

# Ultra-low Temperature Freezer | MDF-DU901VHL VIP ECO

## 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.

## Maximum Sample Storage

The use of space saving VIP PLUS panels within the freezer cabinet allows a capacity of up to 616 2" boxes inside a footprint of just 1m<sup>2</sup> for maximum storage. The freezer's conventional depth allows for easy installation.

## 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.

Model Number		MDF-DU901VHL-PE
External dimensions (W x D x H) <sup>1)</sup>	mm	1150 x 870 x 1993
Internal dimensions (W x D x H)	mm	1010 x 600 x 1400
Volume	litres	845
Net weight	kg	328
Capacity	2" boxes	616
Performance		
Cooling performance <sup>2)</sup>	°C	-86
Temperature setting range	°C	-90 to -50
Temperature control range <sup>2)</sup>	°C	-86 to -50
Control		
Controller		Microprocessor, non-volatile memory
Display		LCD Touchpanel
Temperature sensor		Pt-1000
Refrigeration		
Refrigeration system		Cascade
Compressors	W	2 x 1100
Refrigerant		HC
Insulation material		Rigid polyurethane foam (PUF) / VIP PLUS
Insulation thickness	mm	70
Construction		
Exterior material		Painted Steel
Interior material		Painted Steel
Outer door	qty	1
Outer door lock		Y
Inner doors	qty	2 pieces (insulated)
Shelves	qty	3 (stainless steel)
Max. load - per shelf	kg	50
Vacuum release port		Y
Access port	qty	2
Access port position		Back, Bottom
Access port diameter	Ø mm	17
Casters	qty	4 (2 leveling feet)
Alarms <span style="float: right;">(V = Visual Alarm, B = Buzzer Alarm, R = Remote Alarm)</span>		
Power failure		V-B-R
High temperature		V-B-R
Low temperature		V-B-R
Filter		V
Door open		V-B
Electrical and Noise Level		
Power supply	V	220 / 230/ 240
Frequency	Hz	50
Power Consumption (230V/50Hz) SV-80°C	kWh/day	AT23°C: 8.6 AT30°C: 10.2
Noise level <sup>3)</sup>	dB (A)	52
Options		
Small inner door kit	set of 2	MDF-9ID-PW (max 2) <sup>4)</sup>
Liquid CO <sub>2</sub> back-up		MDF-UB7-PW
Inventory rack		IR-224U-PW, IR-220U-PW
Temperature recorders	- Circular type	MTR-G85C-PE <sup>5)</sup> - Chart paper: RP-G85-PW - Ink pen: PG-R-PW
	- Continuous strip type	MTR-85H-PW <sup>5)</sup> - Chart paper: RP-85-PW - Ink pen: DF-38FP-PW - Recorder housing: MDF-S3085-PW
Optional Communication Systems		
Digital interface (RS232C/RS485) <sup>6)</sup>		MTR-480-PW
Ethernet interface (LAN) <sup>6)</sup>		MTR-L03-PW
Quality Management System		
Certification		ISO 9001

<sup>1)</sup> Exterior dimensions of main cabinet only, excluding handle and other external projections.

<sup>2)</sup> Air temperature measured at freezer centre, ambient temperature 30°C, no load.

<sup>3)</sup> Nominal value - Background noise 20 dB(A).

<sup>4)</sup> Installation of small inner door kit may affect usable storage capacity.

<sup>5)</sup> Requires sensor cover MTR-DU700SF-PW.

<sup>6)</sup> Only for MTR-5000 (data acquisition system) users.

