Freezer Operation Manual

i.Series™ and Horizon Series™

Plasma Storage Models

- i.Series: iPF120, iPF125 (Version C)
- Horizon Series: HPF120, HPF125 (Version C)

Laboratory Models

- i.Series: iLF120, iLF125 (Version C)
- Horizon Series: HLF120, HLF125 (Version B)

Model _____

S/N _____

CE
0086

ISO 13485:2003 CERTIFIED

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Section I: General Information

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1 About this Manual

This chapter explains the symbols and conventions used in this manual, copyright information about this document, and trademark information for products supplied by Helmer.

1.1 Intended audience

This manual is intended for use by end users of the freezer, and is to be used in conjunction with the i.C³™ User Guide, Freezer Service Manual, Chart Recorder Operation Manual, and the Horizon Access Control Keypad User Guide, available on the CD shipped with the freezer.

1.2 Symbols and conventions

1.2.1 Cautions

A Caution is used to call attention to a condition or possible situation that could damage or destroy the equipment or the operator's work.

CAUTION Temperature probes are fragile. Handle them with care.

1.2.2 Notes

Notes contain additional information about a topic. Notes are used to provide information about how a topic relates to another topic, or background information about a design characteristic.

NOTE Spare parts are available for purchase through Helmer.

1.2.3 Model references

Generic references are used to group freezers that contain similar features. For example, "i.Series" refers to iPF125 and iLF125 freezers, and "Horizon Series" refers to HPF125 and HLF125 freezers. This manual covers all freezers, which may be identified singly or by their respective "Series."

Model Group	i.Series	Horizon Series
Plasma	iPF120, iPF125	HPF120, HPF125
Laboratory	iLF120, iLF125	HLF120, HLF125

EC REP

Emergo Europe
Molenstraat 15
2513 BH
The Hague, Netherlands

1.3 Copyright and trademark information

2 Safety

This chapter describes general safety information for operating the freezer. The Freezer Service Manual includes additional safety information for maintaining and cleaning the freezer. Your organization may provide additional safety information.

2.1 Labels

Caution, risk of danger

Caution, hot surface

Caution, shock hazard

Caution, unlock all casters

Earth ground terminal

Protective earth ground terminal

2.2 Avoiding injury

- Review safety instructions before installing, using, or maintaining the equipment.
- Before performing procedures, review any specific safety instructions.
- Do not open multiple, loaded drawers at the same time.
- Before moving unit, ensure casters are free of debris.
- Do not move a unit whose load exceeds 900 lbs (408 kg).
- Avoid removing electrical service panels and access panels unless so instructed.
- Use supplied power cords only.
- Notify appropriate safety personnel when handling or disposing of materials that are infectious, toxic, pathological, radioactive, or otherwise biologically or environmentally harmful.

CAUTION Decontaminate parts prior to sending for service or repair. Items not decontaminated appropriately will not be accepted. Documentation stating contents are not contaminated and are safe to handle must accompany returns. Contact Helmer or your distributor for decontamination instructions and a Return Authorization Number.

3 Installation

3.1 Location requirements

- ► Has a grounded outlet meeting the electrical requirements as listed on the product specification label
- ► Is clear of direct sunlight, high temperature sources, heating vents, and air conditioning vents
- ► Has a minimum of 8 inches (203 mm) above, and a minimum of 3 inches (76 mm) behind
- ► Meets limits specified for ambient temperature and relative humidity

Placement

CAUTION

- ► Do not use the water evaporation tray, located on the rear of the freezer, as a handle. The tray may be hot.
- ► To prevent tipping, ensure the casters are unlocked, leveling feet (if installed) are lifted, and the door is closed before moving the freezer.

1. Ensure all casters are unlocked and the door is closed.
2. Roll freezer into place and lock casters.
3. Ensure the freezer is level.

NOTE Helmer recommends the use of leveling feet.

Operating conditions

This freezer is designed for indoor use only.

Altitude (maximum): 2000 m

Ambient temperature range: 15 °C to 32 °C

Relative humidity (maximum for ambient temperature): 80% for temperatures up to 31 °C, decreasing linearly to 50% at 40 °C

Temperature control range: -15 °C to -30 °C

3.2 Preparing the temperature probe

The temperature probe monitors chamber temperature.

