Freezer Instructions for Use

i.Series™ and Horizon Series™
Upright - Undercounter

Laboratory

i.Series
- iLF104-ADA
- iLF105
- iLF120
- iLF125

Horizon Series
- HLF104-ADA
- HLF105
- HLF120
- HLF125

Plasma Storage

i.Series
- iPF104-ADA
- iPF105
- iPF120
- iPF125

Horizon Series
- HPF104-ADA
- HPF105
- HPF120
- HPF125

360380-ENG/B

Document History

Revision	Date	CO	Supersession	Revision Description
A	17 JAN 2017*	12551	n/a	Initial release (all upright units with serial numbers 2035000 and greater; all undercounter units with serial numbers 2036500 and greater).
B	15 JUN 2020	15413	B supersedes A	The use of safety precautions and symbols have been updated throughout the manual. Updated Compliance section to reflect change in notified body.

* Date submitted for Change Order review. Actual release date may vary.

Document Updates

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The screenshots and component images appearing in this guide are provided for illustrative purposes only, and may vary slightly from the actual software screens and/or product components.

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Part No. 360380-ENG/Rev B

Contents

1 About this Manual

1.1 Intended Audience

This manual provides information on how to use i.Series® and Horizon Series™ undercounter laboratory and plasma storage freezers. It is intended for use by end users of the freezer and authorized service technicians.

1.2 Model Reference

Models are indicated by a distinguishing model number that corresponds to the series, type, and capacity of the freezer. For example, “iLF105” refers to an i.Series Laboratory Freezer with 1 door and a capacity of 5 cu ft.

1.3 Intended Use

Helmer freezers are intended for the storage of blood products and other medical and scientific products.

1.4 Safety Symbols and Precautions

Symbols found in this document

The following symbols are used in this manual to emphasize certain details for the user:

Task Indicates procedures which need to be followed.

Note Provides useful information regarding a procedure or operating technique when using Helmer Scientific products.

NOTICE Advises the user against initiating an action or creating a situation which could result in damage to equipment; personal injury is unlikely.

Symbols and Labels found on the units

The following symbols may be found on the freezer or freezer packaging:

Caution: Risk of damage to equipment or danger to operator

Caution: Shock / electrical hazard

Caution: Hot surface

Refer to documentation

1.5 Avoiding Injury

Review safety instructions before installing, using, or maintaining the equipment.

- Before moving unit, ensure door is closed and casters (if installed) are unlocked and free of debris.
- Before moving unit, disconnect the AC power cord and secure the cord.
- Do not move a unit whose load exceeds 900 lbs / 408 kg.
- Never physically restrict any moving component.
- Avoid removing electrical service panels and access panels unless so instructed.
- Keep hands away from pinch points when closing the door.
- Avoid sharp edges when working inside the electrical compartment and refrigeration compartment.
- Ensure biological materials are stored at recommended temperatures determined by standards, literature, or good laboratory practices.
- Proceed with caution when adding and removing samples from the freezer.
- Do not open multiple, loaded drawers or baskets at the same time.
- Use manufacturer supplied power cord only.
- Using the equipment in a manner not specified by Helmer Scientific may impair the protection provided by the equipment.
- Decontaminate parts prior to sending for service or repair. Contact Helmer or your distributor for decontamination instructions and a Return Authorization Number.

1.6 General Recommendations

General Use

Allow freezer to come to room temperature before switching power on.

During initial startup, high temperature alarm may sound while freezer reaches operating temperature.

⚠

Do not remove the cover from the condensate evaporator tray.

Initial Loading

Allow the freezer to reach room temperature before powering on. Allow chamber temperature to stabilize at the setpoint before storing product.

Note

Do not overload top drawer, basket, or shelf such that airflow from the unit cooler is obstructed.

Product Loading Guidelines

When loading your freezer, take care to observe the following guidelines:

- Never load freezers beyond capacity.
- Always store items within shelves, drawers or baskets.
- Temperature uniformity is maintained by air circulation, which could be impeded if unit is overfilled, particularly at the top or back. Ensure proper clearance is provided below the fan.

Note

Products stacked against back wall may obstruct air flow and affect performance of unit.

