

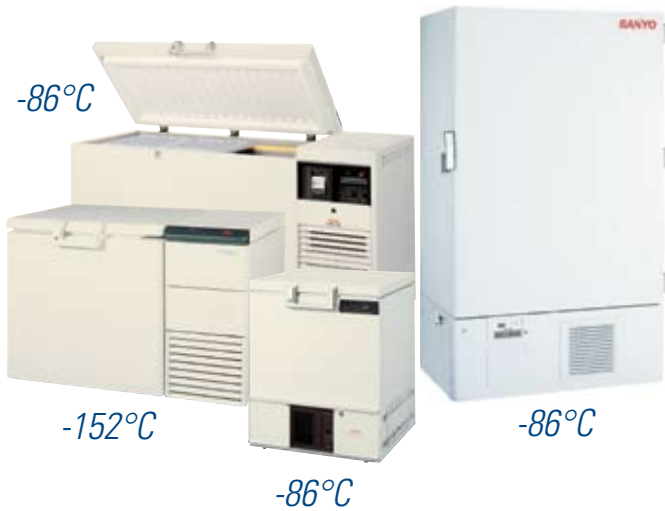
Ultra Low Temperature Freezers



ULTRA LOW TEMPERATURE FREEZERS
(CONVENTIONALLY INSULATED)

MDF-U5386S/C
MDF-U7386S/C
MDF-793C
MDF-593C
MDF-192
MDF-1156ATN

The Ideal – 86°C, –152°C, Freezing Environment in Capacities from 86 L to 701 L



Ideally suited for use in hospitals and laboratories, for long-term preservation and storage of blood, specimens and components, and in testing of various types. Ranging in size from economical chest freezer to large capacity upright configuration, one of these models is sure to be suitable for your needs. Whatever your preservation needs are, SANYO provides the right equipment to meet your exact needs. SANYO preservation systems employ advanced technology to insure a high precision temperature environment.

innovation
performance
reliability
support

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

-86°C PRODUCT FAMILY

A wide range of Ultra-low temperature freezers.

This product family offers different types and models of ultra-low freezer which can achieve and maintain temperatures down to -86°C (-123°F) at ambient temperature of 30°C (85°F). It is a wide selection, offering a variety of sizes and types suitable for uses such as long term preservation, testing, frozen storage etc.

Specially Designed Compressor for Ultra-Low Temperature.

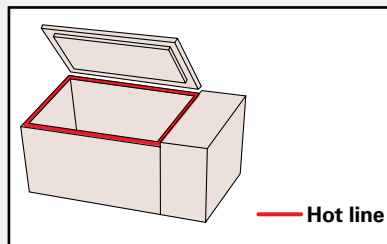
The refrigeration system is at the heart of producing ultra-low temperature freezing. In the process of developing various technical solutions in order to achieve and maintain ultra-low temperatures, Sanyo designed a compressor especially for ultralow temperature use. Sanyo is a leading manufacturer of ultra-low temperature freezers that develops and produces all its own components, from the refrigeration units to the micro-chips.

An Ideal Freezing Environment By Means of A Double-Insulation Wall and the "Hot Line".

In Ultra-Low temperature freezers, effective insulation is extremely critical since the temperature difference between the outside and the inner compartment

DESIGN

can be as high as 115°C. The insulation used in Sanyo's ultra-low temperature freezers is two layers of rigid, foamed in place polyurethane. This design prevents the insulation layers from distortion and cracking that might occur due to temperature differences inside and out, and creates the most efficient insulation material available today. Moisture condensation at the top edges of the cabinet due to differences in temperature inside and out causes frost and icing problems, which may reduce heat insulation efficiency and obstruct door movements. They are prevented by the "hot line" by means of which hot gas from the higher temperature circuit is circulated through the problem areas.



RELIABILITY & CONTROL

A Special Refrigerant and Oil to Maintain Stability and Reliability.

In order to expand refrigeration capacity, a special compound refrigerant has been used. This refrigerant relieves the refrigeration system of much of its load by evaporating at a lower temperature level within the circuit. Also, a special grade of refrigeration machine oil is used with the superior properties of high rate of recovery and outstanding resistance to heat and wear. This contributes to the long life and dependability of the freezer unit as a whole.

