

# -30°C/-20°C Biomedical Freezers



-30°C/-20°C BIOMEDICAL FREEZERS

**SANYO's MDF Series Freezers offer the outstanding reliability and performance required in a wide variety of cold storage and research applications.**

In the biotechnology field, freezers provide effective storage of enzymes for genetic research as well as culture media, reagents and samples for testing. In the industrial field, they are ideal for ageing and temperature tests on electronic components, precision devices, and compound resins. In the medical field they provide effective storage of life-saving blood products and vaccines, as well as samples for diagnosis. As a storage environment, with excellent safety features, easy operability, and a host of other features, these freezers offer unsurpassed reliability.

- MDF-U333
- MDF-U537D
- MDF-U537
- MDF-U730
- MDF-U730M
- MDF-136
- MDF-236
- MDF-436



innovation  
performance  
reliability  
support

# p r e s e r v a t i o n

## -30°C/-20°C BIOMEDICAL FREEZERS

- SANYO MDF Series biomedical freezers offer outstanding reliability and performance for a wide variety of storage and research applications.
- "Plug-in and Go" Laboratory Grade freezing for safe storage of enzymes, vaccines, and other biologics that are designed with all the features required for biomedical research and biotechnology applications.
- If you are looking for precision temperature controlled storage environment, look to SANYO.

## ENHANCED OPERATION

### Enhanced Operation

- Front mounted display/control panel
- LED Temperature display
- The chamber temperature is displayed for five seconds if BUZZER key is depressed during power failure alarm
- After a power outage, operation resumes at pre-outage settings (non-volatile memory for temperature and alarm temperature settings)
- Calibration is possible through the control panel.
- Access ports
- Casters and adjustable feet



### Manual Defrost Enzyme & Biologics Preservation

- Storage at -30°C and -20°C easily with constant stable control.
- Uniform temperatures through out chamber
- Because there is no defrost cycle, the inner chamber temperature remains stable.

## ENHANCED OPERATION (CONT.)

### Auto Defrost (MDF-U730)

- Storage at -30°C with auto-defrost with consistent temperature control below -20°C during defrost cycle .
- Precision temperature uniformity throughout chamber due to forced air circulation with dual fans.
- Evaporator (Cooling Coils) provide the cooling effect and are located at the top of the inner chamber.
- Air flow inlets and outlets direct the air flow across the evaporator to cool the air.
- Dual Circulation fans add to excellent overall uniformity (uniform temperatures) inside the cabinet.

## FEATURES

### Temperature Recording Features (Optional)

A temperature recorder can be fitted in convenient position that will not interfere with installation.

- 7-day circular recorder (MTR-C954, MTR-C955)

### Environmentally-Friendly

- HFC refrigerant R-404A (non-CFC, non-HCFC refrigerant) is environment-friendly and offers superb performance.
- Pre-coated metal body causes less environmental damage than conventional paint coating.



## FEATURES

### Safety Features

- Alarm & Recording System
- High/low temperature alarm ( $\pm 5^{\circ}\text{C}$  to  $\pm 15^{\circ}\text{C}$ , adjustable)
- Power failure
- Remote alarm contacts
- Self diagnostics with error messages

Sanyo designed and built rotary compressor offers high performance, reliability and peace of mind. Heated mullion under door gasket prevents frost build up.

### Balance Hinge allows free choice of opening angle (chest type)

To make this chest freezer easier to use, the balance hinge keeps the door open at whatever angle chosen, leaving both hands free to work.



### Lockable door latch for extra security (upright type)

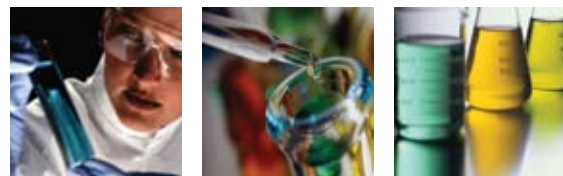
All units come with universal key locks and the upright freezers come with an additional lock. By adding a commercially available lock, you can safeguard the contents of the freezer and keep hazardous items out of harm's way.



