





MARK ENTERPRISES

Ultra Low Temperature Deep Freezer (-50°C to -86°C) Upright



Make: MarkEn **Model: MDFU-04**

IEC 60529-2004, IP69, ISO:45001:2018, ISO 14001:2015, ISO 9001:2015, BIFMA INTERNATIONAL, BIFMA, CE, ISO 13849-1:2015, ISO 13485:2016, WHO-GMP, USFDA,

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An ultra low temperature freezer is widely used for storage of various samples that require low temperature up to -86°C, sensitive stem cells, plasma, semen, virus, bone graft and other biological samples are stored for research purposes in such ultra low deep freezers. ULT is short form of Ultra Low Temperature; therefore, they are also called ULT Freezers. These freezers are used in life science research institutes, hospitals, Blood Banks and pharmaceutical and biotech companies and some industrial

applications also.

Our company is one of known ISO certified **Ultra Low Temperature Freezer** manufacturers in India. The company has knowledge, experience and latest machines to construct an ultra low freezer best suited to your laboratory space and usage. It may further be able to be fitted with choice of accessories to take optimum use of the machine. Our ultra low temperature freezers provide uniform temperature for your critical samples (cell culture plasma, serum, sensitive stem cells, and other biological samples) and research applications that require low temperature up to -80°C or -86°C.



Certifications:

IEC 60529-2004, IP69, ISO:45001:2018, ISO 14001:2015, ISO 9001:2015, BIFMA INTERNATIONAL, BIFMA, CE, ISO 13849-1:2015, ISO 13485:2016, WHO-GMP,UŞFDA,

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- H-drive hydrocarbon refrigeration system provides sustainable performance with reliability you can count on
- Low peak variation helps ensure sample temperature protection throughout entire cabinet
- Fast door opening recovery in as little as 14 minutes
- Long warm-up time from -80°C to -50°C in up to 3 hours
- Decrease storage footprint up to 25%
- Capacity to Hold 24000 Cryo Vial of 2.0 ml

Designed to keep your samples safe

Worry-free storage; with low peak variation, samples are protected throughout the entire cabinet.1
Secure freezer settings with sample security
FDA Class II Medical Device for Storage of Blood, Plasma, Tissue, Skin, and Bone3
Backed by our Global Service and Support Team

Limit environmental impact and lower HVAC costs

Uses as low as 11.2 kWh/day, depending on size
Less heat emission lowers HVAC costs
Natural refrigerants compliant with EU F-Gas regulation
Environmentally-friendly, water-blown foam insulation
Manufactured in an award-winning, zero-waste-to-landfill facility

User-friendly and quiet

New HIC touch screen user interface Quiet enough to reside directly in the laboratory; at just 55 dBA, the sound is comparable to a home refrigerator.2

Power Consumption

The combination of enhanced technology and design with additional vacuum insulation coverage has reduced the Power Consumption by 23%



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Intelligence Features

- It has option of connecting LN2/CO2 Backup system for maintaining the set temperature during power failure.
- Internal memory for storing temperature & Alarm data records which can displayed & transferred to PC
- Keyboard lock and password protection system: prevent from un-authorized change of the parameters.
- With lock prevent from the un-authorized opening.
- Triple-point gasket, air-tight seal without heat to reduce ice build-up, easier to maintain and prevent leakage of ambient air into freezing chamber.
- It has two minimum 10" axial fans to provide maximum cooling of the compressor housing.

Standards

CE (with 4 digit notified Number) USFDA Approved
Conformity to standard conforms to standards IEC- 61010 for electrical safety latest
amendment

Performance Parameters

- 127 mm thickness non CFC Foamed polyurethane insulation cabinet.
- 115 mm thickness Puff insulated door for best temperature uniformity.
- Freezer have heavy duty lockable castors and leveling for adjustments and installation
- 4 shelves which are adjustable and made up of stainless steel.
- Compatible compressor of suitable HP (Cascade Refrigeration System)
- It has 4 Inner doors and sub-lids reduce cold air loss and provide best uniformity and 4" x 12" long heavy-duty hinge for ensuring positive closure and un-interruptive service
- Warranty of Freezer 3 Years

