



Minus40

Instruction Manual

B65/220H Vaccine Fridge

v2026-08

The B65/220H is a 65-litre under-counter vaccine refrigerator for the storage of vaccines and temperature-sensitive medicines. It maintains a 2°C to 8°C temperature range using fan-assisted cooling with automatic defrost, controlled by a Full Gauge TC900E digital controller with LED display and an additional solar display for external monitoring.

Fully stainless steel inside and out, with two fixed perforated shelves and a lockable, self-closing solid door, it is suited to compact clinical storage in consulting rooms, pharmacies, and space-constrained healthcare facilities.

Important Safety Information READ FIRST

Intended use:

The B65/220H is designed for the storage of vaccines and temperature-sensitive medicines at 2°C to 8°C in clinical, pharmaceutical, and laboratory environments. It is not intended for the storage of food or domestic use.

Do not store staff food, drinks, or non-pharmaceutical biological samples alongside registered medicines and vaccines.

General safety:

- Always disconnect the unit from the mains supply before carrying out any maintenance.
- In case of unit failure, disconnect from the power supply and contact M40 Refrigeration, Minus40's dedicated service partner.
- If the supply cord is damaged, it must be replaced by M40 Refrigeration.
- Do not block the ventilation grille. The unit ventilates through the grille; if blocked, it will not operate correctly, and the compressor may be damaged.
- Keep liquids and flammable materials away from the unit at all times.

Electrical safety:

- The power supply must match the specifications on the rating plate, located inside the unit.
- Always ensure the electrical connection is suitably earthed.
- An inadequate electrical installation may cause voltage reduction at the compressor or motor damage.
- If in doubt, consult a qualified electrician before connecting the unit.
- Always use a direct connection to the plug outlet. Extension cords must never be used.



Operating environment:

- Maximum ambient temperature: 32°C
- Indoor use only; keep out of direct sunlight and away from heat sources.
- Minimum clearance required: 50mm on both sides; 100mm at the rear

Refrigerant:

This unit contains R134a refrigerant, which is non-flammable. Servicing and end-of-life recycling must only be carried out by a suitably qualified refrigeration technician.

- Direct contact with liquid R134a can cause frostbite. Technicians must wear appropriate eye and skin protection when connecting or disconnecting service equipment.
- Never use air or oxygen to pressure test the refrigeration circuit – under pressure, R134a/air mixtures can become combustible. Use only dry nitrogen for pressure and leak testing.
- Do not apply heat sources above 250°C near refrigerant lines. Thermal decomposition of R134a at high temperatures releases toxic, corrosive gases including hydrogen fluoride.
- Refrigerant must never be vented to atmosphere. It must be recovered into certified recovery equipment by a qualified technician at end of life or during repair.
- Always isolate and lock out the power supply before servicing the mechanical components.



Product Overview

Key features

- 65-litre under-counter capacity for compact clinical storage
- Lockable, self-closing solid door for security and reduced temperature loss
- 2 fixed perforated stainless steel shelves
- Fully stainless steel construction inside and out
- Fan-assisted cooling with automatic defrost
- Full Gauge TC900E digital controller with LED display and additional solar display for external monitoring without opening the unit
- Built-in voltage protection
- 26-hour holdover at 32°C ambient for cold-chain resilience during power outages
- Levelling feet for stable positioning

Front panel / controls

The B65/220H uses a single Full Gauge TC900E digital controller with LED temperature display and an additional solar display, allowing external temperature monitoring without opening the unit. The unit is factory pre-programmed with a setpoint of 4°C, locked to prevent unauthorised adjustment.

Ports / connectors / probe hole

A pre-fitted independent temperature monitoring probe hole allows a third-party monitoring device to be installed without compromising door seal integrity.

