

Preservation  
sub-zero

## Biomedical Freezers

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SANYO's MDF Series Biomedical Freezers offer the outstanding reliability and performance required in a wide variety of storage and research applications. In the medical field, they provide effective storage of life-saving fresh and frozen blood supplies and vaccines, as well as samples for diagnosis. In the biotechnology field, they 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 aging and temperature tests on electronic components, precision devices, and compound resins. As a storage environment, with excellent safety features, easy operability, and a host of other features, these freezers offer unsurpassed reliability and functionality. If you are looking for precision temperature controlled storage equipment, look to SANYO.

## Chest type

Power to cope with frequent door openings



### MDF-137

Effective capacity:

**138 liters** (4.9 cu.ft.)

#### Small size suitable for personal use

- Digital temperature display as standard feature
- Compact, personal size



### MDF-237

Effective capacity:

**221 liters** (7.8 cu.ft.)

#### Versatile mid-size model

- Digital temperature display as standard feature
- Easy-to-use 200-liter mid-size model



### MDF-436

Effective capacity:

**426 liters** (15.0 cu.ft.)

#### Large size 400-liter class

- Digital temperature display as standard feature
- Large-capacity, economical size

## Enhanced Operation

- Front-mounted display/control panel (with new microprocessor) located at convenient waist height



Photo is MDF-U537D

- Memory backup
- Temperature display
- Front access calibration for temperature recorder
- The control panel, alarm system and non-volatile memory are the same for all models in the series.

- Single electrical box makes servicing simpler.
- 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)
- Control panel can be reset to zero for validation.
- Two access ports (right-hand side and bottom left) (chest type)
- Four casters and two adjustable feet

## Recording Features (Optional)

Recorder can be fitted in convenient position that will not interfere with installation. Choice of optional recorders

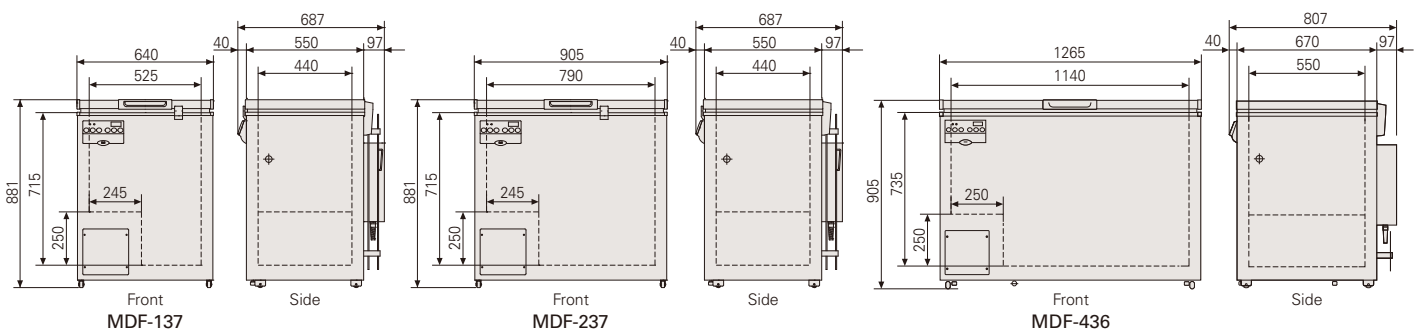
- 7-day circular recorder (MTR-G85) and 32-day strip recorder (MTR-4015LH) are available. (except MDF-U443)
- Temperature recorder with auto recharging battery
- Front access calibration for temperature recorder

## Environment-Friendly

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

## Dimensions

Unit: mm



# Upright type

Maximum capacity in minimum installation space

Powerful fan ensures temperature uniformity throughout the freezer cabinet.



**MDF-U5312**

Effective capacity:  
**482 liters (17.0 cu.ft.)**

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

- Top/bottom twin door design prevents cold air escaping
- Convenient storage drawers



**MDF-U537D**

Effective capacity:  
**452 liters (16.0 cu.ft.)**

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

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



**MDF-U333**

Effective capacity:  
**274 liters (9.7 cu.ft.)**

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

- Microprocessor digital temperature display
- Convenient storage drawers



**MDF-U443**

Effective capacity:  
**426 liters (15.0 cu.ft.)**

**Forced air circulation & auto defrost**

- High freezing power increases temperature uniformity
- Auto defrost for easy maintenance

## Safety Features

- Alarm & Recording System
- High/low temperature alarm
- Power failure alarm
- Remote alarm contact
- Self diagnostics function. Should an abnormality be picked up, an error code will be displayed in red figures.
- Breaker switch turns power off in event of over current abnormality.
- Balance hinges keep the lid open in any position to make this chest freezer easier to use. This means you have both hands free to work. (chest type)



position to make this chest freezer easier to use. This means you have both hands free to work. (chest type)

- Secure lock safeguards the contents of the freezer and keeps hazardous items out of harm's way.