Additional Parameters

- Corrosion resistant racks
- Vacuum relief port for easy door opening and easy re-entry after door openings.
- Pairs of Cryo gloves and Ice scraper
- Automatic data logging facility.
- 7 Days Inkless Temperature Chart recorder



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MDFU-04 370 L Drype of Cabinet Drype of	Technical Specification of Ultra Low Temperature Deep Freezer	
O Capacity in Liter O Type of Cabinet O Freezer Body - O Material of Inner tank- O Material of Inner tank- O Material of Inner tank- O Refrigerants O Pull down time in with full load O Departing Temperature Range O Operating Temperature Range O Maximum cooling performance O Internal Dimensions (HxWxD) in mm O External Dimensions (HxWxD) in mm O Departing Temperature Display O Digital temperature Display O Digital temperature Display O Door Style O Door Style O Door Style O Inner Shelves O Temperature uniformity O Dalarms- O Noise level O Noise level O Door Supply O Noise leve	O Make	MarkEn
Drype of Cabinet Dripe of Cabinet Corrosion resistance CRCA powder coated steel Drive of Cabinet Corrosion resistance CRCA powder coated steel Drive of Cabinet Corrosion resistance CRCA powder coated steel Stainless Steel 100 mm CFC-Free, HCFC-Free non flammable refrigerant Drull down time in with full load 4.9 Hrs Drull down time with full load 3.2 Hrs -50°C to -86°C adjustable with setting accuracy of ±0.1°C Maximum cooling performance Maximum cooling performance Internal Dimensions (HxWxD) in mm Drive of Control System Drive of Cabinet Drive of Cabinet Drive of Cabinet 1308x586x490 mm 1978x912x833 mm Fully programmable microprocessor controlled with membrane keypad and eye level control panel Drive of Control System Drive of Control System Drive of Cabinet 24 Hours In-Built Battery back-up Drive of Cabinet 25 Corrosion resistance CRCA powder coated steel 143°C or Less 150 Corrosion resistance CRCA powder coated steel 150 Drive of Cabinet 1	O Model	MDFU-04
Corrosion resistance CRCA powder coated steel Material of Inner tank- Order of CFC-Free, HCFC-Free non flammable refrigerant CFC-FC-FCE ACC CFC-FCE ACC CFC	O Capacity in Liter	370 L
Material of Inner tank- O Ground clearance D Refrigerants CFC-Free, HCFC-Free non flammable refrigerant D Pull down time in with full load D Refrigerants D Pull down time in with full load D Operating Temperature Range D Maximum cooling performance Maximum cooling performance D Internal Dimensions (HxWxD) in mm D External Dimensions (HxWxD) in mm D External Dimensions (HxWxD) in mm D D Digital temperature Display D Digital temperature Display and Security ock and alarm monitoring system D Power supply D Door Style D Inner Shelves D Temperature uniformity D Temperature stability of system D Alarms- D Noise level D Power Consumption rate- 100 mm 4.9 Hrs 3.2 Hrs -50°C to -86°C adjustable with setting accuracy of ±0.1°C 1308x586x490 mm 1308x586x490 mm 1978x912x833 mm Fully programmable microprocessor controlled with membrane keypad and eye level control panel D Power authority Yes D Alarms- A Hours In-Built Battery back-up D Alarms- A Hours In-Built Battery D Alarms- A Hours In-Built Battery D Alarms- A	○ Type of Cabinet	Vertical (Upright)
O Ground clearance O Refrigerants O Pull down time in with full load O Pull down time in with full load O Operating Temperature Range O Maximum cooling performance O Internal Dimensions (HxWxD) in mm O External Dimensions (HxWxD) in mm O Digital temperature Display O Digital temperature Display O Digital temperature Display and Security ock and alarm monitoring system O Power supply O Door Style O Inner Shelves O Hams- O Alarms- O Noise level O Noise level O Power Consumption rate- 100 mm CFC-Free, HCFC-Free non flammable refrigerant 4.9 Hrs 3.2 Hrs -50°C to -86°C adjustable with setting accuracy of ±0.1°C -50°C to -86°C	○ Freezer Body -	Corrosion resistance CRCA powder coated steel
CFC-Free, HCFC-Free non flammable refrigerant 4.9 Hrs 4.9 Hrs Operating Temperature Range Omaximum cooling performance Omaximum cool	O Material of Inner tank-	Stainless Steel
