



BLOOD BANK REFRIGERATOR



Quality, Management, Environment, Health & Safety Standards



CDSCO MD 5 License



USFDA Listed



European CE



ISO 9001: 2015
IAF



ISO 13485:2016
NABCB/IAF



ISO 45001 : 2018
IAF



7 Electric Safety Certifications
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

INTRODUCTION

The MarkEn Blood Bank Refrigerator stands as a symbol of technological excellence and trusted preservation, specifically engineered to meet the rigorous demands of modern blood storage environments. Designed for the safe and stable preservation of whole blood and blood components, it combines unmatched performance, precision engineering, and robust reliability making it an indispensable asset in blood banks, hospitals, diagnostic centers and research facilities.

At the core of its design lies an advanced microprocessor-based control system, offering real-time temperature monitoring with tight regulation and minimal deviation. Paired with a high-efficiency, low-noise compressor, this ensures rapid temperature recovery, uniform distribution throughout the chamber, and energy-efficient operation crucial for maintaining the viability and safety of stored blood products.



KEY FEATURES

PRECISION COOLING & TEMPERATURE CONTROL



Operates seamlessly in ambient temperatures from -10°C to $+45^{\circ}\text{C}$, with 15–95% relative humidity tolerance.



Maintains an internal temperature range of $+2^{\circ}\text{C}$ to $+6^{\circ}\text{C}$ for optimal blood storage.

ADVANCED REFRIGERATION & ENERGY EFFICIENCY



Eco-friendly CFC-free R290/R134a refrigerant and sustainable insulation.



Automatic shut-off minimizes power use during door openings.



Efficient 35% compressor runtime at 25°C ambient temperature reduces costs.

SUPERIOR BUILD & DURABILITY



99.97% pure copper tubing ensures long-lasting performance and efficient thermal conductivity.



Durable, unbreakable stainless-steel interior ensures long life and maximum reliability.



Availability of spares/disposables for at least 10 years

ENHANCED STORAGE & SPACE OPTIMIZATION



Compact design ideal for labs, clinics, and limited spaces.



Sturdy storage trays prevent collapse, even when fully loaded.

ADVANCED DOOR MECHANISM & SEALING



Durable Closure: Heavy-duty hinges with a spring-loaded automatic closing system (secure below 90°, max opening of 110°).



Enhanced Sealing: Triple-pane glass and high-grade magnetic silicone gasket minimize temperature fluctuations and boost energy efficiency.

CONTROL SYSTEM

Intelligent Temperature Management & Defrosting



- **Consistent Cooling:** 90° angled internal fan ensures uniform temperature across compartments.



- **Moisture Control:** Strategically placed hotline prevents condensation, maintaining a dry storage environment.



- **Flexible Defrosting:** Offers both automatic and manual defrost modes based on storage needs.

Advanced Control & User Interface



- **Programmable Controller:** User-friendly microprocessor/PLC with a membrane keypad for easy configuration and monitoring.



- **Digital Display:** 7" HMI LED display with 0.5°C precision for clear, accurate readings.



- **Temperature Unit Flexibility:** Selectable °C or °F display options for user preference.

Monitoring & Alerts



- **Simultaneous Monitoring:** Displays both set and actual conditions for real-time performance tracking.



- **Alarm Systems:** Visual and audible alarms for immediate deviation or system issue alerts.



- **Remote Monitoring:** SMS alerts and remote access for enhanced control and oversight.

Precision & Temperature Control



- **Accurate Measurement:** Factory-calibrated RTD sensors for precise temperature monitoring.



- **Uniform Distribution:** Forced air circulation ensures consistent temperature across shelves.

Illumination & Monitoring



- **Optimal Lighting:** Flicker-free CFL illumination ensures clear visibility without eye strain.



- **Advanced Monitoring:** Microprocessor controller with digital display for real-time temperature tracking and an independent safety thermostat to prevent temperature deviations.

Security & Data Management



- **Enhanced Security:** User login, RFID/password protection, and protocol tracking for secure access.



- **Real-Time Data Logging:** RS485/USB connectivity for seamless data transfer and management.



- **Data Storage:** Stores temperature and alarm data for over 4 months with PC transfer capability.

ACCESSORIES :

- Stem Alcohol Thermometer
- Suitable Servo Controlled Voltage Stabilizer with input voltage rating 90-280V and 50Hz.