2 Installation

2.1 Location

- Has a grounded outlet meeting the electrical requirements listed on the product specification label.
- Is clear of direct sunlight, high temperature sources, and heating and air conditioning vents.
- Upright units require minimum 8” (203 mm) above, and minimum 3” (76 mm) behind.
- Undercounter units require minimum 3” behind the unit for clearance and feature access.
- Meets limits specified for ambient temperature and relative humidity.

2.2 Placement and Leveling

NOTICE

- To prevent tipping, ensure the casters (if installed) are unlocked and the door is closed before moving the freezer.
- Do not use the water evaporation tray, located on the rear of the upright freezer, as a handle. The tray may be hot.
- Do not sit, lean, push or place heavy objects on top surface of undercounter units.

1. Roll freezer into place. Lock casters if installed.
2. Ensure freezer is level.

Note

Helmer recommends the use of leveling feet. Contact Helmer Technical Service for parts and instruction.

2.3 Stacked Undercounter Units

NOTICE

- For stacked configuration, both units must have leveling feet installed.
- Back brace bars and front stabilizing brackets must be installed (Blue - PN 400821-1; Stainless Steel - PN 400821-2)
- When stacking units, place the heavier unit on the bottom.
- Do not open multiple loaded drawers or baskets at the same time.

Contact Helmer or your distributor for more information regarding the stacking kit and methods to secure both units to the wall and / or floor.

2.4 AC Power Cord

Use manufacturer supplied power cord only.

Install power cord

If packaged with modular cord, insert plug securely into the freezer power receptacle prior to connecting to grounded outlet. Ensure power cord has been secured with strain relief zip tie.

Upright models

Undercounter models

2.5 Temperature Probes

A probe bottle along with a container of propylene glycol have been provided with this unit. The propylene glycol is mixed with water to create a solution which simulates the product stored in the freezer. The product simulation solution temperature reflects the product's temperature during normal operation.

Note

Temperature probes are fragile; handle with care.

NOTICE

Failure to fill probe bottles or keep probe bottles filled to the appropriate level may not allow the chamber temperature to stabilize at the freezer setpoint or the chamber temperature to display higher or lower than the actual temperature.

Primary Monitor Probe

The primary monitor probe bottle is located at the top left side of the freezer.

Upright probe bottle

Undercounter probe bottle

Fill Temperature Probe Bottle

Note

Use approximately 4 oz. (120 mL) of product simulation solution (1:1 ratio of water to propylene glycol). Propylene glycol is included in freezer box.

1. Remove all probes from bottle and remove bottle from bracket.
2. Remove cap and fill with approximately 4 oz. (120 mL) of product simulation solution.
3. Secure cap on bottle and place in bracket.
4. Replace probes, immersing at least 2" (50 mm) in solution.

2.6 Chart Recorder (if included)

Note

For complete information,refer to the Temperature Chart Recorder Operation and Service Manual provided with this unit.

The chart recorder has a back-up battery system enabling a period of continuous operation if power is lost. Battery life varies by manufacturer as well as voltage level remaining. If full battery power is available, back-up power for the temperature chart recorder is available for up to 14 hours.

Note

If chart recorder is operated on battery power, the battery should be replaced to ensure the back-up source has proper charge.

Prior to Use

Place probe in bottle with primary monitor probe.

Setup and Operation

Access chart recorder by pressing and releasing (i.Series) or pulling door open (Horizon Series).

i.Series chart door

Horizon Series chart door

Install Battery

Connect the leads to the battery to provide back-up power to the chart recorder.

Install / Replace Chart Paper

Note

For accurate temperature reading, ensure the current time is aligned with the time line groove when the chart knob is fully tightened.

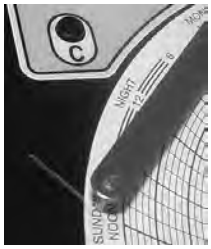


Chart recorder stylus and time line groove

1. Press and hold C button. When stylus begins to move left, release button. The LED flashes.
2. When stylus stops moving, remove chart knob then move knob up and away.
3. Place chart paper on chart recorder.
4. Gently lift stylus and rotate paper so current time line corresponds to time line groove.
5. Hold chart paper in place while making sure the chart knob is fully tightened. *(Failure to fully tighten the knob can result in paper slipping and losing time.)*
6. Press and hold C button. When stylus begins to move right, release button.
7. Confirm stylus is marking on paper and stops at the correct temperature.
8. Calibrate chart recorder to match primary temperature if needed and close recorder door.