In addition to using standard probes installed by Helmer, external probes may be introduced through the existing rear port and immersed in the existing probe bottle.

For the probe bottle, obtain:

- ► Approximately 4 oz (120 ml) of product simulation solution. Solution is a 1:1 ratio of water to propylene glycol (or equivalent low-temperature fluid).

Left: Probe bottle with temperature and chart recorder probes. Right: Access port on the top of the freezer. The number and location of ports varies by model.

To fill a temperature probe bottle

CAUTION

- ► Clean bottle first, as required.
- ► Temperature probes are fragile; handle with care.

1. Remove all probes from bottle.
2. Remove bottle from bracket and fill with approximately 4 oz (120 ml) of product simulation solution.
3. Cap tightly to minimize evaporation.
4. Place bottle in bracket and replace probes, immersing at least 2 inches (50 mm) in solution.

4 Compliance and Energy Conservation

Energy conservation and regulatory compliance

This device complies with the requirements of directive 93/42/EEC concerning Medical Devices, as amended by 2007/47/EC.

This product is certified to applicable UL and CSA standards by a NRTL.

Insulation Type: 2

Pollution Degree: 2 (for use in USA and Canada only)

Sound level is less than 70 dB(A).

WEEE compliance

The WEEE (waste electrical and electronic equipment) symbol (right) indicates compliance with European Union Directive WEEE 2002/96/EC and applicable provisions. The directive sets requirements for the labeling and disposal of certain products in affected countries.

When disposing of this product in countries affected by this directive:

- ► Do not dispose of this product as unsorted municipal waste.
- ► Collect this product separately.
- ► Use the collection and return systems available locally.

For more information on the return, recovery, or recycling of this product, contact your local distributor.

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Section II: i.Series™ Models

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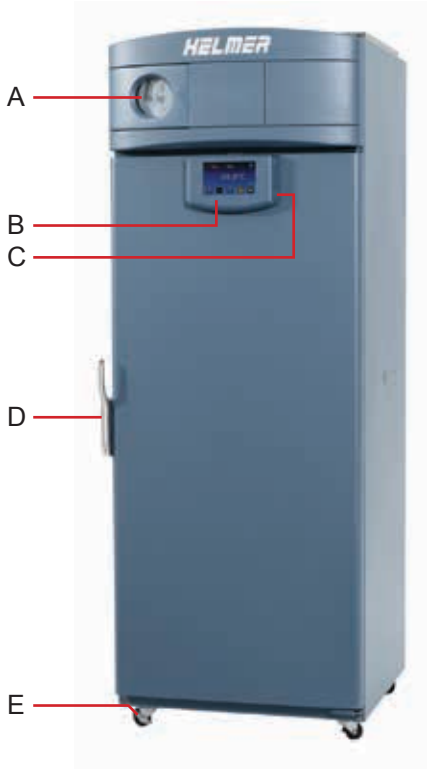
5 Components

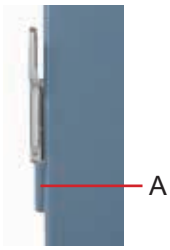
3.1 Front



Front features (iPF120 model shown).

Label	Description	Label	Description
A	Chart recorder (standard on plasma storage models, optional on laboratory models)	D	Door handle with lock
B	i.C³ control	E	Caster
C	USB port		

5.1.1 Access Control option



Access Control lock cartridge (iPF120 model shown).