### Interface board MTR-480

Option for SANYO Biomedical Products RS232C & RS485 Selectable. Option is easily installed.





# preservation

## CHEST TYPE — IDEAL TO COPE WITH FREQUENT LID OPENINGS

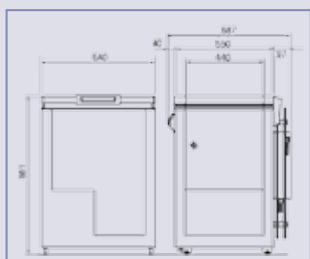


**MDF-136**

Effective Capacity: 4.9 cu.ft. (138 liters)

**Small Size suitable for personal use**

- Digital temperature display as standard feature
- Compact, personal size, 4.9 cu.ft.

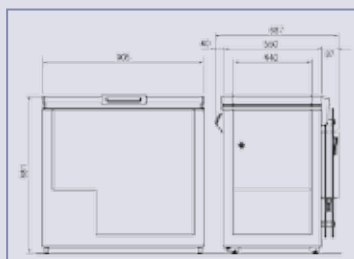


**MDF-236**

Effective Capacity: 7.8 cu.ft. (221 liters)

• Digital temperature display as standard feature

• Easy-to-use 7.8 cu.ft. mid-size model

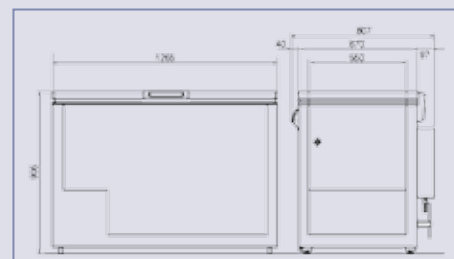


**MDF-436**

Effective Capacity: 15.0 cu.ft. (426 liters)

• Digital temperature display as standard feature

• Large-capacity, economical size



## UPRIGHT TYPE — MAXIMUM CAPACITY IN MINIMUM INSTALLATION SPACE



**MDF-U537**

Effective Capacity: 17.0 cu.ft.. (482 liters)

**Large capacity, economical, space-saving model**

- Top/Bottom twin door design prevents cold air escaping
- Individual freezer circuits for each of the five drawers

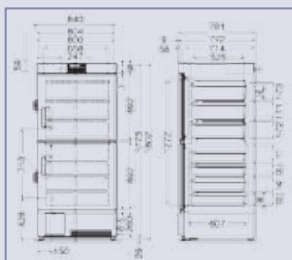


**MDF-U537D**

Effective Capacity: 16.0 cu.ft. (452 liters)

**Independent top/bottom control meets differing freezer needs simultaneously**

- Two independent freezer cabinets in one unit with separate defrost and operation
- Individual freezer circuits for each of the five drawers

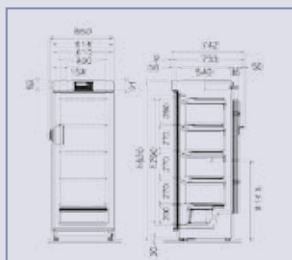


**MDF-U333**

Effective Capacity: 9.7 cu.ft. (274 liters)

**Easy-to-use, compact upright model**

- Microprocessor digital temperature display and control
- Convenient storage drawers

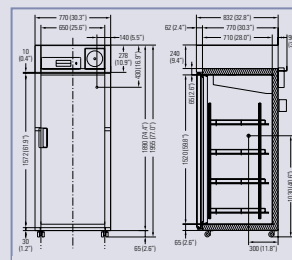


**MDF-U730M**

Effective Capacity: 24.4 cu.ft. (690 liters)

**Manual Defrost**

- Microprocessor digital temperature display and control
- Cold wall design
- Four adjustable shelves

