



TERSO
SOLUTIONS, INC.

Large UHF RFID Refrigerator

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Introduction

Read this manual carefully before using the refrigerator and follow the instructions for safe operation.

Terso Solutions does not guarantee safe operation if the refrigerator is not used as intended as outlined in this manual.

Keep this manual in an easily accessible place to refer to as necessary.

The contents of this manual are subject to change without notice due to improvement in performance or functions.

Contact Terso Technical Support if a page of the manual is lost or page order is incorrect.

Contact Terso Technical Support if any point in this manual is unclear or if there are any inaccuracies.

Precautions for Safe Operation

It is imperative that the user complies with this manual as it contains important safety advice.

Items and procedures are described so that you can use this refrigerator correctly and safely. If the precautions advised are followed, this will prevent possible injury to the user and any other person.

Precautions are illustrated in the following way:



WARNING

Failure to observe WARNING signs could result in a hazard to personnel possibly resulting in serious injury or death



CAUTION

Failure to observe CAUTION signs could result in injury to personnel and damage to the refrigerator and associated property

Symbol shows:



This symbol means an action is prohibited.

- This symbol means an instruction must be followed.

Be sure to keep this manual in a place accessible to users of this refrigerator.



Caution, read all accompanying documents before operating the device.



This mark is labeled on the cover in which the electrical components of high voltage are enclosed to prevent electrical shock. The cover should be removed by qualified engineers or service personnel only.




This mark indicates the location of the protective earth conductor. Do not disconnect. Disconnection of the protective earth conductor may impair the protection provided by the device.





WARNING

- **Risk of shock is present inside the device.** The cover should be removed by qualified engineers or service personnel only.

 **Do not use the refrigerator outdoors.** Current leakage or electric shock may result if refrigerator is exposed to rain water.

- **Be sure to install the refrigerator on a sturdy floor.** If the floor is not strong enough or the installation site is not adequate, injury may result from the refrigerator falling or tipping over.

 **Never install the refrigerator in a flammable or volatile location.** This may cause explosion or fire.

 **Never install the refrigerator where acid or corrosive gases are present** as current leakage or electrical shock may result due to corrosion.

- **Make sure a dedicated power source is used** as indicated on the rating label attached to the refrigerator.


- **Make sure to remove dust from the power supply plug** before inserting in a power source. A dusty plug or improper insertion may pose a hazard.




WARNING


- **Use a power supply outlet with ground (earth)** to prevent electric shock. If the power supply outlet is not grounded, it will be necessary to have qualified engineers install a ground.

- **When removing the plug from the power supply outlet, grip the power supply plug, not the cord.** Pulling the cord may result in electric shock or fire by short circuit.


 **Never damage or break the power supply plug or cord. Do not use the supply plug if its cord is loose.** This may cause fire or electric shock.


 **Do not touch any electrical parts such as power supply plug or any switches with a wet hand.** This may cause electric shock.

 **Never ground the refrigerator through a gas pipe, water main, telephone line or lightning rod.** Such grounding may cause electric shock in the case of an incomplete circuit.

 **Do not insert metal objects such as a pin or wire into any outlet, vent or gap** for inner air circulation. This may cause electric shock.

- If this refrigerator is to be used for storing poisons, radioactive material or other harmful products, ensure that it is in a safe area.** Failure to do so may lead to an adverse effect on the health of personnel in the area and local environment. In this case, a request for repair or maintenance will necessitate a safety check sheet for maintenance personnel and that the unit is clearly labeled to show such materials.
-

 **Never splash water directly onto the refrigerator** as this may cause electric shock or short circuit.

 **Never disassemble, repair, or modify this refrigerator yourself.** Any such work carried out by an unauthorized person may result in fire or injury due to a malfunction.

- **Disconnect the power supply plug if there is something wrong with the refrigerator.** Continued abnormal operation may cause electric shock or fire.

- If the refrigerator is to be stored unused in an unsupervised area for an extended period of time, ensure **that children do not have access and that doors cannot be closed completely.**



WARNING

- **Make sure to prepare a safety check sheet** when you request any repair or maintenance for the safety of service personnel.
- **Select a level and sturdy floor for installation.** This precaution will prevent the refrigerator from tipping. Improper installation may result in injury from the refrigerator tipping over.