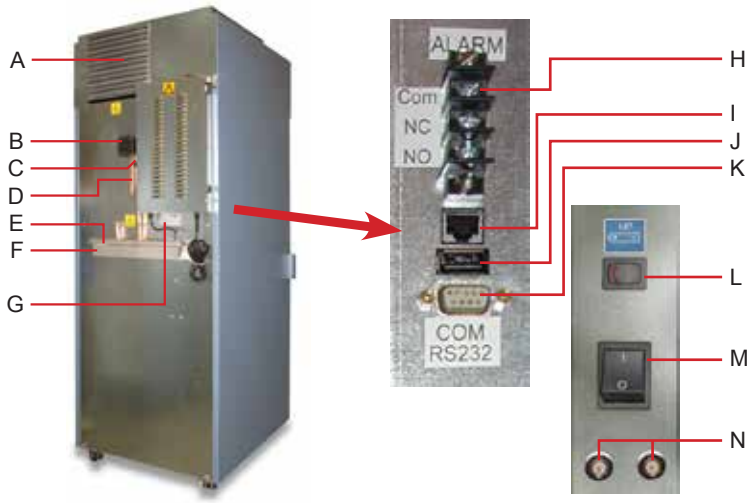
Label	Description
A	Access Control cartridge assembly (includes manual override key)

5.2 Chamber

Chamber features (iPF120 model shown).

Label	Description	Label	Description
A	Unit cooler with fan guard	E	Standard for adjusting storage components
B	Upper probe bottle	F	Roll out basket
C	Cold-Shield door (plasma storage models with eight drawers)	G	Lower probe bottle (not visible)
D	Shelf	H	Drawer

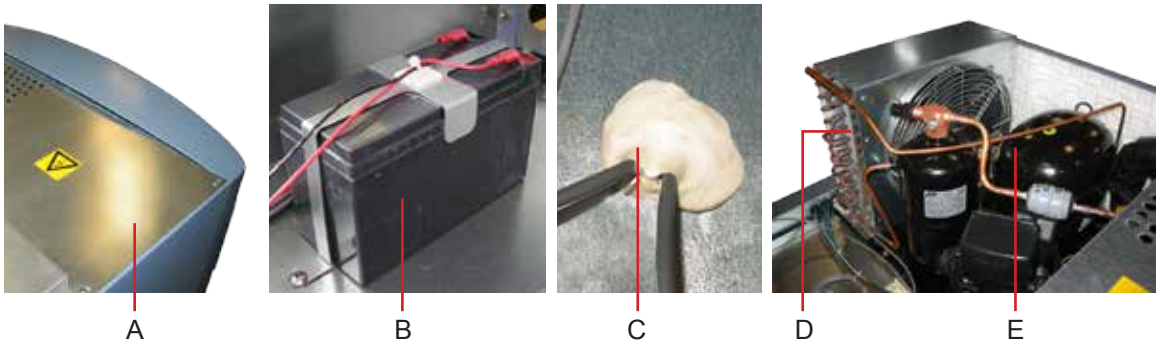
5.3 Rear



Rear features (iLF120 model shown).

Label	Description	Label	Description
A	Condenser grill	H	Remote alarm interface
B	Drain line fan	I	RJ-45 Ethernet port
C	Drain line heater	J	USB port
D	Drain line	K	RS-232 COM port (optional)
E	Condensate evaporator	L	Backup battery switch
F	Water evaporation tray	M	Main power switch
G	Product specification label	N	Circuit breakers

5.4 Top



Top features (iLF120 model shown).

Label	Description	Label	Description
A	Service cover	D	Condenser
B	Monitor backup battery	E	Compressor
C	Access port (number and location vary by model)		

6 General Operation

6.1 Power on

NOTE Allow the freezer to come to room temperature before power on.

When the power is connected for the first time, the freezer runs frequently to achieve normal operating temperature. This may cause an alarm to sound. When normal operating temperature is reached, the freezer runs normally and automatically clears the alarm.

The freezer has a rechargeable backup battery that is switched off for shipping. Switch the battery ON to provide power to the monitoring system in the event of main power failure.

CAUTION Do not remove the cover from the condensate evaporator tray.

1. Plug the power cord into a grounded outlet that meets the electrical requirements that appear on the product specification label.
2. Switch the AC ON/OFF switch ON. The touchscreen lights up. For more information, refer to the i.C³ User Guide.

NOTE The i.C³ monitoring and control system will take approximately two minutes to boot up.

3. If an alarm sounds, mute the alarm temporarily by touching the **Mute** button.
4. Switch the backup battery switch ON.

