

Ultra Low Temperature Deep Freezer

The **MarkEn** ULT Deep Freezers are Worldwide one of the most safest and most efficient deep freezers.

MarkEn Ultra Low Temperature Deep Freezers are widely used for storage of various Biological samples that requires Temperature between -50°C to -86°C .

Sensitive Stem Cells, Plasma, Semen, Virus, Bone Graft and other Biological samples are stored in MarkEn Deep Freezers. These freezers are used in life science research institutes, hospitals, Blood Banks and pharmaceutical and biotech companies and some industrial applications also.

FEATURES:

Temperatures Range of -50°C to -86°C at Environmental Temperature up to $+45^{\circ}\text{C}$.

Designed for tropical climates.

Weight carrying capacity Uniformly distributed to each tray.

The Hot Line at the mouth of the cabinet for Anti Condensation

Compression Cycled type. Refrigeration and insulation are CFC free.

All system tubing –Suction- Freezer – Condensing Tubing of minimum 99.97% of pure Copper.

The door is fitted with standard size heavy duty hinges with aspiring loaded automatic closing device ensuring positive closure for less than 90° opening of the door.

Triple point gasket for airtight seal to reduce ice buildup and easier to maintain temperature and prevent leakage of ambient air into freezing chamber.

Designed for minimum 10 years life with assurance of spare parts availability.

Quality Management: ISO 9001:2015, ISO 13485:2015

CE (European notified body 4-digit No.: 1282).

Electrical Safety Standards IEC 60335-1 and IEC 60335-2-24, IEC 61010-1, IEC 61010-2-020 and 61010-2-101, IEC 61326-1, IEC 61326-2-6.

Make: MarkEn
Model: MDFU-12



Quality Assurance:

USFDA, IEC 60529-2004, ISO:45001:2018, ISO 14001:2015, ISO 9001:2015, ISO 13849-1:2015, ISO 13485:2016, BIFMA INTERNATIONAL, WHO-PQS, WHO-GMP, CE (European notified body 4 digit).

FEATURES:

Vacuum (Pressure) relief port for easy door opening and easy re-entry after door openings.

03 Nos 10" tube axial fans to provide maximum cooling of the compressor housing.

Provision of connecting LN2/CO2 Backup system for maintaining the set temperature during power failure.

CONTROL SYSTEM:

7-inch-wide Touch screen operating LED/LCD display (Which can be used with Gloved hand).

Fully programmable microprocessor controlled/PLC base- controller with membrane keypad and eye level control panel.

In built facility for User login, User ID tracking, run logs, protocol tracking with RFID/Password.

On-board real-time data logging, connectivity via RS 485 port data management software.

Displays both set and actual run conditions simultaneously.

Internal memory for storing temperature & Alarm data records which can displayed and transferred to PC.

Provision of Defrosting (Automatic/Manual).

Digital Temperature display and Recorder with provision for SMS alert and remote monitoring and controlling system.

ACCESSORIES:

Stem Alcohol Thermometer.

5KVA Servo Controlled Voltage Stabilizer with Automatic High-Low Voltage cut-off and Time Delay Restart.

ACCESSORIES (OPTIONAL):

Holding Racks Cryo gloves

Ice scraper Polypropylene cry boxes

Cryo pen USB drive Pre-Filter

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MarkEn -86DegC ULT Deep Freezer Fully protected against Fire as it is designed to protect against Over Pressure - Lower Pressure - Over Heat - Over Load - Over Current- Fan off Protection which works as follows;

SAFETY:

User access control and security with RFID/Password Protected security lock on the control panel for unauthorized tampering.

The refrigeration auto shut off when door opens for Power saving and environment friendly operation.

Blocked Filter indicator lights with filters which are removable and washable for cleaning.

HP (High Pressure) Switch- If the compressor is over-pressured, the compressor may overheat and cause a fire. Since we have used HP pressure switch, if the compressor gets over pressured, the supply to the compressor is cut off through relay by the HP pressure switch.