Included with unit

- Accessories: 2 x stainless steel shelves; 2 x keys
- Documentation: instruction manual, warranty informationinformation

Key Components

Controller	Full Gauge TC900E; LED display; additional solar display; located at the top of the unit
Condenser	Located beneath the unit, accessed via the grille at the base
Evaporator fan	Internal fan for air circulation
LED lighting	Internal, activated on door opening
Door seals	One gasket; inspect regularly
Voltage protector	Located in the motor compartment; LED indicators visible through the grille
Temperature monitoring probe hole	Pre-fitted, for independent monitoring devices
Castor wheels	Levelling feet

Technical Specifications

Temperature range	2°C to 8°C
Capacity	65L
Power	220V AC
Rated current	0.17 Amps
Electrical protection	Built-in voltage protector
Energy rating	Est. A++
Refrigerant	R134a
Defrost mode	Automatic
Holdover time	26 hours at 32°C ambient
Controller	Digital controller with LED display; additional solar display
Alarms	High/low temperature; door open; condenser temperature; compressor lockout; sensor fault
External dimensions (H×W×D)	835 × 600 × 695 mm
Internal dimensions (H×W×D)	515 × 400 × 350 mm
Net weight	75 kg
Max ambient temperature	32°C



Installation & Setup

1. Unpacking on receipt of unit

Remove all wrapping and packing material. Inspect for transport damage before signing waybill and proceeding.

2. Positioning

- Place out of direct sunlight and away from any heat sources.
- The unit is designed for under-counter installation. Maintain a minimum clearance of 50mm on both sides and 100mm at the rear to allow free airflow around the ventilation grille for heat exchange.
- Ensure the unit is placed on level ground and adjust the levelling feet as needed.

3. Power supply

- Confirm voltage and current requirements from the rating plate before connecting.
- Ensure the electrical connection is suitably earthed.
- Always use a direct connection to the plug outlet. Extension cords must never be used.
- If in doubt about the electrical installation, consult a qualified electrician before proceeding.

4. Power-on

Once correctly positioned and connected, switch on at the mains. This unit incorporates a built-in voltage protector. On power-up, allow 3–5 minutes for the voltage protector to complete its startup sequence before the unit begins cooling. During this delay, the yellow LED on the voltage protector will be lit; this is normal. The unit will turn on once the voltage protector signals stable power with a green LED.

5. Stabilisation

Allow the unit to run for a minimum of 24 hours before loading contents. Do not load before the display confirms the temperature is within 2°C to 8°C.

6. Initial checks

- Confirm the temperature display is active and reading within 2°C to 8°C.
- Confirm the door seal is intact and the door closes and latches fully.
- Confirm the door lock is functioning.
- Confirm the voltage protector green LED is lit, indicating a good power supply.

Operation

Temperature

The B65/220H is factory pre-programmed to maintain a temperature range of 2°C to 8°C, with a setpoint of 4°C. The setpoint is locked at the factory to prevent accidental or unauthorised changes to validated cold-chain settings and cannot be adjusted from the front panel. If you have a concern about the controller settings or need the setpoint changed, contact M40 Refrigeration.

Note: The displayed temperature reflects the current internal air temperature and may differ slightly during initial cool-down, after loading, or during an automatic defrost cycle. This is normal. Monitor over 30–60 minutes to confirm stability.

Voltage protector

The B65/220H includes a built-in voltage protector that stabilises the power supply to the unit, protecting against damage from power surges and voltage fluctuations. The voltage protector is located towards the bottom of the fridge in the motor compartment; its LED indicators are visible through the grille.

If the red LED is lit during normal operation (not during startup), check the power supply and consult a qualified electrician if the condition persists.

THIS UNIT COMES WITH A BUILT-IN VOLTAGE PROTECTOR

RED LED - VOLTAGE PROBLEM

YELLOW LED - WAIT

GREEN LED - POWER ON

Loading the unit

- Do not block internal air vents. Allow space for cold air to circulate around contents and the inside of the unit.
- Where possible, allow warm loads to approach room temperature before placing inside. (Note: vaccines and other temperature-sensitive materials that exceed 8°C prior to loading should be considered no longer viable and disposed of.)

Door use

- The door is self-closing — ensure it is fully closed and latched after every use.
- When the door is locked, store keys securely but ensure they remain accessible to authorised staff at all times.
- Minimise door opening duration to reduce temperature fluctuation.