NOTE Active alarms are displayed on the Home screen. If an alarm condition other than High Temperature has occurred, refer to the service manual for troubleshooting procedures.

6.2 Storing items in the freezer

CAUTION Follow all chemical handling and disposal requirements and procedures specified by your organization. See chapter **2** (Safety).

Before storing items in the freezer, be sure the temperature is correct and stable. After the freezer has reached room temperature, allow the chamber temperature to stabilize at the setpoint before storing product.

6.3 Locking and unlocking the doors

Lock the doors to prevent unauthorized access to items stored in the freezer. The freezer is shipped from the factory with two keys.

6.4 Using access control

The Access Control option allows user-specific secure access to the freezer. The Access Control system consists of a mechanical lock which prevents the freezer door from being opened unless a valid user code is entered on the i.C³ Access Control screen. If the Access Control option has been installed and is enabled, refer to the i.C³ User Guide.

6.5 Moving drawers, shelves, and baskets

Not all containers are available for all models. The drawers, shelves, or baskets may be removed or replaced as needed. Refer to the service manual for additional information.

NOTE Do not move a unit whose load exceedes 900 lbs/408 kg.

6.6 Changing temperature setpoints

The refrigerator is shipped from the factory with preset temperature setpoints. These setpoints are specific to the refrigerator's intended use.

Instructions for changing the temperature setpoints are outlined within Chapter 11: Alarm Settings, in the i.C³ User Guide. Refer to the i.C³ User Guide for instructions in changing temperature setpoints.

6.7 Understanding normal operation

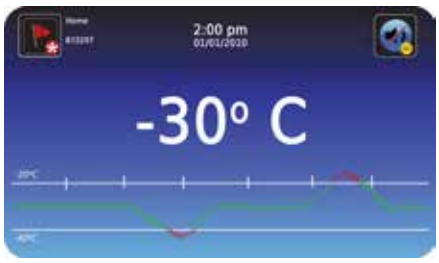
This sub-chapter describes some of the characteristics the freezer has during normal operation.

6.7.1 Understanding when the Home screen appears

The i.C³ displays the Home screen if the **Home** button is touched from any other screen. If another screen is displayed, and there is no interaction for two minutes, the display returns to the Home screen. The only exceptions are the screens used to enter a password. For more information about the i.C³ Home Screen, refer to the i.C³ User Guide.

Home screen.

6.7.2 Understanding the temperature graph screensaver



Home screen with temperature graph.

The temperature graph screen saver displays chamber temperature data for the past 24 hours of operation. When there are no active alarms and the Home screen has not been touched for one minute, the graph appears at the bottom of the screen. The graph clears if the screen is touched or an alarm activates. For more information about the i.C³ temperature graph screensaver, refer to the i.C³ User Guide.

6.7.3 Defrost status

While the freezer is defrosting, the defrost icon appears on the Home screen.

Home screen with defrost icon.

6.8 Identifying visual alarms

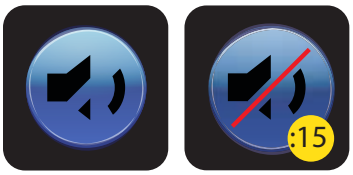
- ► If any alarms are active, the Alarm Condition indicator appears, with the type of alarm described below it.
- ► If multiple alarms are active, they are sequentially displayed for two seconds each, below the Alarm Condition indicator.
- ► If the alarm is for the chamber temperature, the display of the upper chamber temperature turns red.

For more information about the i.C³ alarms, refer to the i.C³ User Guide.

Home screen with an active High Temperature alarm.

6.9 Controlling the sound for audible alarms

Muting and disabling audible alarms



Mute button. Left: Alarm is not muted. Right: Button shown with 15-minute delay indicator.

Audible alarms may be muted temporarily by touching the **Mute** button until the desired duration is shown. For more information about the i.C³ monitoring and system, refer to the i.C³ User Guide.

7 Maintenance Schedule

Maintenance tasks should be completed according to the following schedule. Refer to the service manual for more detail on the various tasks.

NOTE These are recommended minimum requirements. Regulations for your organization or physical conditions at your organization may require maintenance items to be performed more frequently, or only by designated service personnel.