Power Supply

The temperature chart recorder uses AC power when the system is operating. If AC power fails, the recorder continues to record temperature with back-up power provided by the nine-volt battery.

- The LED indicator glows green continually when main power is functioning and the battery is charged.
- The LED indicator glows red continually when main power is functioning and the battery is either not installed or needs to be changed.
- The LED indicator flashes red to indicate the recorder is receiving power only from the back-up battery.
- The LED indicator flashes during chart paper change mode.

3 i.Series® Operation

3.1 Initial Power-Up

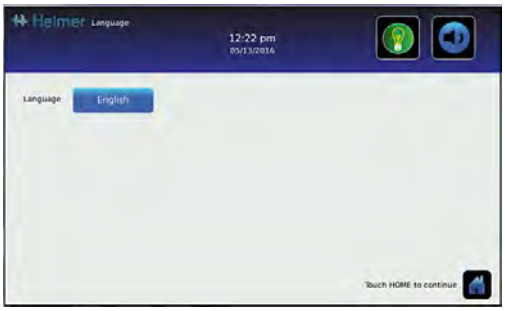
1. Plug the power cord into a grounded outlet that meets the electrical requirements on the product specification label.
2. Turn the AC power switch ON.
3. Turn the Back-up battery switch ON.

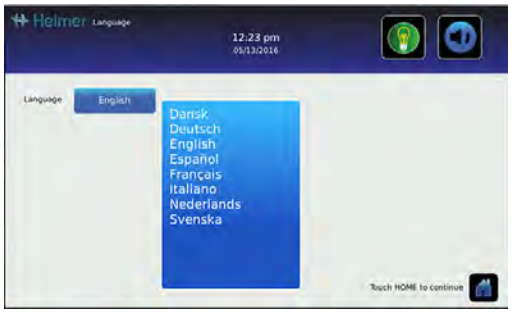
Notes

- For models equipped with optional Access Control, the back-up battery is turned ON with a key switch.
- The Start screen is displayed when the i.C³ is powered on. The i.C³ will take approximately 2-5 minutes to boot up.

Start screen

The language screen is displayed when the i.C³ is powered on. Use the Language screen to select the i.C³ display language.





Language screens

Note

English is the default language.

If an alarm sounds, temporarily mute the alarm by touching the Mute icon.

Home screen - alarm muted

Mute icon

Note

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

3.2 Operation

Notes

- Refer to the i.C³ User Guide for complete information regarding the i.C³ User Interface.
- The i.C³ Home screen displays temperature and alarm information, and provides icons to gain access to other functions of the i.C³.
- After two minutes of inactivity, the screensaver will be displayed. To return to the Home screen, touch the screensaver.

Home screen

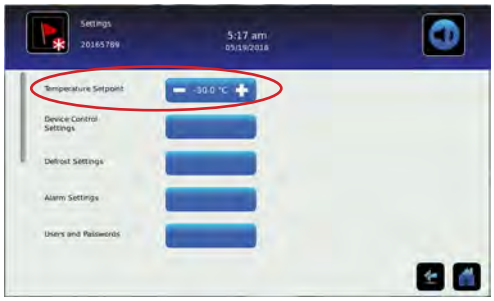
Home screensaver (touch to return to Home screen)

3.3 Change Temperature Setpoint

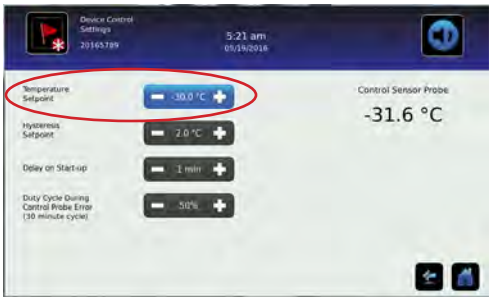
Note

The Temperature Setpoint toggle button can be accessed from either the initial Settings screen or the Device Control Settings screen.

i.C³ APPS > > Enter the Settings password. Select Temperature setpoints. Touch minus (-) or plus (+) on the spin box to change the value.



Settings screen



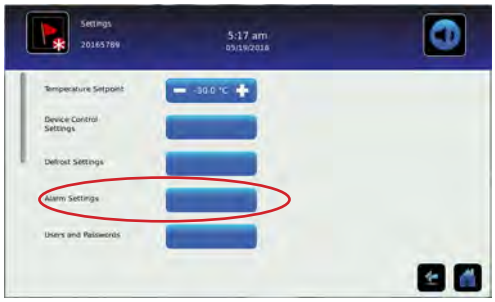
Device Control Settings screen

Notes

- Default Settings password is 1234.
- Default setpoint is -30.0 °C.