CAUTION

- ⊘ **Do not disconnect the protective earth conductor.** Disconnection may impair the protection provided by the device.
- ⊘ **Do not place any switches or disconnect devices in the earth conductor.**
- ⊘ **Do not touch any stock, especially metal objects, in the refrigerator with a bare hand.** This may cause frostbite.
- ⊘ **Do not climb onto the refrigerator.** This may cause injury by tipping or damage to the refrigerator.
- **Always hold the handle when closing the door.** This will reduce the likelihood of a trapped finger.
- ⊘ **Do not lean on the door.** This may cause injury if the refrigerator tips over.
- **Always disconnect the power supply plug before moving the refrigerator.** Take care not to damage the power cord. A damaged cord may cause electric shock or fire.
- **Be careful not to tip over the refrigerator** during movement to prevent damage or injury.
- **Always disconnect the power plug** when the refrigerator is not used for long periods of time.
- **Always disconnect the power supply to the refrigerator prior to any repair or maintenance** of the refrigerator in order to prevent electric shock or injury.

Cautions for Usage

1. Always use gloves when handling items within the refrigerator.
2. Never store corrosive materials such as acid or alkali unless the container is completely sealed up. Corrosion may lead to failure of the refrigerator in time.
3. Always close the door firmly. The door open buzzer will sound after the door is open for five minutes unless configured otherwise. The buzzer can be canceled automatically when the door is closed.
4. Always open and close the door gently. Rough operation may lead to stored items falling down, incomplete closing, or damage of the door and/or locking mechanism.
5. Items should be added to the refrigerator in small batches to minimize temperature increase.
6. If condensation forms on the door or frame surface, wipe it off with a dry soft cloth.

Environmental Conditions

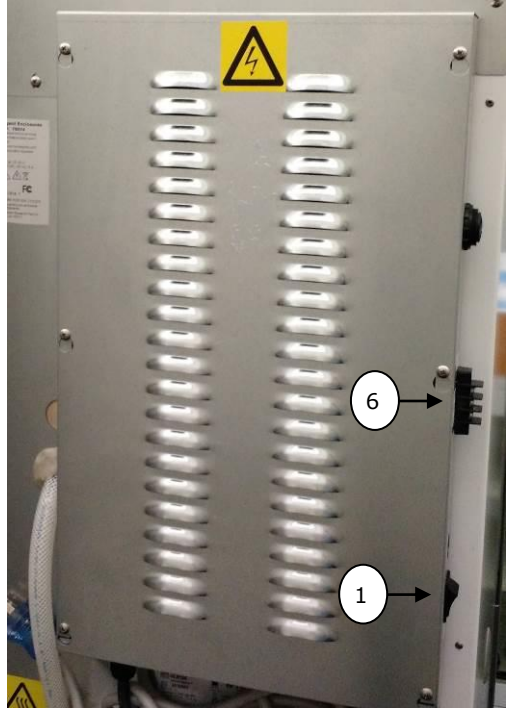
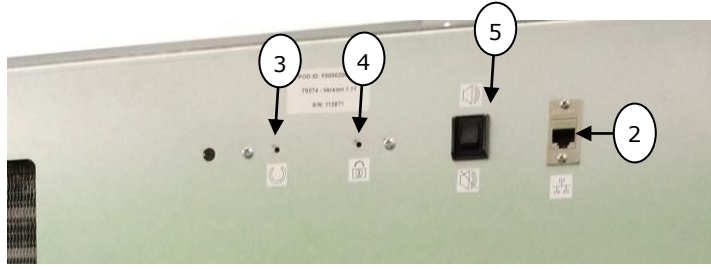
This equipment is designed to be safe at least under the following conditions:

1. Indoor use
2. 2000m / 6550ft altitude
3. 5° C to 40° C / 41° F to 104° F, ≤80% relative humidity
4. Over Voltage Category II
5. Pollution Degree 2 (normal office conditions)
6. Peak operating noise level of 60 dB

Components

Back Panel

1. AC On/Off Switch
2. WAN Ethernet Jack
3. Reset Button
4. Bypass Button
5. Buzzer Mute Switch
6. Alarm Contacts



Refrigerator Front

1. LCD Screen
2. Proximity Badge Reader
3. USB Interface
4. Unit Control Panel:
Temp Settings +
Control, Light Switch
(refer to refrigerator
manual)



Installation

Site

To operate this refrigerator properly and to obtain maximum performance, install the refrigerator in a location with the following conditions:

- **A location with correct power outlets**

The refrigerator requires a dedicated grounded 120V 20A NEMA 5-20 outlet.