**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 stored in the product.

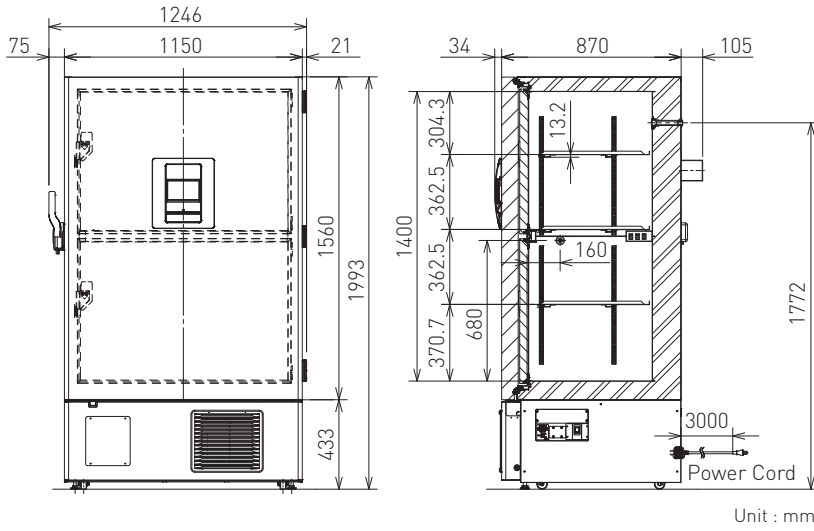


## Reliable controllability and data log function

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

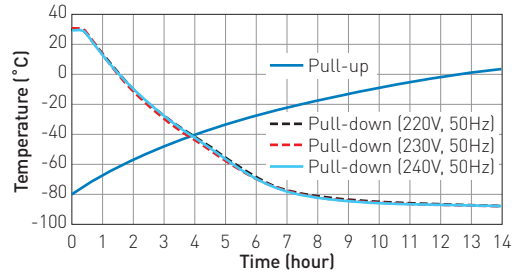


Dimensions

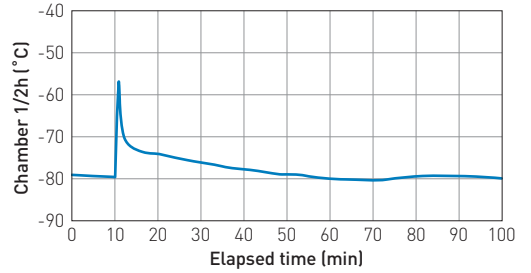


Performance Data

AT30°C Pull-down & Pull-up Temperature (No load)

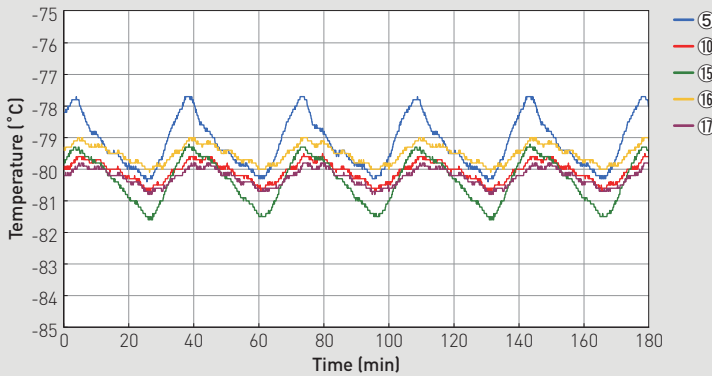


Temperature recovery after top door opened for 60 sec., Conditions: AT23°C, 230V/50Hz, SV-80°C

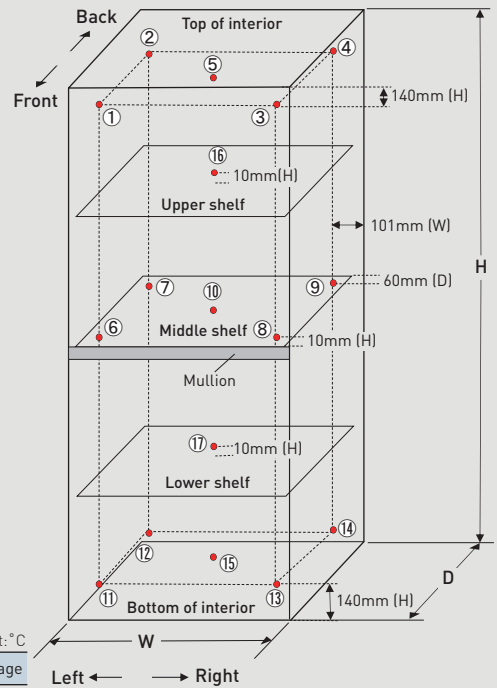


Temperature Stability

Condition: SV-80°C, AT23°C, 230V/50Hz, no load



Temperature uniformity - 17 points measuring



Internal Temperature Uniformity (Reference Data)

Distribution data

Temperature of the cycle in each area (SV-80°C, air temperature)

Conditions

Load: Unloaded

Ambient temperature 23°C, 230V/50Hz

	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮	⑯	⑰	Average
Maximum	-76.4	-77.1	-76.1	-76.9	-77.7	-78.1	-79.6	-78.1	-79.5	-79.5	-77.8	-78.7	-78.0	-78.5	-79.2	-79.0	-79.8	—
Minimum	-80.5	-80.9	-80.2	-80.5	-80.4	-80.0	-81.7	-79.7	-81.5	-80.7	-80.2	-81.2	-80.4	-81.1	-81.6	-80.1	-80.8	—
Middle of cycle	-78.5	-79.0	-78.2	-78.7	-79.1	-79.1	-80.7	-78.9	-80.5	-80.1	-79.0	-80.0	-79.2	-79.8	-80.4	-79.6	-80.3	-79.5

(Note) Disclaimer

- Specification may change without notice.
- The performance data was measured by inhouse test data of PHC.
- The Performance data is a reference data and not guaranteed.
- Not all the products available in all countries.