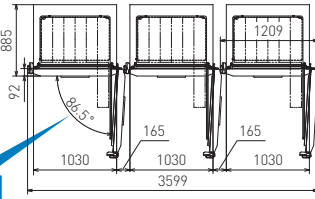
# VIP ECO Natural Refrigerants Ultra-Low Temperature Freezer

Approximately 110 mm\*1 installation width can be reduced when installing 3 units in line compared to conventional units.

The "Chamfer-design" body front features a chamfered edge for reduced installation space when compared to conventional models in a multiple unit installation. The design is especially suitable for a biobank or similar application.



\*1 Comparison of MDF-DU702VH, MDF-DU702VHL and the conventional MDF-DU700VH product. Comparison condition: Minimum width required when installing 3 units in line. This prevents outer doors from contacting each other for door openings/closings.



Opening the inner door to 90 degrees lets storage racks be removed.

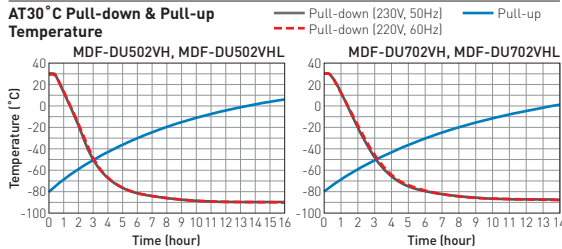
## User friendly for daily operation with newly developed vacuum release port and fivefold gasket

Newly developed automatic vacuum release port and fivefold gasket are adopted. Automatic release of negative pressure and reduced frost realise user friendliness even for frequent door opening.



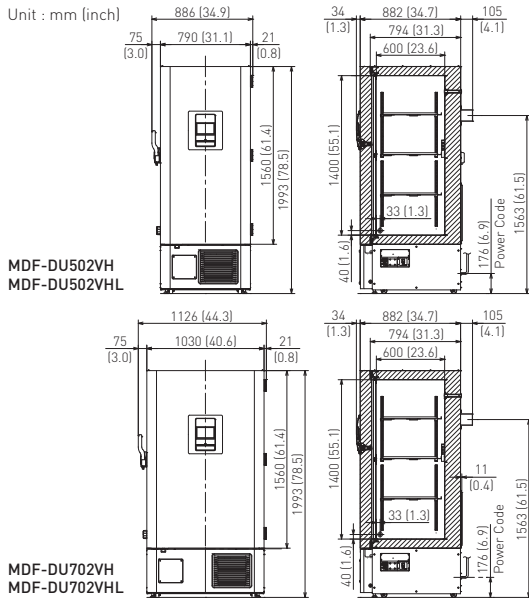
## Performance Data

AT30°C Pull-down & Pull-up Temperature



## Dimensions

Unit : mm (inch)



Model Number <sup>2)</sup>		MDF-DU502VHL-PS MDF-DU502VH-PA MDF-DU502VH-PE	MDF-DU702VHL-PS MDF-DU702VH-PA MDF-DU702VH-PE
External dimensions (W x D x H) <sup>1)</sup>	mm	790 x 882 x 1993	1030 x 882 x 1993
Internal dimensions (W x D x H)	mm	630 x 600 x 1400	870 x 600 x 1400
Volume	litres	528	729
Net weight	kg	246	278
Capacity <sup>2)</sup>	2" boxes	384	576
<b>Performance</b>			
Cooling performance <sup>3)</sup>	°C	-86 to -40	
Temperature setting range	°C	-90 to -40	
Temperature control range <sup>3)</sup>	°C	-86 to -40	
<b>Control</b>			
Controller	Microprocessor, non-volatile memory		
Display	LCD Touchpanel		
Temperature sensor	Pt-1000		
<b>Refrigeration</b>			
Refrigeration system	Cascade		
Compressors	W	2 x 750	
Refrigerant	HC		
Insulation material	PUF / VIP PLUS		
Insulation thickness	mm	80	
<b>Construction</b>			
Exterior material	Painted Steel		
Interior material	Painted Steel		
Outer door	qty	1	
Outer door lock	Y		
Inner doors	qty	2 pieces	
Shelves	qty	3 (stainless steel)	
Max. load - per shelf	kg	50	
Max. load - total	kg	415 <sup>4)</sup>	515 <sup>4)</sup>
Vacuum release port	2 (1 automatic, 1 manual)		
Access port	qty	3	
Access port position	3 locations [rear x 1, bottom x 2]		
Access port diameter	Ø mm	17	
Casters	qty	4 (2 leveling 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		
Filter	V		
Door open	V-B		
<b>Electrical and Noise Level</b>			
Power supply	V	PA: 220 / PE: 220/230/240 / PS: 230	
Frequency	Hz	PA: 60 / PE: 50 / PS: 50	
Noise level <sup>5)</sup>	dB [A]	52	
<b>Options</b>			
Small inner door kit	set of 5	MDF-5ID5-PW <sup>6)</sup>	MDF-7ID5-PW <sup>6)</sup>
	set of 4	MDF-5ID4-PW	MDF-7ID4-PW
Liquid CO <sub>2</sub> back-up	MDF-UB7-PW		
Inventory rack	IR-224U-PW, IR-316U-PW		
Temperature recorders	- Circular type	MTR-G85C-PE <sup>7)</sup> - Chart paper: RP-G85-PW - Ink pen: PG-R-PW	
	- Continuous strip type	MTR-85H-PW <sup>7)</sup> - Chart paper: RP-85-PW - Ink pen: DF-38FP-PW - Recorder housing: MDF-S3085-PW	
<b>Optional Communication Systems</b>			
Digital interface (RS232C/RS485) <sup>8)</sup>	MTR-480-PW		
Ethernet interface (LAN) <sup>8)</sup>	MTR-L03-PW		
<b>Quality Management System</b>			
Certification	ISO 9001		

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 centre, ambient temperature 30°C, no load.  
 4) Max. load allowed for chamber interior — total shelves (3) and chamber bottom, excluding load on casters mounted on product.  
 5) Nominal value - Background noise 20 dB[A].  
 6) Installation of small inner door kit may affect usable storage capacity.  
 7) Requires sensor cover MTR-DU700SF-PW.  
 8) Only for MTR-5000 (data acquisition system) users.  
 9) MDF-DU502VH, MDF-DU502VHL, MDF-DU702VH, MDF-DU702VHL are for laboratory use.  
 • 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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 The management of the design, development, production and servicing of the above.  
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