Deput down time in with full load 3.2 Hrs Operating Temperature Range Operating Temperature Passes Operating Temperature Range Operating Temperature Passes Operating Temperat	Ground clearance	100 mm
Describing Temperature Range Describing Temperature Display in mm Describing Temperature Display in mm Describing Temperature Display in mm Describing Temperature Display mm Describing Temperature Display mm Describing Temperature Display Describing Temperature Display mm Describing Temperature Display Describing Temperature Display mm Des	○ Refrigerants	CFC-Free, HCFC-Free non flammable refrigerants
Operating Temperature Range Operating Temper	O Pull down time in with full load	4.9 Hrs
Operating lemperature Range of ±0.1°C Maximum cooling performance Dinternal Dimensions (HxWxD) in mm Diexternal Dimensions (HxWxD) in mm Diexternal Dimensions (HxWxD) in mm Diexternal Dimensions (HxWxD) in mm Fully programmable microprocessor controlled with membrane keypad and eye level control panel Digital temperature Display Pose Battery Backup for Display and Security ock and alarm monitoring system Diexternal Dimensions (HxWxD) in mm Fully programmable microprocessor controlled with membrane keypad and eye level control panel Yes 24 Hours In-Built Battery back-up Diexternal Dimensions (HxWxD) in mm Fully programmable microprocessor controlled with membrane keypad and eye level control panel Yes 24 Hours In-Built Battery back-up Diexternal Dimensions (HxWxD) in mm Fully programmable microprocessor controlled with membrane keypad and eye level control panel Yes 24 Hours In-Built Battery back-up Diexternal Dimensions (HxWxD) in mm Fully programmable microprocessor controlled with membrane keypad and eye level control panel Yes 24 Hours In-Built Battery back-up Diexternal Dimensions (HxWxD) in mm Fully programmable microprocessor controlled with membrane keypad and eye level control panel Yes 24 Hours In-Built Battery back-up 230 V, 50 Hz AC Single Outer door and 4 Inner door Diexternal Dimensions (HxWxD) in mm Possible Battery back-up 230 V, 50 Hz AC Single Outer door and 4 Inner door Diexternal Dimensions (HxWxD) in mm Possible Battery back-up 24 Hours In-Built Battery back-up 24 Hours In-Built Battery back-up 25 O Hz AC Single Outer door and 4 Inner door Diexternal Diexternal Diexternal Battery back-up 25 O Hz AC Diexternal Diexternal Battery back-up 26 O Hz AC Diexternal Diexternal Battery back-up 27 O Hz AC Diexternal Diexternal Battery back-up 28 O Hz AC Diexternal Diexternal Battery back-up 29 O Hz AC Diexternal Diexternal Battery back-up 20 O Hz AC Diexternal Diexternal Battery back-up 21 O Hz AC Diexternal Diexternal Battery back-up 28 O Hz AC	O Holdover time with full load	3.2 Hrs
Dileternal Dimensions (HxWxD) in mm 1308x586x490 mm 1978x912x833 mm Fully programmable microprocessor controlled with membrane keypad and eye level control panel Digital temperature Display Digital temperature Display and Security ock and alarm monitoring system Digital temperature Display and Security ock and alarm monitoring system Digital temperature Stability of Single Outer door and 4 Inner door Digital temperature uniformity 230 V, 50 Hz AC Single Outer door and 4 Inner door Digital temperature uniformity 230 V, 50 Hz AC Single Outer door and 4 Inner door Digital temperature uniformity 230 V, 50 Hz AC Single Outer door and 4 Inner door Digital temperature uniformity 23 °C or Less 24 Hours In-Built Battery back-up A Nos Digital temperature door and 4 Inner door Digital temperature door and 4 Inner door A Nos Digital temperature uniformity 24 Hours In-Built Battery back-up A Nos Digital temperature door and 4 Inner door Digital temperature door and 4 Inner door A Nos Digital temperature door and 4 Inner door A Nos Digital temperature door and 4 Inner door A Nos Digital temperature door and 4 Inner door Digital temperature door an	Operating Temperature Range	,