3.4 Set Alarm Parameters

>  > Enter the Settings password. Scroll down to select Alarm Settings. Touch minus (-) or plus (+) on spin box to set each alarm parameter.



Settings screen

Alarms screens

Alarm settings control the circumstances and timing of alarm condition indicators displayed on the i.C³ Home screen.

3.5 Active Alarms

Home screen with active alarm

Table 1. i.Series Active Alarms

Alarm	Description
Primary Monitor Probe High Temp	Primary monitor probe reading is above high temperature alarm setpoint
Primary Monitor Probe Low Temp	Primary monitor probe temperature reading is below low temperature alarm setpoint
Primary Monitor Probe Failure	Primary monitor probe not functioning properly
Secondary Monitor Probe High Temp (if installed)	Secondary monitor probe reading is above high temperature alarm setpoint
Secondary Monitor Probe Low Temp (if installed)	Secondary monitor probe temperature reading is below low temperature alarm setpoint
Secondary Monitor Probe Failure (if installed)	Secondary monitor probe not functioning properly
Control Probe Failure	Control probe not functioning properly
Evap Defrost Probe Failure	Evaporator defrost probe not functioning properly
Compressor High Temperature	Compressor temperature reading is above high temperature alarm setpoint
Compressor Probe Failure	Compressor probe not functioning properly
Power Failure	Power to unit has been disrupted
Door Open	Door is open beyond user-specified duration
Low Battery	Rechargeable battery voltage is low
No Battery	Battery is not connected
Communication Failure Messages 1, 2, 3	1 Communication lost between i.C³ display board and control board 2 Communication lost between i.C³ display board and internal system memory 3 Corrupt database

3.6 Mute and Disable Active Alarms

Audible alarms may be muted by touching the Mute icon to set delay.

Unmuted

Muted

Table 2. i.C³® Icon Reference Guide

Icon	Description	Icon	Description	Icon	Description	Icon	Description
	Home		Temperature Graph		Upload		Save
	Event Log		Alarm Test		Access Control		Cancel
	Mute		Information Logs		Access Log		Back Arrow
	Reset		Contact Information/ Contact Helmer		Defrost Cycle		Scroll
	Zoom Information		Display Brightness		Defrost Log		Temperature Graph Foward/Back
	i.C³ Applications		Icon Transfer		Alarm Conditions		Battery Power
	Settings		Download		Cancel Test		

4 Min/Max Temperature Monitoring

The Min/Max temperature display provides the highest and lowest Primary Monitor probe temperature reading since the last system reset (power-on event) or manually-initiated reset. Touch the Reset icon to the right of the display to manually reset.

Notes

- The Min/Max temperature display can be turned On or Off through Display Settings.
- Once the time reaches the maximum display of 999 hours and 60 minutes, the message will display “>999:60”, but minimum and maximum temperatures will continue to be tracked.

5 i.Series® Access Control (Optional)

Allows user-specific secure access to the freezer.

Notes

- During a power failure, the optional Access Control lock will remain locked until battery power is depleted or until the back-up battery key switch is switched OFF.
- Switching the back-up battery key switch OFF will disable the monitoring system during a power failure.
- During a power failure, switch the battery back-up switch OFF and use the mechanical door key to provide secure storage for freezer contents.

5.1 Set Up

Configure and manage user-specific accounts to allow controlled access to the freezer.

 >  > Access Set Up

Access Control Setup Password screen

Access Control Setup screen

Enter the supervisor PIN to set up Access Control and follow the on-screen prompts to add, delete or edit user information.

Notes

- Initial factory supervisor PIN = 5625
- The supervisor PIN cannot be deleted, and should be changed to prevent unauthorized user ID setup. The supervisor PIN does not allow access to the unit. At least one user ID must be set up to gain access to the unit.

5.2 Open Freezer with Access Control

Access Control Keypad

Enter a valid PIN using the keypad.