Task	Frequency		
	Quarterly	Annually	As needed
Test the high and low temperature alarms.	✓		
Test the power failure alarm (as required by your organization's protocols).			✓
Test the door alarm (as required by your organization's protocols).			✓
Check the temperature calibration on the monitor and change it if necessary.	✓		
(Models with chart recorders) Check the backup battery for the chart recorder after an extended power failure and change it if necessary, or change the battery if it has been in service for one year. Refer to the Temperature Chart Recorder Operation and Service Manual.			✓
Check the level of the solution in the probe bottles. Refill or replace solution if necessary.			✓
Examine the probe bottles and clean or replace them if necessary.		✓	
Check the chamber lights and replace them if necessary.			✓
Clean the condenser grill.	✓		
Clean the door gaskets, interior, and exterior of the refrigerator.			✓
If applicable, test the ground fault circuit interrupter on the internal outlet.			✓

NOTE Cleaning of the condenser grill is required on a quarterly basis.

CAUTION

- ► During a power failure, the rechargeable backup battery provides power to the monitoring system and the power failure alarm. If the backup battery is not functioning, the power failure alarm will not be activated.
- ► If the rechargeable backup battery does not provide power to the monitoring system during the power failure alarm test, or if the battery has been in service for two years, replace the battery.

CAUTION Follow all chemical handling and disposal requirements and procedures specified by your organization. See chapter **2** (Safety).

8 Technical Specifications

Power

Input voltage and frequency

The requirements for a particular freezer are specified on the product specification label. Available options are 208/230 V 60 Hz and 230 V 50 Hz.

Power consumption

The power consumption for a particular freezer is specified on the product specification label. Power consumption is measured in full load Amperes.

Input voltage	Power consumption	Circuit breakers
230 V, 50 Hz	3.8 A	12 A (quantity 2)
208/230 V, 60 Hz	4.3 A	

Load capacity for alarm contacts

The terminals on the remote alarm interface have the following maximum load capacity:

► 0.5 A at 125 V (AC); 1 A at 250 V (AC)

CAUTION

► The interface on the remote alarm monitoring system is intended for connection to the end user's central alarm system(s) that uses normally-open or normally-closed dry contacts.

► If an external power supply exceeding 33 V r.m.s. or 70 V (DC) is connected to the remote alarm monitoring system's circuit, the remote alarm will not function properly; may be damaged; or may result in injury to the user.

Weight

The weight may vary slightly depending on what options are installed. The weights provided are for the following configurations:

Model family	Model variety	
	120	**125**
iPF	8 drawers	8 drawers
iLF	4 full-size shelves	4 full-size shelves

Model family	Model variety	
	120	**125**
iPF	505 lb	557 lb
	230 kg	253 kg
iLF	443 lb	481 lb
	201 kg	219 kg

NOTE Plasma storage models (iPF) feature drawers as the standard storage configuration. Lab models (iLF) feature shelves as the standard storage configuration. Any combination of drawers, baskets, and shelves may be installed.

Drawer weight

NOTE Maximum drawer load is 100 lbs (46 kg).

Size

All dimensions are for the overall exterior and include items that protrude from the main unit.

Dimension	Model variety	
	120	125
Width	30.75 in	30.75 in
	782 mm	782 mm
Height	80 in	80 in
	2032 mm	2032 mm
Depth	32.50 in	38.50 in
	826 mm	978 mm

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Section III: Horizon Series™ Models

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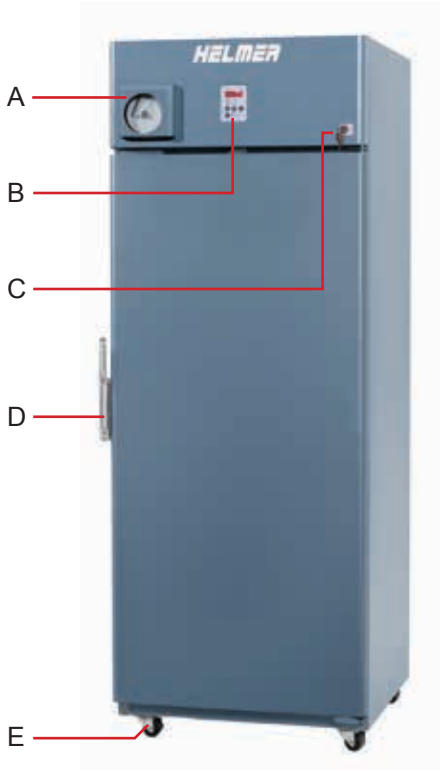
9 Components