Description (Part of System) Descri	 Maximum cooling performance 	-86°C
Fully programmable microprocessor controlled with membrane keypad and eye level control panel Digital temperature Display Digital temperature Display Digital temperature Display Digital temperature Display Pes 24 Hours In-Built Battery back-up 25 Door Style Digital temperature Display 26 Hours In-Built Battery back-up 27 Door Style Digital temperature display 28 Hours In-Built Battery back-up 29 Door Style Single Outer door and 4 Inner door Of Inner Shelves Digital temperature uniformity 29 Door Style Digital temperature display 20 Hours In-Built Battery back-up 20 Door Style Single Outer door and 4 Inner door 20 Less Digital temperature uniformity 230 V, 50 Hz AC Single Outer door and 4 Inner door Of Nos Digital temperature display 24 Hours In-Built Battery back-up 25 Description and 4 Inner door Of Nos Digital temperature display 26 Door Style Digital temperature display 26 Door Style Digital temperature display A long in digital temperature displayed and eye level control panel A long in digital temperature displayed and eye level control panel A long in digital temperature displayed and eye level control panel A long in digital temperature displayed and eye level control panel A long in digital temperature displayed and eye level control panel A long in digital temperature displayed and eye level control panel A long in digital temperature displayed and eye level control panel A long in digital temperature displayed and eye level control panel A long in digital temperature displayed and eye level control panel A long in digital temperature displayed and eye level control panel A long in digital temperature displayed and eye level control panel A long in digital temperature displayed and eye level control panel A long in digital temperature displayed and eye level control panel A long in digital temperature displayed and eye level control panel A long in digital temperature displayed and eye level control panel A long in digital temperature displayed and eye	O Internal Dimensions (HxWxD) in mm	1308x586x490 mm
with membrane keypad and eye level control panel Digital temperature Display Pes Digital temperature Display Pes Digital temperature Display Digital Temperature Digital Temperature Digital Di	○ External Dimensions (HxWxD) in mm	1978x912x833 mm
24 Hours In-Built Battery back-up 25 Power supply 26 Power supply 27 Power supply 28 Power supply 29 Power supply 29 Power supply 20 Power supply 20 Power supply 21 Single Outer door and 4 Inner door 20 Inner Shelves 20 Temperature uniformity 21 **C or Less** 22 Audible and visual alarm system for over and under temperature, sudden power failure, system failure, poor open, filter block and battery low 20 Noise level 21 **Noise level 24 Hours In-Built Battery back-up 25 O Hz AC 26 Power Style 26 Power Style 27 **Noise In-Built Battery back-up 26 Hours In-Built Battery back-up 27 **Hours In-Built Battery back-up 28 **Hours In-Built Battery back-up 29 **Hours In-Built Battery back-up 20 **Hours In-Built Battery back-up 20 **Unit Battery back-up 20 **Unit Battery back-up 21 **Hours In-Built Battery back-up 20 **Unit Battery back-up 20 **Unit Battery back-up 21 **Hours In-Built Battery back-up 21 **Hours In-Built Battery back-up 21 **Hours In-Built Battery back-up 22 **Unit Battery back-up 23 **Unit Battery back-up 24 **Hours In-Built Battery back-up 26 **Hours In-Built Battery back-u	○ Control System	with membrane keypad and eye level control
24 Hours In-Built Battery back-up 24 Hours In-Built Battery back-up 250 Power supply 26 Door Style 27 Door Style 28 Single Outer door and 4 Inner door 29 Inner Shelves 29 Temperature uniformity 29 Temperature stability of system 20 Alarms- 20 Alarms- 20 Alarms- 20 Alarms- 21 Hours In-Built Battery back-up 230 V, 50 Hz AC Single Outer door and 4 Inner door 24 Hours In-Built Battery back-up 25 Hours In-Built Battery back-up 26 Nos 26 Hours In-Built Battery back-up 27 Hours In-Built Battery back-up 28 Hours In-Built Battery back-up 29 Hours In-Built Battery back-up 29 Hours In-Built Battery back-up 20 Hours In-Built B	O Digital temperature Display	Yes