Microprocessor Temperature Control With Digital Design.

Precise setting and temperature control. The temperature inside the freezer can be set and monitored easily by means of precise microprocessor temperature control with digital display. The thermostat utilizes a platinum resistor (Pt 100) sensor which is precise and extremely durable.

MDF-7386S/C



-86°C
23.5 cu.ft.

MDF-5386S/C



-86°C
17.1 cu.ft.

MDF-793C



-86°C
24.7 cu.ft.



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

SAFETY & ALARM

Built-In Temperature & Power Failure Alarms(Lamp/Buzzer).Protecting Contents from Trouble.

In case of power failure or an irregular rise in temperature, a rechargeable, Cadnica battery-operated indicator lamp and alarm will be activated. Optional CO₂ and LN₂ back-up systems are available and are self-activated when a power outage occurs. This equipment helps ensure that the contents will be protected in the event of any power failure or mechanical trouble.

Easy to Operate.

Overall operability and dependability are greatly enhanced by improved design details. Highly durable hinges are used to support the large door so both opening and closing are facilitated. Door handles are equipped with a latch-locking system.

A Wide Range to Choose From Large, Small, Chest and Upright- A freezer to suit your Needs.

Chest type freezers low profile design makes the placement and removal of contents very convenient. The upright type is designed to accommodate a large capacity in a limited space. Even very narrow spaces can be readily utilized.

LOW PROFILE

Super freezing capability below -86°C (MDF-192) Specific

Even with ambient temperature of 30°C (85°F), ultra-low temperature of -86°C (-123°F) can be maintained. This is made possible by means of a compact and super-efficient freezing circuit employing a miniature heat exchanger in combination with a three gas mixed refrigerant freezing circuit.

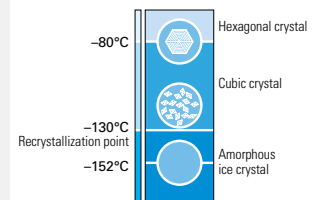
Low-profile design for easier loading and unloading.

(MDF-192) Specific
The chest-type design provides a stable inside temperature and occupies a mere 29.5"(W) x 27.6"(D) (75cm x 70cm) of space. The low profile greatly facilitates loading and unloading.

-152°C Environment

Why Freeze to -152°C?

Recrystallization Mechanism



World's lowest -152°C ensures stable cell and tissue preservation

An important factor to consider when preserving cells or tissue at ultra-low temperatures is to prevent amorphous ice crystals from recrystallizing within and outside the cells. Samples that are maintained in an ultra-low temperature freezer at -152°C which is far lower than the recrystallization point (-130°C for pure water) can be preserved semi-permanently. Preservation at ultra-low temperatures maintains vitrification without crystallization occurring inside and outside cells. In contrast to conventional liquid nitrogen preservation containers, freezer preservation has numerous advantages: no sample contamination, no sudden liquid eruptions, as well as low operational costs. SANYO's MDF-1156ATN makes long-term storage below the recrystallization point easier and more stable than ever before.

MDF-593C



-86°C
17.1 cu.ft.

MDF-192



-86°C
3.0 cu.ft.

MDF-1156ATN



-152°C
4.5 cu.ft.