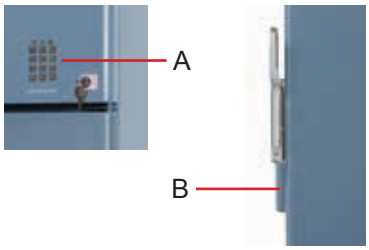
9.1 Front



Front features (HPF120 model shown).

Label	Description	Label	Description
A	Chart recorder (standard on plasma storage models, optional on laboratory models)	D	Door handle with lock
B	Horizon control	E	Caster
C	Alarm key switch		

9.1.1 Access Control option



Access Control keypad and lock cartridge (HPF120 model shown).

Label	Description	Label	Description
A	Access Control keypad (included with Access Control option)	B	Access Control cartridge assembly (includes manual override key)

9.2 Chamber

Chamber features (HPF120 model shown).

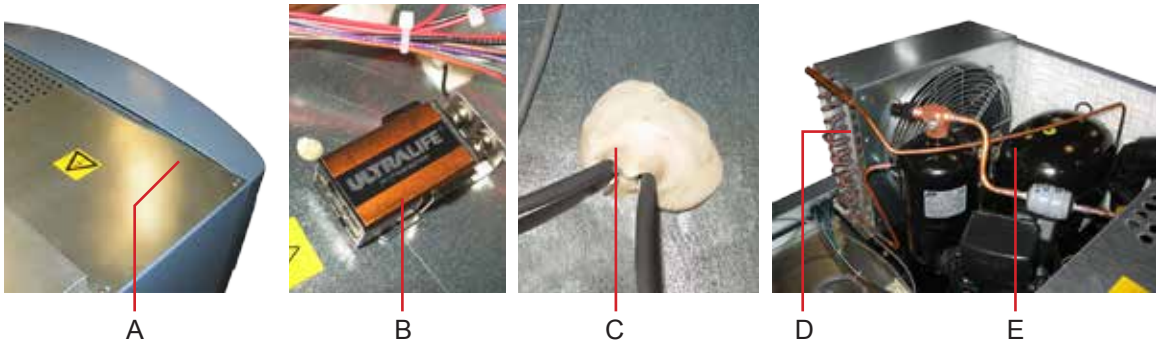
Label	Description	Label	Description
A	Unit cooler with fan guard	E	Standard for adjusting storage components
B	Upper probe bottle	F	Roll out basket
C	Cold-Shield door (plasma storage models with eight drawers)	G	Drawer
D	Shelf		

9.3 Rear

Rear features (HLF120 model shown).

Label	Description	Label	Description
A	Condenser grill	G	Product specification label
B	Drain line fan	H	Remote alarm interface
C	Drain line heater	I	RS-232 COM port
D	Drain line	J	Main power switch
E	Condensate evaporator	K	Circuit breakers
F	Water evaporation tray		

9.4 Top



Top features (HLF120 model shown).

Label	Description	Label	Description
A	Service cover	D	Condenser
B	Monitor backup battery	E	Compressor
C	Access port (number and location vary by model)		

10 General Operation

10.1 Power on

NOTE Allow the freezer to come to room temperature before power on.

When the power is connected for the first time, the freezer runs frequently to achieve normal operating temperature. This may cause an alarm to sound. When normal operating temperature is reached, the freezer runs normally and automatically clears the alarm.

The freezer is shipped with the 9 V battery in the literature box. Install the battery and connect it to provide power to the monitoring system in the event of main power failure.

CAUTION Do not remove the cover from the condensate evaporator tray.