Condensate

The unit is designed to automatically evaporate condensate water in the compressor compartment. No user action is required under normal operation.

Temperature monitoring

The B65/220H does not have Bluetooth monitoring. It uses a digital controller with LED display and an additional solar display for external temperature monitoring without opening the unit.

Temperature should be checked and recorded manually via the LED or solar display as part of your facility's cold chain monitoring procedure.

Defrost cycle

The B65/220H's TC900E controller runs an automatic, temperature-dependent defrost cycle approximately every 2 to 3 hours to remove ice build-up (if any) from the evaporator coil. The cycle ends automatically once the evaporator reaches 7°C, or after a maximum of 90 minutes, whichever comes first. During this cycle, the compressor temporarily pauses and the displayed air temperature may briefly rise. This is normal; product temperature remains within the safe 2°C to 8°C range throughout. Do not remove contents or contact service during a routine defrost cycle.

Power interruption

- In the event of a power failure:
1. Note the time the power was lost.
 2. Keep the door closed to preserve internal temperature for as long as possible.
 3. The B65/220H maintains safe storage conditions for up to 26 hours at 32°C ambient temperature during a power outage.
 4. If power is not restored within this holdover period, follow your facility's internal cold chain emergency policy to determine when contents must be relocated.
 5. When power is restored, allow the voltage protector startup delay to complete, then allow the unit to stabilise within 2°C to 8°C before reloading.voltage protector startup delay to complete, then allow the unit to stabilise within 2°C to 8°C before reloading.

Alarms

Code	Meaning	Recommended Actions
Athi	High temperature alarm (cabinet sensor)	Check that the door is closed properly, verify power is available, minimise door openings, and contact M40 Refrigeration if the alarm persists.
Atlo	Low temperature alarm (cabinet sensor)	Check for unusually low temperatures that could damage temperature-sensitive products. Contact M40 Refrigeration if the alarm does not clear.
AOPn	Open door alarm	Close the door fully and ensure nothing is preventing it from sealing. The alarm clears automatically once the door is closed.
AC1	High condenser temperature alarm (L1)	Clean the condenser (see Maintenance & Cleaning). Contact M40 Refrigeration if the alarm persists after cleaning.
AC2	High condenser temperature alarm (L2) — more severe; the controller shuts down the compressor, fan, and defrost outputs to protect the unit	Clean the condenser immediately and contact M40 Refrigeration. Monitor stored product temperature closely until resolved.
ALrC	Compressor ran continuously without reaching the setpoint; outputs shut down for protection	Contact M40 Refrigeration — this indicates a refrigeration fault requiring technical attention.
Err1-3	Temperature sensor disconnected or out of range	Contact M40 Refrigeration.
eCAL / pppp	Controller configuration or calibration fault	Contact M40 Refrigeration. Do not attempt to reconfigure the controller yourself.

For any other alarm codes, contact M40 Refrigeration for further guidance.
Email: service@m40refrigeration.com
Tel: +27 21 386 2290
WhatsApp: +27 84 602 9586

Maintenance & Cleaning

Annual service

It is recommended that the unit be serviced by an authorised Minus40 service agent at least once per year. An annual service agreement is available — contact service@m40refrigeration.com or speak to your Minus40 sales representative.

Storage — extended periods out of use

1. Disconnect from the power supply.
2. Remove all contents to suitable alternative storage.
3. Clean the unit inside and out thoroughly.
4. Leave the door slightly open so that air can circulate freely.
5. When returning to service: power on, allow the voltage protector startup delay to complete, then allow the unit to stabilise within 2°C to 8°C before reloading — refer to Installation & Setup.

Interior and exterior cleaning

- Disconnect the unit from the power supply before cleaning.
- Clean periodically using a non-abrasive cleaner and a soft cloth.
- Do not use detergents or abrasives.
- A damp cloth may be used; ensure all surfaces are polished dry afterwards.
- Both interior and exterior surfaces are stainless steel; use appropriate stainless steel cleaners if required..