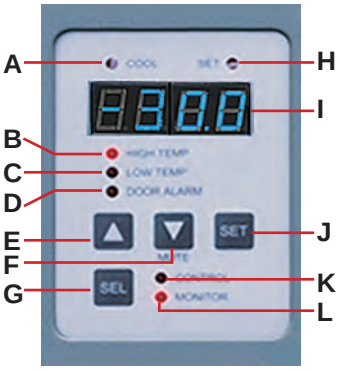
6 Horizon Series™ Operation

6.1 Initial Power Up

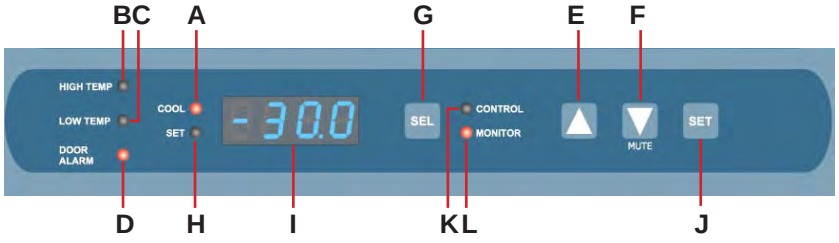
1. Plug the power cord into a grounded outlet that meets the electrical requirements on the product specification label.
2. Turn the AC power switch ON.
3. Install 9 V back-up battery provided (undercounter battery located in literature box; upright battery located on top of unit).
4. Press **Down Arrow** (Mute) if high temperature alarm sounds.

Notes

- For models equipped with optional Access Control, the back-up battery is turned ON with a key switch.
- If an alarm condition other than High Temperature occurs, refer to the service manual for troubleshooting.



Upright Interface



Undercounter Interface

Table 3. Access Control Interface Functions

Label	Description	Function
A	COOL lamp	Indicates the compressor is running.
B	HIGH TEMP lamp	Indicates when the freezer is in a high temperature alarm condition. Also indicates the high alarm temperature setpoint is being changed.
C	LOW TEMP lamp	Indicates when the freezer is in a low temperature alarm condition. Also indicates the low alarm temperature setpoint is being changed.
D	DOOR ALARM lamp	Indicates when the door is open.
E	UP ARROW button	Increases a temperature setting.
F	DOWN ARROW button	Decreases a temperature setting. Also mutes the audible alarm for five minutes.
G	SEL button	Toggles between alarm monitor and control modes.
H	SET lamp	Indicates when temperature setpoint or alarm setpoint is being changed.
I	LED Display	Displays real-time temperature information, setpoints, and alarms.
J	SET button	Allows settings to be selected, prior to changing settings.
K	CONTROL lamp	Indicates when the reading from the control probe is displayed.
L	MONITOR lamp	Indicates when the display is showing temperature readings from the monitor probe. Also indicates when alarm setpoints are being changed.

6.2 Display Minimum and Maximum Monitor Temperature Recordings

Notes

- This feature is standard on Horizon Series™ models with serial numbers of 2015494 or higher. Some exceptions may exist. For confirmation on your unit, please contact Helmer Technical Service.
- This feature only applies to the Primary Monitor probe.
- Units which do not include the minimum and maximum recording feature will not display ˚C or ˚F when entering the program mode.

The minimum and maximum recording feature allows the user to view a minimum temperature occurrence and a maximum temperature occurrence within a given period of time. The timer provides a time reference in which those temperatures occurred.

View Minimum Temperature Recording

1. Press and hold the **Down Arrow** button for 1 second and listen for a single beep. 
2. The display will alternate between **LO** and a valid temperature value five (5) times followed by a single beep to indicate exit back to the temperature display.

View Maximum Temperature Recording

1. Press and hold the **Up Arrow** button for 1 second and listen for a single beep. 
2. The display will alternate between **HI** and a valid temperature value five (5) times followed by a single beep to indicate exit back to the temperature display.

View Recorded Temperature Timer

Notes

- The timer denotes the period of time that has elapsed. It does not display the time at which a minimum or maximum temperature occurred.
- The maximum period of time the timer can record is 99:59 (99 hours and 59 minutes).

1. Press and hold either the **Up** or **Down Arrow** button for 1 second.  or 
2. While the display is flashing the **HI** or **LO** value, press and hold the **SET** button for 1 second.
3. The display will alternate five (5) times between **CLr** and a value representing the number of hours and minutes that have elapsed since the last recording (example: 12:47 would represent 12 hours and 47 minutes). A single beep will follow to indicate exit back to temperature display.