- **A location with a sturdy and level floor**

Install the refrigerator on a sturdy floor to ensure proper door alignment



WARNING

Be sure to install the refrigerator on a sturdy floor. If the floor is not strong enough or the installation site is not adequate, this may result in injury from the refrigerator falling or tipping over.



CAUTION

Select a level and sturdy floor for installation. This precaution will prevent the refrigerator from tipping.

- **A location not prone to high humidity**



WARNING

Do not use the refrigerator outdoors. Current leakage or electric shock may result if the refrigerator is exposed to rain water.

Never install the refrigerator in a humid place or a place where it is likely to be splashed by water. This may result in current leakage or electric shock.

Do not install the refrigerator under water pipes or steam pipes. This may result in current leakage or electric shock.

- **A location without a flammable or corrosive gas**



WARNING

Never install the refrigerator in a flammable or volatile location. This may cause explosion or fire.

Never install the refrigerator where acid or corrosive gases are present as current leakage or electric shock may result due to corrosion.

Installation

Inspection

With packaging in place, inspect the refrigerator for any damage that may have occurred during transit. If any damage is present, please contact Terso Technical Support at +1 (888) 376-0257 in the US or +49 621 8501 233 in Europe.

Unpacking

- Remove the straps and remove all packaging. Gently position the refrigerator in place on the ground.
- **Remove accessories from inside the refrigerator.** Items included are a **Power Cable and Ethernet Cable.** Other items may also be included such as an Ethernet Hub or other refrigerator specific items.

Proper Handling

Move the refrigerator to the installation site. There are wheels on the refrigerator to aid in positioning. Roll the refrigerator by firmly pushing on the middle section of the body. Always move the refrigerator with the door facing you. Carefully roll the refrigerator into position leaving at least a 6" gap between the refrigerator and the wall.

Connecting AC Power

Plug the refrigerator into a grounded wall outlet with a minimum of a 8A rating.

The power outlet must be within 3m / 6ft of the refrigerator and must be easily accessible unobstructed outlet. Ensure that the on/off switch is easily accessible.

In an emergency, the cord can act as an off switch.

Connecting Communications

Plug the Ethernet cable into the back panel and then into the appropriate wall data jack or cellular router.

Access Verification

Present a pass below the LCD screen on the front panel. The LCD text should indicate that the door is now unlocked. The door can be closed at any time and will be locked upon doing so. This can be verified by gently pulling on the door handle.

Remote Alarm Contacts

Alarm contacts on the back of the refrigerator are available to wire the refrigerator into an alarm system. These contacts can alarm on high/low temperature, power outages, and control probe or microboard failures. Reference the Refrigerator Manual for further details.

Operating Instructions

Basic Access Process

An end user will present an access badge to the proximity badge reader on the refrigerator. The badge needs to be presented close to the proximity reader to be read. The LCD screen will indicate granted access when a valid badge has been presented.

The end user now can open the door for a predetermined time period, normally about five seconds. Otherwise the user will need to present the pass again. Desired products may now be taken out. The refrigerator will give an audible alarm if the door is left open for, typically, more than five minutes.

Close the refrigerator door once products have been retrieved. The refrigerator will automatically lock the door and begin its inventory process. The updated inventory will then be sent to Terso Solutions for processing. The refrigerator will not be accessible during the inventory process. Typically, the inventory process will take about a minute to complete. Access will then be restored and the process can be repeated.

Alarms

All refrigerator alarms are automatically sent to Terso Solutions. Terso Solutions staff may contact on site staff to assist in correcting a potential problem.

Alarm Types

Door Ajar

When the refrigerator door is left open for longer than five minutes, an audible alarm will sound until the door is closed. If the door appears to be closed, verify nothing is obstructing the door and attempt to re-close.

Power Outage

In the event of a power outage, an audible alarm will sound. The alarm will continue until AC power has been restored or the onboard UPS system runs out of power. Once power has been restored, the refrigerator will perform an inventory scan and be ready for normal use.