Newly designed lid lock (chest type, except MDF-436).



- Door latch can accommodate a pad lock for added protection of valuable samples. (upright type)

- Part replacement notification (MDF-U5312)

## Temperature Monitoring Features (optional)

SANYO Data Acquisition (DAQ) System enables remote monitoring of SANYO biomedical freezers.

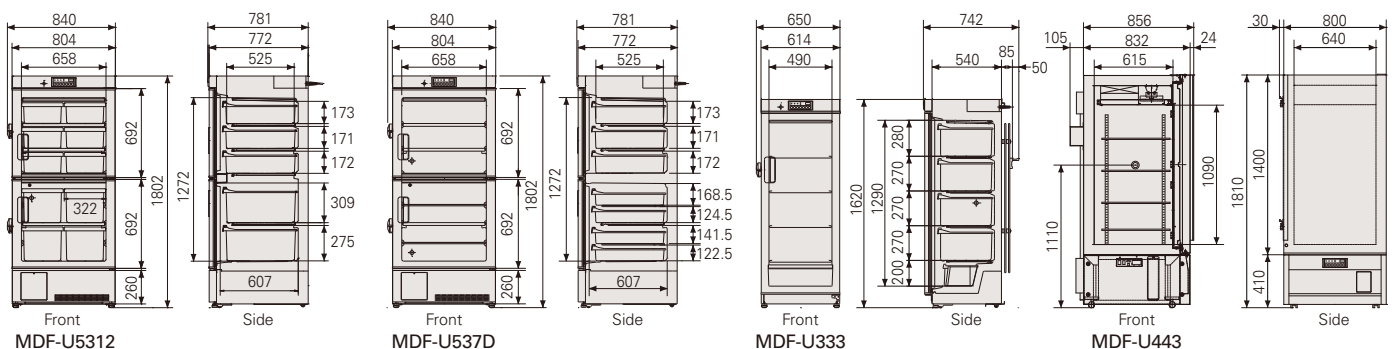
SANYO Data Acquisition Software MTR-5000



Graph Display

Channel List

Ethernet (LAN) Interface MTR-L03



## Specifications

Model	MDF-137*	MDF-237*	MDF-436	MDF-U5312	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)	804 x 772 x 1802 (mm) 31.7 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>	-30°C (AT: 35°C, no load)		-35°C (AT: 35°C, no load)	-30°C (AT: 35°C, no load)	
<b>Control range</b>	-20°C to -30°C		-20°C to -35°C	-20°C to -30°C	
<b>Baskets</b>	2	3	4	Top: 6 medium. Bottom: 4 large	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>Compressor</b>	Hermetic, 150W	Hermetic, 200W	Hermetic, 350W	Hermetic, 400W	Hermetic, 350W
<b>Refrigerant</b>	HFC				
<b>Alarm system</b>	• High/low temperature alarm (SV ±5°C to ±15°C adjustable) • Power failure • Remote alarm contact • Part replacement notification (MDF-U5312 only)				
<b>Calibration</b>	Zero adjustment via control panel				
<b>Options</b>	Temperature recorder (MTR-G85, MTR-4015LH), SANYO DAQ system			Temperature recorder (MTR-G85, MTR-4015LH), SANYO DAQ system	
<b>Baskets</b>	MDF-13B2/13B3		MDF-43B2/43B3		

Model	MDF-U333	MDF-U443*
<b>Exterior dimensions (W x D x H)</b>	614 x 733 x 1620 (mm) 24.2 x 28.9 x 63.8 (inch)	800 x 832 x 1810 (mm) 31.5 x 32.8 x 71.3 (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)	640 x 615 x 1090 (mm) 25.2 x 24.2 x 42.9 (inch)
<b>Capacity</b>	274L (9.7 cu. ft.)	426L (15.0 cu. ft.)
<b>Cooling performance</b>	-30°C (AT: 35°C, no load)	-40°C (AT: 35°C, no load)
<b>Control range</b>	-20°C to -30°C	-15°C to -40°C
<b>Baskets</b>	4 large, 1 small	—
<b>Access ports</b>	30mm diameter, left-hand side	40mm diameter, left-hand side
<b>Compressor</b>	Hermetic, 225W	Hermetic, 400W/750W
<b>Refrigerant</b>	HFC	
<b>Alarm system</b>	• High/low temperature alarm (SV ±5°C to ±15°C adjustable) • Power failure • Remote alarm contact	• High/low temperature alarm (SV ±5°C to ±20°C adjustable) • Power failure • Filter clogging • Remote alarm contact • Battery/fanmotor replacement notification
<b>Calibration</b>	Zero adjustment via control panel	—
<b>Options</b>	Temperature recorder (MTR-G85, MTR-4015LH), SANYO DAQ system	Temperature recorder (MTR-85H, MTR-4015LH), SANYO DAQ system