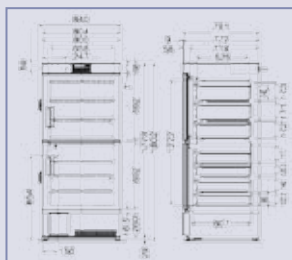
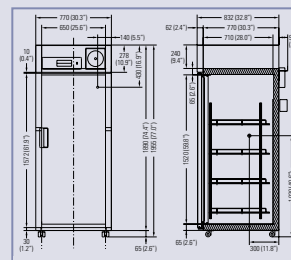


**MDF-U730**

Effective Capacity: 22.3 cu.ft. (632 liters)

**Automatic Defrost**

- Microprocessor digital temperature display and control
- Forced-air circulation
- Four adjustable shelves



# Specifications

Model	MDF-136	MDF-236	MDF-436	MDF-U537	MDF-U537D
<b>Exterior dimensions (W x D x H)</b>	640 x 687 x 881 (mm) 25.2 x 27.0 x 34.7 (inch)	905 x 687 x 881 (mm) 35.6 x 27.0 x 34.7 (inch)	1265 x 807 x 905 (mm) 49.8 x 31.8 x 35.6 (inch)	800 x 772 x 1802 (mm) 31.5 x 30.4 x 70.9 (inch)	804 x 772 x 1802 (mm) 31.7 x 30.4 x 70.9 (inch)
<b>Interior dimensions (W x D x H)</b>	525 x 440 x 715 (mm) 20.7 x 17.3 x 28.1 (inch)	790 x 440 x 715 (mm) 31.1 x 17.3 x 28.1 (inch)	1140 x 550 x 735 (mm) 44.9 x 21.7 x 28.9 (inch)	658 x 607 x 1272 (mm) 25.9 x 23.9 x 50.1 (inch)	658 x 607 x 589/Top (mm) 658 x 607 x 603/Bottom (mm) 25.9 x 23.9 x 23.2 (inch) 25.9 x 23.9 x 23.7 (inch)
<b>Capacity</b>	138L (4.9 cu. ft.)	221L (7.8 cu. ft.)	426L (15.0 cu. ft.)	482L (17.0 cu. ft.)	452L (16.0 cu. ft.)
<b>Cooling performance</b>	-35C (1/2h chamber air temp. Ambient temp.: 35C, no load)			-30C (1/2h chamber air temp. Ambient temp.: 35C, no load)	
<b>Control range</b>	-20°C to -35°C			-20°C to -30°C	
<b>Baskets</b>	2 (MDF-13B)	3 (MDF-13B)	4 (MDF-43B)	Top: 6 medium. Bottom: 8 small	
<b>Access ports</b>	17mm diameter, right-hand side and bottom left			30mm diameter, rear	Two 30mm diameter, rear
<b>Cooling system</b>	Hermetic rotary compressor				
<b>Refrigerant</b>	R-404A (HFC)			R-407D (HFC)	
<b>Alarm system</b>	• High/low temperature alarm (SV 5°C to 15°C adjustable) • Power failure • Remote alarm contact				
<b>Calibration</b>	Zero adjustment via control panel				
<b>Options</b>	7-day circular recorder: MTR-C954 Baskets (MDF-13B2/13B3/43B2/43B3)			7-day circular recorder: MTR-C955 (2 pen)	