Door seal inspection

The door has a single gasket. Inspect the seal regularly for cracks, gaps, or deformation. To test: close the door on a sheet of paper — it should grip firmly and resist being pulled out. If the seal fails, contact M40 Refrigeration.

Condenser cleaning procedure

The condenser is located beneath the unit and is accessed through the grille at the bottom front.

To clean the condenser:

1. Power off and unplug the unit from the mains supply.
2. Using an Allen key, remove the grille at the bottom front of the unit.
3. Locate the condenser, the fin-and-tube assembly similar in appearance to a car radiator.
4. Using a soft brush, carefully clean the fins.
5. Caution: The condenser fins are delicate. Do not bend the fins. Never poke anything through the fins. Never use water. Never use a hard brush.
6. If possible, vacuum away loose debris.
7. Check the remainder of the compartment for foreign objects and remove.
8. Secure the grille back in place using the Allen key.
9. Record the date cleaned for internal auditing purposes.

Need a new cleaning schedule template? Find that and more on the M40 Refrigeration website in the Resources section!

Why clean the condenser?

The condenser dissipates heat from inside the unit. Keeping the fins clear of dust allows the unit to run more efficiently, reduces energy consumption, and extends product life. Check monthly; clean every 2–3 months or whenever dust or debris is present.

Condenser Cleaning Schedule

Check the condenser monthly. If you see dust or fluff buildup, clean it.

YEAR	LOCATION									
Month	1	2	3	4	5	6	7	8	9	10
January										
February										
March										
April										
May										
June										
July										



Troubleshooting

Symptom	Checks	Action
Unit does not run; controller and lights are all off	Plug is fully inserted Wall socket has power Circuit breaker has not tripped Voltage protector LED colour	Restore power as needed. Voltage protector LED indicates status: amber = startup delay (normal); red = voltage fault; the unit will start once the LED turns green. If red persists, consult a qualified electrician.
Unit does not run, but controller is on	Check whether the compressor starts after a few minutes Check whether the evaporator fan is operating	Unplug the unit, wait two hours, then reconnect. If the compressor runs, a fault is causing it to overheat – contact M40 Refrigeration. If it never runs, contact M40 Refrigeration.
Unit not cold enough	Temperature setpoint Door fully closed Internal airflow not blocked Condenser clean Room temperature below 32°C	Clear any restriction at the grille. Clean the condenser. Inspect and, if necessary, replace the door seal. Contact M40 Refrigeration if the issue persists.
Unit too cold	Check displayed temperature Check whether a low-temperature alarm (Atlo) is active	Contact M40 Refrigeration.
Unit is noisy (Hissing or popping are normal refrigerant sounds)	Unit standing level Nothing touching the cabinet Fan free from obstruction	Adjust the levelling feet as needed. Remove any obstruction. If unusual noise persists, contact M40 Refrigeration.
Unit runs continuously	Door fully closed Condenser clean Room temperature below 32°C Temperature or condenser alarm present	Clean the condenser and check the door seal. Improve room ventilation. Contact M40 Refrigeration if the issue persists.
Temperature alarm active (Athi or Atlo)	Door fully closed Loading levels reasonable Temperature recovering over 30–60 minutes	If temperature does not recover, relocate contents to alternative storage and contact M40 Refrigeration.
Door alarm active (AOPn)	Door fully closed and latched Door seal undamaged	Close the door fully. Contact M40 Refrigeration if the seal is damaged.
Condenser alarm active (AC1 or AC2)	Condenser clean Base grille clear of dust and debris	Clean the condenser. If AC2 is showing, contact M40 Refrigeration immediately – the controller has shut down the compressor for protection.
Compressor lockout alarm (ALrC)	Check whether the compressor has been running continuously without reaching the setpoint	Contact M40 Refrigeration – indicates a refrigeration fault requiring technical attention.
Sensor fault (Err1 , Err2 , or Err3)	Check the temperature display for the error code	Contact M40 Refrigeration. Do not attempt to repair or bypass the sensor yourself.



NEED HELP?

Contact our dedicated service team!

Email: service@m40refrigeration.com

Tel: +27 21 386 2290

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