\*MDF-137 & 237 for 60Hz, MDF-U443 for 110V/60Hz and 115V/60Hz are unavailable.

\*Cooling performance is indicated by the temperature reached at the center of the freezer (at ambient temperature of 30°C with no load). In order to use the freezer at a stable temperature for a long time, it is recommended that the temperature be set to at least 5°C higher than the indicated lowest temperature.

In addition, depending on the usage conditions, it may not be possible to reach the indicated lowest temperature.

Caution: SANYO guarantees the product under certain warranty conditions.

SANYO in no way shall be responsible for any loss of content or damage to content.

• Appearance and specifications are subject to change without notice.

## Options

### Storage Baskets



For MDF-137/237  
**MDF-13B2**  
(set of two)  
**MDF-13B3**  
(set of three)



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

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

### Temperature Recorders



MTR-G85

**MTR-G85** (except MDF-U443) -100°C to +40°C

• Mounting kit for chest: MDF-S740

• Mounting kit for MDF-U5312 and MDF-U537D

(lower room): MPR-S7

• External mounting kit for MDF-U333 and MDF-U537D

(upper room): MDF-S740T

• Recording paper: RP-G85

• Recording pen: PG-R



MTR-4015LH

**MTR-4015LH** -40°C to +14°C

• Mounting kit for chest: MDF-S3040

• Mounting kit for upright: MPR-S30

(No kit required for MDF-U443)

• Recording paper: RP-40



MTR-85H

**MTR-85H**

(for MDF-U443 only) -100°C to +50°C

• Recording paper: RP-85

• Recording pen: DF-38FP

### SANYO DAQ system

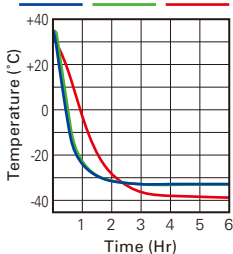
Data acquisition software **MTR-5000**/Ethernet (LAN) Interface

**MTR-L03** or RS232C/RS485 Interface **MTR-480**

## Performance Data

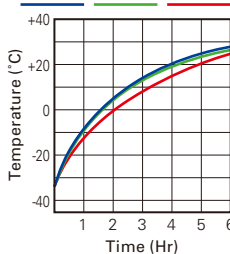
### Pull-down characteristics under no-load condition

MDF-137 MDF-237 MDF-436



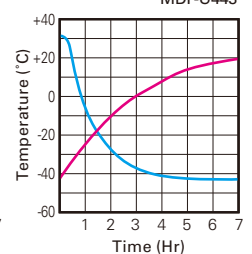
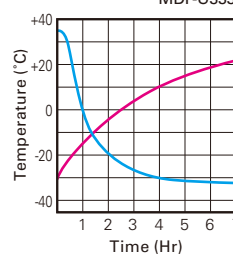
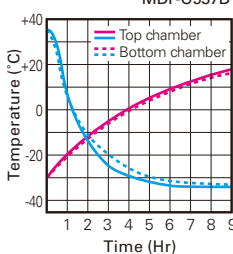
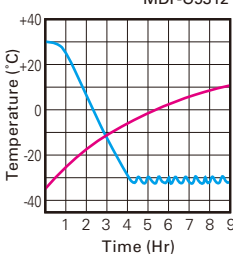
### Pull-up characteristics under no-load condition

MDF-137 MDF-237 MDF-436



### Pull-down characteristics during power failure

— Pull-down characteristics  
— Pull-up characteristics during power failure



Central air temp. in cabinet  
Ambient temp. 35°C, No-load

SANYO Electric Co., Ltd., Biomedical Division, Gunma is certified for:

**Quality management system: ISO9001 / Medical devices quality management system: ISO13485 / Environmental management system: ISO14001**

RoHS (European Restriction of Hazardous Substances directives) compliant

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