1. Plug the power cord into a grounded outlet that meets the electrical requirements that appear on the product specification label.
2. Switch the AC ON/OFF switch ON.
3. If an alarm sounds, mute the alarm by pressing the **Down Arrow** button.
4. Connect the backup battery.

NOTE If an alarm condition other than High Temperature has occurred, refer to the service manual for troubleshooting procedures.

10.2 Storing items in the freezer

CAUTION Follow all chemical handling and disposal requirements and procedures specified by your organization. See chapter **2** (Safety).

Before storing items in the freezer, be sure the temperature is correct and stable. After the freezer has reached room temperature, allow the chamber temperature to stabilize at the setpoint before storing product.

10.3 Locking and unlocking the doors

Lock the doors to prevent unauthorized access to items stored in the freezer. The refrigerator is shipped from the factory with two keys.

10.4 Using access control

The Access Control option allows user-specific secure access to the freezer. The Access Control system consists of a mechanical lock which prevents the freezer door from being opened unless a valid user code is entered on the Access Control keypad. If the Access Control option has been installed and is enabled, refer to the Horizon Access Control Keypad User Guide.

10.5 Moving drawers, shelves, and baskets

Not all containers are available for all models. The drawers, shelves, or baskets may be removed or replaced as needed. Refer to the service manual for additional information.

NOTE Do not move a unit whose load exceedes 900 lbs/408 kg.

10.6 Changing temperature controller setpoints

The freezer is shipped from the factory with preset temperature setpoints. These setpoints are specific to the freezer's intended use. These setpoints may be changed depending on organizational requirements.

NOTE The Control Offset and Control Hysteresis are factory preset and should not be changed.

10.6.1 Monitor temperature offset value

If the temperature displayed on the monitor does not match the actual chamber temperature, the setting for the Monitor Offset can be changed so they match. The monitor offset can be changed to a value from -10.0 °C to +10.0 °C.

Horizon Series temperature monitor and controller.

10.6.2 Control temperature offset value

The Control Offset is used to control chamber temperature. This value is factory preset and should not be changed.

10.6.3 Hysteresis

This value represents each side of the refrigerator setpoint value, for a combined total band (range). The hysteresis is factory preset at 2.0. This value should not be changed.

10.7 Changing temperature alarm setpoints

10.7.1 High alarm setpoint

The High Alarm setpoint specifies the activation point of the high temperature alarm. The default setting is -20.0 °C. The setpoint may be changed to a value from -40.0 °C to +40.0 °C.

10.7.2 Low alarm setpoint

The Low Temp alarm setpoint specifies the activation point of the Low Temperature Alarm. The default setting is -35.0 °C.

10.7.3 To change a temperature alarm setpoint

1 Press and hold both the **Up Arrow** and **Down Arrow** buttons for three seconds. The MONITOR lamp flashes to indicate program mode enable.

2 Press and release the **SEL** button until the desired setting appears.

If this lamp is flashing	Then this setting is selected
HIGH TEMP and MONITOR	High Temp alarm setpoint
LOW TEMP and MONITOR	Low Temp alarm setpoint
MONITOR only	Monitor Offset
CONTROL only	Control Offset
CONTROL only	Control Hysteresis

NOTE The control lamp flashes when the Control Offset setting is selected. Press and release the **SEL** button to select the next setting (Control Hysteresis). The control lamp will continue to flash once, after the Control Hysteresis setting has been selected.

3 While pressing and holding the **SET** button, press and release the **Up Arrow** or **Down Arrow** button to change the value for the parameter.

4 When changes are complete, release the **SET** button.

5 (Optional) To change the value for another setting, repeat steps 2-4.

6 Press and hold both the **Up Arrow** and **Down Arrow** buttons for three seconds. The MONITOR lamp stops flashing to indicate an exit from program mode. The new settings are saved.

10.8 Identifying active visual alarms

- ► If the door is continuously open for more than three minutes, the DOOR ALARM lamp flashes.
- ► If the temperature reaches the high temperature setpoint, the HIGH TEMP lamp flashes.
- ► If the temperature reaches the low temperature set point, the LOW TEMP lamp flashes.
- ► If there is an AC power failure, PoFF appears on the display.
- ► If the probe circuit is open, Prob appears on the display.