Temperature

The refrigerator continuously monitors its internal temperature where inventory items are kept. If the temperature becomes too hot or cold, Terso Solutions staff will contact on site staff to attempt to troubleshoot and/or move temperature sensitive products to a safe location. The refrigerator may also prevent access if the inventory items have become compromised.

Hardware Failure

The refrigerator will automatically attempt to correct any hardware errors preventing the refrigerator from functioning correctly. However, in the event that a hardware component fails, the refrigerator may lock itself down to prevent access. Terso Solutions staff will be in contact with on site staff if this is the case.

Door Breach

If the refrigerator door is forced open, a notification indicating a forced entry occurred will be sent to Terso Solutions. Any products taken will be reported. This is a rare occurrence but may result in damage to the refrigerator.

Maintenance

There are no serviceable parts in the refrigerator. Please contact Terso Solutions for any service related inquiries.



WARNING

Always disconnect the power supply to the refrigerator prior to any repair or maintenance in order to prevent shock or injury.

Exterior Cleaning

Use a dry cloth to wipe off small amounts of dirt on the outside and inside of the refrigerator and all accessories. If the outside panels are dirty, clean them with a diluted neutral dishwashing detergent. (Undiluted detergent can damage the plastic components. For the dilution refer to the instruction of the detergent.) After cleaning with diluted detergent, always wipe off the same areas with a wet cloth. Then wipe off the refrigerator or accessories with a dry cloth.

Never pour water onto or into the refrigerator. Doing so can cause electric shock or a short circuit.

Do not clean the refrigerator with scrubbing brushes, acid, thinner, solvents, powdered soap, cleanser or hot water. These agents can scratch the paint or cause it to peel. Plastic and rubber parts can be easily damaged by these materials. Especially never use any volatile solvent to clean the plastic or rubber parts. When a neutral dishwashing detergent is used to clean the refrigerator, wipe it up thoroughly with a cloth soaked in clean water.

Interior Cleaning

If the interior of the unit requires cleaning, refer to in house safety procedures to ensure any harmful materials are handled and cleaned correctly.

Troubleshooting

If the refrigerator appears to not be operating correctly, check to ensure that it is plugged into a wall outlet and powered on. If further support is needed, contact Terso Technical Support at +1 (888) 376-0257 in the US or +49 621 8501 233 in Europe. Support can also be contacted by visiting <http://support.tersosolutions.com>.

Disposal

Terso Solutions will handle the disposal of the refrigerator and its components. Please contact Terso Solutions at +1 (888) 376-0257 in the US or +49 621 8501 233 in Europe to arrange for refrigerator disposal.

Specifications

Attribute	Specification (Imperial)	Specification (Metric)
External Dimension	79.5H x 29.5W x 29.5D in	2020H x 750W x 750D mm
Internal Dimension	58.25H x 24.75W x 24.25D in	1480H x 629W x 615D mm
External Space	64.25H x 27.75W x 27.25D in	1680H x 675W x 680D mm
Volume	20.2 ft ³	572 L
Unit Weight	473 lbs.	215 kg
Control Range	2° F to 10° F	-16° C to -12° C
Maximum Drawer Weight Capacity	30 lbs.	14 kg
Electrical Input Rating	120VAC, 60Hz, 8A	
Power Consumption	920W max	
Battery	12VDC, 1.3A, Sealed lead acid, qty 2	
Security Device	Electromagnet	
Access Control	EM4102/EM4200 Proximity Reader	
Environmental Protection	IPX0	
Refrigerant	R-134A non-CFC	
Cooling Method	Forced Air Cooled	
Communications	Ethernet based LAN DSL optional Cellular optional	

Model Specifics

Model	Country	RFID Frequency	Plug Style	Door Style
TS074	US	902-928 MHz	NEMA 5-15	Glass

Note: Design or specifications are subject to change without prior notice

Safety Check List



CAUTION

Please fill out this form before servicing and ensure that the unit is properly marked with any applicable markings to denote any hazards inside.

Provide this form to the service engineer to keep for safety purposes.

Safety Check List

Refrigerator Contents:

Risk of infection	Yes	No
Risk of toxicity	Yes	No
Risk of radioactive sources	Yes	No

Please list any potentially hazardous materials that have been stored in this refrigerator:

Contamination of the Refrigerator

No contamination	Yes	No
Decontaminated.....	Yes	No
Contaminated	Yes	No