Clear Minimum and Maximum Temperature Recordings

1. Press and hold either the **Up** or **Down Arrow** button for 1 second.  or 
2. While the display is flashing the **HI** or **LO** value, press and hold the **SET** button for 1 second and listen for a single beep.
3. While the display is flashing the elapsed time since last reset, press and hold the **SET** button for 2 seconds. **CLr** will be displayed followed by a series of 3 beeps to indicate exit back to the temperature display.

Notes

The minimum and maximum temperature and timer will reset when:

- the unit is powered off and battery back-up is not engaged, or
- after 99 hours and 59 minutes have elapsed.

6.3 Change Freezer Temperature Setpoint

Note

Default setpoint is -30.0°C

1. Press and release **SEL** to change to Control mode. The CONTROL lamp will illuminate.
2. Press and hold **SET** to display the current setpoint temperature.
3. Hold **SET** and press the **Up** or **Down Arrow** as necessary to set the desired setpoint value.
4. Release all buttons; the setpoint is changed.
5. Press and release **SEL** to return to Monitor mode. The MONITOR lamp will illuminate.

6.4 Set Parameter Values

1. Press and hold the **Up** and **Down Arrows** simultaneously for 3 seconds to enter program mode.
2. The LED Display will show .C or .F to indicate Celsius or Fahrenheit.
3. Press and release **SEL** button to scroll through the parameters.
4. Once the desired parameter is selected, press and hold the **SET** button while pressing the **Up** or **Down Arrow** to select the desired value.
5. Release **SET** button. The new setting is saved.
6. Press and hold the **Up** and **Down Arrows** simultaneously for 3 seconds to exit program mode.

Note

Contact Helmer Technical Service to set Hysteresis values.

Table 4. Parameter Values

Parameter	Visual Indicator	Range	Default
Celsius or Fahrenheit	None	.C, .F	.C
High Temperature	MONITOR Lamp & HIGH Lamp	-40.0 to 40.0 (°C); -40 to 104 (°F)	-20.0°C
Low Temperature	MONITOR Lamp & LOW Lamp	-40.0 to 40.0 (°C); -40 to 104 (°F)	-40.0°C
Monitor Offset	MONITOR Lamp	-10.0 to 10.0 (°C); -18 to 18 (°F)	Varies
Control Offset	CONTROL Lamp	-10.0 to 10.0 (°C);-18 to 18 (°F)	Varies
Hysteresis	CONTROL Lamp	0.5 to 2.5 (°C); 1 to 5 (°F)	2.0°C

6.5 Set Temperature Units

Note

If temperature units are changed, the temperature setpoints, offsets and alarm settings must be recalibrated.

1. Press and hold the **Up** and **Down Arrows** simultaneously for 3 seconds to enter program mode.
2. The LED Display will show ˚C or ˚F to indicate Celsius or Fahrenheit.
3. Press and hold the **SET** button while pressing the **Up** or **Down Arrow** to select the desired temperature unit.
4. Release **SET** button. The new setting is saved.
5. Press and hold the **Up** and **Down Arrows** simultaneously for 3 seconds to exit program mode.

6.6 Temperature Calibration Offsets

Temperature calibration offsets indicate an acceptable margin of error between the actual temperature value and the desired temperature value.

Monitor Offset

- Value is factory-set to match a calibrated reference thermometer.
- Refer to the service manual for instructions regarding changing the Monitor Offset.

Control Sensor Offset and Hysteresis

The control sensor affects the reading of the control probe temperature and therefore the actual temperature of the freezer. This should not be adjusted from the original setting unless directed by Helmer Technical Service.

Hysteresis helps control the refrigeration based on the control probe temperature reading and the set point and should not be changed from the default setting.

NOTICE

Control Sensor Offset and Hysteresis are factory-preset and should not be changed. Contact Helmer Technical Service for instructions regarding changing these values.

6.7 Set Alarm Setpoints (Parameters)

1. Press and hold the **Up** and **Down Arrows** simultaneously for 3 seconds to enter program mode.
2. The LED Display will show ˚C or ˚F to indicate Celsius or Fahrenheit.
3. Press **SEL** until HIGH TEMP or LOW TEMP and MONITOR lamps flash.
4. Hold **SET**, then press **Up** or **Down Arrow** to change the setpoint.
5. Release **SET** button. The new setting is saved.
6. Press and hold **Up** and **Down Arrows** simultaneously for 3 seconds to exit program mode.