BLOOD BANK REFRIGERATOR						
Type		Vertical	Vertical	Vertical	Vertical	Vertical
Blood Bag Storage Capacity	450 ml	64 Bags	144 Bags	200 Bags	240 Bags	340 Bags
Liters		198 L	346 L	362 L	502 L	600 L
External Dimensions (WxDxH) mm		638 x 895 x 1271	688 x 944 x 1686	772 x 874 x 1685	784 x 1070 x 1710	784 x 1070 x 1911
Internal Dimensions (WxDxH) mm		474 x 666 x 626	524 x 636 x 1041	620 x 777 x 791	620 x 760 x 1066	620 x 762 x 1266
						As per customer requirement

TECHNICAL SPECIFICATIONS

Make	MarkEn	
Outer Cabinet	Corrosion resistance CRCA/PPGI powder coated steel (18 swg) durable rust free Sheet with 1 mm thickness.	
Inner Cabinet	Stainless Steel 304 (22 swg)	
Insulation	CFC-free PUFF Insulation	
Insulation Thickness	Cabinet: 80-100 mm	Door: 80-100 mm
Ground Clearance	4 castor wheels (2 Lockable and 2 un-lockable) for free mobility.	
Door	Single/Double Integrated Triple-pane Glass door, Magnetic closing (90° closer) door handle and latch assembly to allow for easy operation, and includes standard key lock and provision for padlock.	
Inner Acrylic Door (Optional)	Ultimate Insulation option with acrylic inner doors which effectively locks in the temperature inside, minimizing cold air loss.	
Drawer Type	Convenient, fully extendable Roll-out type, 5 nos adjustable perforated shelves made of SS 304, featuring scratch-resistant surfaces and acrylic separators to securely hold bags in a vertical position with sufficient air space to reduce the "sardine effect."	
Compressor	Hermetically sealed, industrial-grade, highly efficient, air-cooled compressor for optimal performance and reliability.	
Refrigerant	CFC Free Refrigerant gas	
Air Circulation	Automatically operated, Adequate /uniform air circulation through an internal DUCT system using an evaporator fan to ensure even cooling across all compartments.	
Pull down time	04 Hours	
Temperature Controller	Fully programmable, microprocessor-controlled system with a membrane keypad and an eye-level control panel featuring on/off switch, digital thermometer, power indicator LEDs, and temperature alarm system for intuitive operation and precise control	
Display with Resolution	LCD/LED with 0.1°C resolution.	
Temperature Range	+2°C to +6°C with a setting accuracy of $\pm 0.1^\circ\text{C}$ for precise temperature control.	
Temperature uniformity	$\pm 1^\circ\text{C}$ or Less	
Environmental Condition	+10°C to +45°C with Humidity 5% to 95% RH	
Temperature Hold Over	2 Hours	
Cool-down Time	4 to 5 Hours for all the packs to reach below +6°C	
Audio Alarms with Visual Indication on Digital Display	High & Low Temperature, Door Opening, Power Failure with alarm silence button, Sensor Failure, Buzzer off time, C/F unit display choice.	
HMI Visual Indications Parameters	Heater ON, Door Open, Battery Low, Compressor On, Mains LED, System OK, Chart change, Power On	
Temperature Recording	Six-inch, 24x7 uninterrupted digital electronic temperature Ink-less, pressure-sensitive circular chart recorder with 21-day memory, Integrated print facility, data logger, remote alarm contact facility, and battery backup for alarms and recorder accuracy $\pm 1^\circ\text{C}$.	
Temp prob/ RTD Location	In the top portion of Inside chamber in a liquid medium bottle.	
Data Transfer Facility	Provision to connect with central (Temperature) monitoring system / facility of wireless data transfer facility & storage of temp. data on cloud, with continuous accessibility of data on PC or laptop and on smart phones with internet facility.	
Sensor	Dual Temperature Sensors: One for front display, 2nd for temperature recording device (Chart Recorder) ensuring precise monitoring.	
Battery Backup	12-Hour Battery Backup: Supports digital display, alarm system, and temperature recording (TRCU) with auto-recharging for uninterrupted temperature tracking.	
Noise level	<50 db	
Power Protection	MCB fitted in input Power Line	
Power supply	240 $\pm 10\text{V}$, 50 Hz, Single phase AC	

ALL-IN-ONE SOLUTION FOR

Cold Chain Solution
Medical Equipment
Blood Bank Equipment

Hospital & Scientific Equipment
Hospital Furniture & Infrastructure
Commercial Refrigeration



25+

Years of Excellence



400+

Product Range



500+

Service center



1000+

Committed Engineers



1,00,000+

Satisfied Users

CERTIFICATION



10 products tested by a
WHO-PQS accredited
laboratory



ISO 14001: IAF



WHO GMP



BIFMA Certified,
BIFMA Level 3



ASTM- Corrosion
Free Products



ISO 2409

EN 13523-26,
ISO 13849-1,
IP 69, IP 65

& MANY OTHER...

OUR ESTEEMED CUSTOMERS



& MANY MORE...



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