Model	MDF-U333	MDF-U730	MDF-U730M
<b>Exterior dimensions (W x D x H)</b>	614 x 733 x 1620 (mm) 24.2 x 28.9 x 63.8 (inch)	770 x 830 x 1955 (mm) 30.0 x 32.7 x 77.0 (inch)	770 x 830 x 1955 (mm) 30.0 x 32.7 x 77.0 (inch)
<b>Interior dimensions (W x D x H)</b>	490 x 485 x 1290 (mm) 19.3 x 19.1 x 50.8 (inch)	650 x 710 x 1370 (mm) 25.6 x 28.0 x 53.9 (inch)	650 x 700 x 150 (mm) 25.6 x 27.5 x 59.8 (inch)
<b>Capacity</b>	274L (9.7 cu. ft.)	632L (22.3 cu. ft.)	690L (24.4 cu. ft.)
<b>Cooling performance</b>	-20°C to -30°C (AT: 35°C)	-20°C to -30°C (AT: 35°C)	-20°C to -30°C (AT: 35°C)
<b>Control range</b>	-20°C to -30°C (AT: 35°C)	-20°C to -30°C (AT: 35°C)	-20°C to -30°C (AT: 35°C)
<b>Baskets</b>	4 large, 1 small	-	-
<b>Access ports</b>	30mm diameter, left-hand side		
<b>Cooling system</b>	Hermetic rotary compressor		
<b>Refrigerant</b>	R134a (HFC)	Environmentally Friendly R404A Refrigerant (HFC)	Environmentally Friendly R404A Refrigerant (HFC)
<b>Alarm system</b>	High/low temperature alarm (SV 5°C to 15°C adjustable), Power failure, Remote alarm contact	High/low temp. alarm, door ajar alarm, remote alarm contact (DC30V2A), memory backup	High/low temp. alarm, door ajar alarm, remote alarm contact (DC30V2A), memory backup
<b>Calibration</b>	Zero adjustment via control panel		
<b>Options</b>	7-day circular recorder: MTR-C954	7-day circular recorder: MTR-C954	7-day circular recorder: MTR-C954

## Options



**Storage Baskets**  
For MDF-136/236  
**MDF-13B2** (set of two)  
**MDF-13B3** (set of three)

Outer dimensions: 255(W) x 420(D) x 205(H)mm  
Inner dimensions: 210(W) x 370(D) x 200(H)mm



**Temperature Recorder:**  
**MTR-C954/C955**



**Storage Baskets**  
For MDF-436  
**MDF-43B2** (set of two)  
**MDF-43B3** (set of three)

Outer dimensions: 275(W) x 530(D) x 205(H)mm  
Inner dimensions: 230(W) x 480(D) x 200(H)mm



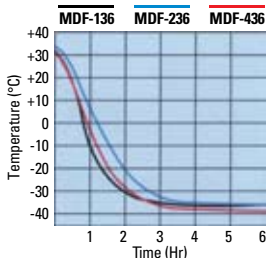
**Temperature Recorder:**  
**MTR-4014LH**  
-40C to +14C

- Mounting kit for chest: MDF-S3040
- Mounting kit for upright: MPR-S30 (No kit required MDF-U333)
- Recording paper: RP-40

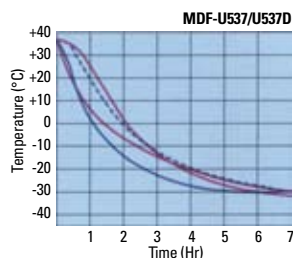
\*Appearance and specifications are subject to change without notice.

## Performance Data

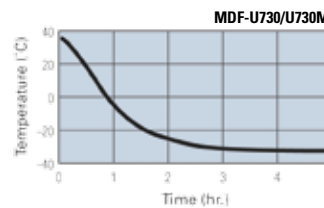
**Pull-down characteristics under no-load condition**



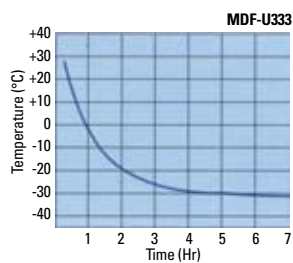
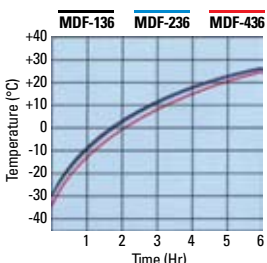
**Pull-down characteristics under no-load condition**



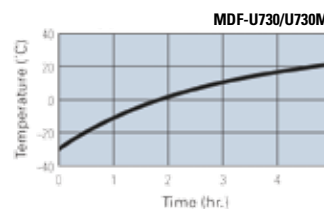
**Pull-down characteristics under no-load condition**



**Pull-up characteristics under no-load condition**



**Pull-down characteristics under no-load condition**



Conditions:  
AT 35°C, no load, measured at center of chamber



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