Single Outer door and 4 Inner door O Inner Shelves O Temperature uniformity ±3°C or Less Temperature stability of system ±3°C Audible and visual alarm system for over and under temperature, sudden power failure, system failure, Door open, filter block and battery low O Noise level D Power Consumption rate- 11.2 KW-Hr/Day	 Battery Backup for Display and Security lock and alarm monitoring system 	24 Hours In-Built Battery back-up
O Inner Shelves O Temperature uniformity ±3°C or Less ±3°C Audible and visual alarm system for over and under temperature, sudden power failure, system failure, Door open, filter block and battery low O Noise level O Power Consumption rate- 11.2 KW-Hr/Day	O Power supply	230 V, 50 Hz AC
Temperature uniformity ±3°C or Less ±3°C Audible and visual alarm system for over and under temperature, sudden power failure, system failure, Door open, filter block and battery low Noise level Power Consumption rate- ±3°C or Less ±3°C Audible and visual alarm system for over and under temperature, sudden power failure, system failure, Door open, filter block and battery low 11.2 KW-Hr/Day	○ Door Style	Single Outer door and 4 Inner door
Temperature stability of system Addible and visual alarm system for over and under temperature, sudden power failure, system failure, Door open, filter block and battery low Noise level Power Consumption rate- 11.2 KW-Hr/Day	○ Inner Shelves	04 Nos
Audible and visual alarm system for over and under temperature, sudden power failure, system failure, Door open, filter block and battery low Noise level Power Consumption rate- Audible and visual alarm system for over and under temperature, sudden power failure, system failure, Door open, filter block and battery low 11.2 KW-Hr/Day	○ Temperature uniformity	±3°C or Less
under temperature, sudden power failure, system failure, Door open, filter block and battery low Noise level Power Consumption rate- 11.2 KW-Hr/Day	Temperature stability of system	±3°C
Power Consumption rate- 11.2 KW-Hr/Day	○ Alarms-	under temperature, sudden power failure, system failure, Door open, filter block and
	O Noise level	55 Db
Net weight 200 kg	O Power Consumption rate-	11.2 KW-Hr/Day
	○ Net weight	200 kg

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Silent Features

- It has external Single door design with RFID operated security lock on the control panel for unauthorized tampering
- Automatic/Manual defrost mechanism.
- Sufficient internal memory for storing temperature data and alarm data (including door opening) with provision of SMS alert and remote and central monitoring, recording and controlling system.
- There is the facility to collect the Temperature data through a RS485 port /USB drive (4-20mA remote contact) for remote and central monitoring, recording and controlling system
- Deep Freezer have Integrated door handle and latch assembly to allow for easy right-or
 left- handed operation, and includes standard key lock and provision for padlock
- Blocked Filter indicator lights with filters which are removable and washable for cleaning.
- It have industrial grade, high efficiency dual compressor.
- Alarm history: Temperature maximum and minimum, average temperature during alarm period time of duration of alarm and door opening and closing history also.
- Touch Screen Display
- External 5KVA servo voltage stabilizer
- Four independent interior compartments (SS304 material) with individual doors, with sealing silicone gasket to prevent cold loss.

Accessories:

- Steel racks for full capacity.
- Polypropylene cryoboxes
- USB drive
- Pre-Filter

Documentation:

- Will provide operator manuals with machine.
- Will give training to users at the time of installation.
- Will provide list of important spare parts and accessories with their part number and costing.

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