10.9 Controlling the sound for audible alarms

All audible alarms or the muting period on an active audible alarm may be controlled.

Muting and disabling audible alarms

The sound for all audible alarms may be disabled. Muting audible alarms does not disable the alarm lamps or signals sent through the remote alarm interface.

To disable all audible alarms

► Insert the key in the Alarm Disable switch and turn.

11 Maintenance Schedule

Maintenance tasks should be completed according to the following schedule. Refer to the service manual for more detail on the various tasks.

NOTE These are recommended minimum requirements. Regulations for your organization or physical conditions at your organization may require maintenance items to be performed more frequently, or only by designated service personnel.

Task	Frequency		
	Quarterly	Annually	As needed
Test the high temperature alarm.	✓		
Test the power failure alarm (as required by your organization's protocols).	✓		
Test the door alarm (as required by your organization's protocols)			✓
Check the temperature calibration on the monitor and change it if necessary.	✓		
(Models with chart recorders) Check the backup battery for the chart recorder after an extended power failure and change it if necessary, or change the battery if it has been in service for one year. Refer to the Temperature Chart Recorder Operation and Service Manual.			✓
Check the level of the solution in the probe bottles. Refill or replace solution if necessary.			✓
Examine the probe bottles and clean or replace them if necessary.		✓	
Check the chamber lights and replace them if necessary.			✓
Clean the condenser grill.	✓		
Clean the door gaskets, interior, and exterior of the refrigerator.			✓
If applicable, test the ground fault circuit interrupter on the internal outlet.			✓

NOTE Cleaning of the condenser grill is required on a quarterly basis.

NOTE

- ► During a power failure, the backup battery provides power to the monitoring system and the power failure alarm. If the backup battery is not functioning, the power failure alarm will not be activated.
- ► If the backup battery does not provide power to the monitoring system during the power failure alarm test, or if the battery has been in service for one year, replace the battery.

CAUTION Follow all chemical handling and disposal requirements and procedures specified by your organization. See chapter **2** (Safety).

12 Technical Specifications

Power

Input voltage and frequency

The requirements for a particular freezer are specified on the product specification label. Available options are 208/230 V 60 Hz and 230 V 50 Hz.

Power consumption

The power consumption for a particular freezer is specified on the product specification label. Power consumption is measured in full load Amperes.

Input voltage	Power consumption	Circuit breakers
230 V, 50 Hz	3.8 A	12 A (quantity 2)
208/230 V, 60 Hz	4.3 A	

Load capacity for alarm contacts

The terminals on the remote alarm interface have the following maximum load capacity:

► 10 A at 250 V (AC); 10 A at 125 V (AC); 5 A at 100 V (AC)

CAUTION

► The interface on the remote alarm monitoring system is intended for connection to the end user's central alarm system(s) that uses normally-open or normally-closed dry contacts.

► If an external power supply exceeding 33 V r.m.s. or 70 V (DC) is connected to the remote alarm monitoring system's circuit, the remote alarm will not function properly; may be damaged; or may result in injury to the user.

Weight

The weight may vary slightly depending on what options are installed. The weights provided are for the following configurations:

Model family	Model variety	
	120	**125**
HPF	8 drawers	8 drawers
HLF	4 full-size shelves	4 full-size shelves

Model family	Model variety	
	120	**125**
HPF	502 lb	554 lb
	228 kg	252 kg
HLF	440 lb	478 lb
	200 kg	217 kg

NOTE Plasma storage models (HPF) feature drawers as the standard storage configuration. Lab models (HLF) feature shelves as the standard storage configuration. Any combination of drawers, baskets, and shelves may be installed.

Drawer weight

NOTE Maximum drawer load is 100 lbs (46 kg).

Size

All dimensions are for the overall exterior and include items that protrude from the main unit.

Dimension	Model variety	
	120	125
Width	30.75 in	30.75 in
	782 mm	782 mm
Height	80 in	80 in
	2032 mm	2032 mm
Depth	32.50 in	38.50 in
	826 mm	978 mm

END OF MANUAL

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