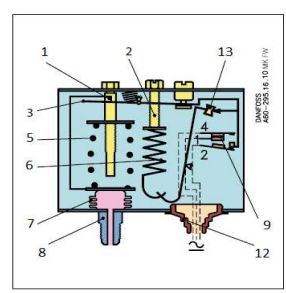
LP (Low Pressure) Switch- If the compressor is Low-pressured, the compressor may overheat and cause a fire. Since we have used LP pressure switch, if the compressor gets low pressured, the supply to the compressor is cut off through relay by the LP pressure switch.

Over Load Protector- If the compressor is overloaded for any reason, the compressor may overheat and cause a fire. As we use an overload protector, if the compressor gets overloaded, the supply to the compressor is cut off through the overload protector and the relay.

Over Heat Protector- If the compressor is Over Heat for any reason, the compressor may overheat and cause a fire. As we use an Over Heat protector, if the compressor gets Over Heat, the supply to the compressor is cut off through the Over Heat protector and the relay.

Over Current Protector- If the compressor draws Over Current for any reason, the compressor may overheat and cause a fire. As we use an Over Current Protector, if the compressor draws Over Current, the supply to the compressor is cut off through the Over Current protector and the relay.

Fan off protection- If the condenser fan off then compressor may Over Heat and cause a fire. As we use fan off protection so the supply to the compressor is cut off through the relay.



Technical Specifications of Ultra Low Temperature Deep Freezer.

▪Make	MarkEn
▪Model	MDFU-12
▪Capacity in Liter	810 Litres
▪Type of Cabinet	Vertical/Upright
▪Outer Material of Cabinet	Corrosion resistance CRCA/GI powder coated steel (18swg)
▪Inner Material of Cabinet	Stainless Steel 304
▪PUFF Insulation- CFC free	Cabinet: 127 mm
	Door : 115 mm
▪Ground Clearance	4 castor wheels (2 Lockable and 2 un-lockable) for free mobility. Floor standing jacks for leveling and vibration free run.
▪Door	Single/Double (optional) Integrated Door handle and latch assembly to allow for easy operation, and includes standard key lock and provision for padlock.
▪ Inner Compartments	05 Nos adjustable with 05 Inner Doors.
▪Inner Shelves	05 Nos. Stainless Steel 304.
▪ Compressor	02 Nos Hermetically sealed industrial grade, high efficiency compressor - Cascade system.
▪Refrigerants	CFC Free-HCFC Free non flammable green refrigerants.
▪ Condensing	Skin condensing and Inner and air cooled grooved aluminum fins.
▪Dimensions (WxDxH) in mm	Outer: 1065x1051x2000
	Inner : 880x740x1200
▪Pull down time	04 Hours
▪Operating Temperature Range	-50°C to -86°C adjustable with setting accuracy $\pm 0.1^{\circ}\text{C}$
▪Temperature uniformity	$\pm 3^{\circ}\text{C}$ or Less
▪Environmental Condition	Up to +45°C with Humidity 5% to 95% RH
▪Temperature Hold Over	In case of power failure the rate of fall of temperature not more than 2°C/Hour with the holdover time of 2 Hour.
▪Temperature Monitoring System	With IOT (Cloud Manage) supported (Optional) and 7 days inkless Chart Recorder (Optional).
▪Alarms	Audible and visual alarm system for over and under temperature (settable), sudden power failure, system failure, Door open and battery low, Over Load, Over Heat, Over Current, Block filter.
▪ Battery Backup	48 Hrs Battery Backup for Digital Display, Total Alarm system, Temp. recording system and security lock with auto recharging facility.
▪Noise level	<55 db
▪Power Consumption rate-	9KW-Hr/Day
▪Net weight	325 kg
▪Power supply	Suitable for Input Voltage Range 100 to 290 VAC, 50 Hz $\pm 10\%$