Specifications

Model No.	MDF-1156ATN	MDF-793C	MDF-593C	MDF-192
Temperature Range	-100°C to -152°C		-20°C to -86°C	
Exterior Dimensions [W x D x H] mm (inch)	1,400 x 800 x 945 (55.1 x 31.5 x 37.2)	2,570 x 770 x 1,070 (101.2 x 30.3 x 42.1)	2,010 x 770 x 1,070 (79.1 x 30.3 x 42.1)	750 x 700 x 945 (29.5 x 27.6 x 37.2)
Interior Dimensions [W x D x H] mm (inch)	500 x 450 x 572 (19.7 x 17.7 x 22.5)	1,840 x 500 x 762 (72.4 x 19.7 x 30)	1,280 x 500 x 762 (50.3 x 19.7 x 30)	480 x 430 x 420 (18.9 x 16.9 x 16.5)
Effective Capacity	128 liters (4.5 cu.ft.)	701 liters (24.7 cu.ft.)	487 liters (17.1 cu.ft.)	86 liters (3.0 cu.ft.)
Exterior Cabinet	Painted steel			
Interior Cabinet	Aluminum plate		Stainless steel	
Inner Lid	1	4	3	1
Insulation	Rigid polyurethane foamed-in place			
Compressor	High stage side	Hermetic type, 1,100 W	Hermetic type, 1,100 W	Hermetic type, 750 W
	Low stage side	Semi-hermetic type, 1,500 W	Hermetic type, 1,100 W	Hermetic type, 750 W
Evaporator	High stage side	Tube-on-sheet type		Tube-on-sheet type
	Low stage side	Tube on sheet (shared with interior)		
Condenser	High stage side	Fin and tube type		Fin and tube type
	Low stage side	Shell and tube type		
Temperature Control	Microprocessor control system		Microprocessor: Keypad input Temp. input range: -20°C to -95°C (1°C increment) Set value memory: non-volatile memory	
Temperature Display	Digital display			
Sensor	Platinum resistance (Pt. 100)			
Alarm system	High temperature alarm, Power failure alarm, Filter check lamp, Remote contact alarm	Selectable high temp. alarm (+10°C & +15°C from set point), Power failure alarm, Filter check lamp, Remote alarm contact		
Net Weight (Approx.)	285 kg (628 lbs.) —1155ATN	375 kg (827 lbs.) —793C	305 kg (672 lbs.) —593	121 kg (267 lbs.) —192
Power Requirement	220 V / 60 hz	220 V / 60 hz Built-in voltage booster		115V / 60 hz

*Appearance and specifications are subject to change without notice.

Model	MDF-U7386SC
Temperature range	-50°C to -86°C (1°C increment)
Maximum cooling performance	-86°C (Ambient temp. 30°C)
Exterior dimensions (W x D x H)	1130 x 875 x 1990mm (44.5" x 34.4" x 78.3")
Interior dimensions (W x D x H)	870 x 600 x 1280mm (34.2" x 23.6" x 50.4")
Net weight	Approx. 355kg (783 lbs.)
Effective capacity	668 L (23.5 cu.ft.)
Shelf	Stainless steel, Adjustable, 3 shelves, W848 x D533mm, Max. load: 50kg (110 lbs.)/shelf
Access port	17mm diameter, 3 locations (back, bottom left/right corner)
Compressor	Hermetic type, Output: 1100 W (high stage), 1100 W (low stage)
Refrigerant	HFC refrigerants
Alarm	High/low temperature, Power failure, Filter check, Battery check
Remote alarm contact	Allowable contact capacity: DC 30V, 2A
Accessories	1 set of keys, 1 scraper
Power Requirement	220V / 60 Hz Built-in voltage booster

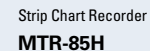
Model	MDF-U5386SC
Temperature range	-50°C to -86°C (1°C increment)
Maximum cooling performance	-86°C (Ambient temp. 30°C)
Exterior dimensions (W x D x H)	890 x 875 x 1990mm (35.0" x 34.4" x 78.3")
Interior dimensions (W x D x H)	630 x 600 x 1280mm (24.8" x 23.6" x 50.4")
Net weight	Approx. 305kg (672 lbs.)
Effective capacity	483 L (17.1 cu.ft.)
Shelf	Stainless steel, Adjustable, 3 shelves, W608 x D533mm, Max. load: 50kg (110 lbs.)/shelf
Access port	17mm diameter, 3 locations (back, bottom left/right corner)
Compressor	Hermetic type, Output: 1100 W (high stage side), 1100 W (low stage side)
Refrigerant	HFC refrigerant
Alarm	High/low temperature, Power failure, Filter check, Battery check
Remote alarm contact	Allowable contact capacity: DC 30V, 2A
Accessories	1 set of keys, 1 scraper
Power Requirement	220V / 60 Hz Built-in voltage booster



Inventory rack
SUR-624-I
Rack Capacity: 24



Circular recorder
MTR-C954



Strip Chart Recorder
MTR-85H
Recorder mounting
bracket
MDF-S3085
(for MTR-85H)



LC02 backup system
CVK-UB2 (I)
LN2 backup system
CVK-UBN2

ISO 9001 & 14001 certified