6.8 Active Alarms

The controller displays temperature and alarm information.

Table 5. Horizon Series Active Alarms

Alarm	Visual Indicator	Description
High Temperature	HIGH TEMP lamp flashes	Chamber temperature reading is above high temperature alarm setpoint
Low Temperature	LOW TEMP lamp flashes	Chamber temperature reading is below low temperature alarm setpoint
Power Failure	”PoFF” appears on display	Power to unit has been disrupted
Probe Failure	“Prob” appears on display	Probe not functioning properly
Door Open < 3 min.	DOOR ALARM lamp lights	Door is open (less than three minutes)
Door Open > 3 min.	DOOR ALARM lamp flashes	Door has been open 3 minutes or longer*

**Audible alarm will sound after door is open for 3 minutes.*

6.9 Mute and Disable Audible Alarms

Note

Muting audible alarms does not disable alarm lamps or signals sent through the remote alarm interface.

- Press **Down Arrow** (Mute) to mute audible alarms.
- To disable all audible alarms, insert the key in the Alarm Disable switch and turn.

7 Horizon Series™ Access Control (Optional)

Access Control allows user-specific secure access to the freezer.

Notes

- During a power failure, the optional Access Control lock will remain locked until battery power is depleted or until the back-up battery key switch is switched OFF.
- During a power failure, switch the battery back-up switch OFF and use the mechanical door key to provide secure storage for freezer contents.

7.1 Setup

The Access Control keypad was programmed at the factory with a master code (0000). The master code is used to program the keypad and enter user codes. The master code also releases the door lock.

Note

The master code cannot be deleted, and should be changed to prevent unauthorized user code setup.

Enter unique user codes for up to 100 users. Each user code is stored with a specific record location number. Keep a log of the location numbers and user codes with users' names.

Add User Code

1. Enter the master code
2. Press **1** to initiate user code programming function
3. Enter the location number (00 - 99)
4. Enter the user code (4 - 9 digit number)
5. Press ***** to save changes and return to normal operation

Delete User Code

1. Enter the master code
2. Press **1** to initiate user code programming function
3. Enter the location number (00 - 99)
4. Press ***** to save changes

Open Freezer with Access Control

1. Enter the user code
2. Press #

8 Product Specifications

8.1 Operating Standards

These units are designed to operate under the following environmental conditions:

- 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
- Sound level is less than 70 dB(A).
- EMC Environment: Basic

Table 6. Electrical Specifications (Laboratory and Plasma Storage)

	104	105	120 / 125
Input Voltage and Frequency	115 V, 60 Hz	115 V, 60 Hz; 230 V, 50 Hz; 230 V, 60 Hz	115 V, 60 Hz; 230 V, 50 Hz; 208/230 V, 60 Hz
Voltage Tolerance	±10%		
Circuit Breakers	N/A	6.0 A (230 V only, quantity 2)	12.0 A (quantity 2)
Current Draw	5.75 A (115 V, 60 Hz)	5.75 A (115 V, 60 Hz) 2.9 A (230 V, 50 Hz) 3.1 A (230 V, 60 Hz)	8.5 A (115 V, 60 Hz) 3.8 A (230 V, 50 Hz) 4.3 A (208/230 V, 60 Hz)
Power Source	Grounded outlet, meeting national electric code (NEC) in the U.S. and local electrical requirements in all locations.		
Remote Alarm Capacity	i.Series: 0.5 A at 125 V (AC) 1 A at 250 V (DC) Horizon Series: 0.25 A at 30 V (RMS) 0.25 A at 60 V (DC)	i.Series: 0.5 A at 30 V (RMS) 1.0 A at 24 V (DC) Horizon Series: 0.25 A at 30 V (RMS); 0.25 A at 60 V (DC)	i.Series: 0.5 A at 30 V (RMS); 1.0 A at 24 V (DC) Horizon Series: 0.25 A at 30 V (RMS); 0.25 A at 60 V (DC

** Amperage values are subject to change. Refer to the product specification label on your unit for current values.*

NOTICE

- 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 30 V (RMS) or 60 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.

Notes

- Add 0.375” (10 mm) to width for optional access control.
- Maximum load per drawer, shelf or basket - 100 lbs (46 kg).
- The maximum height added with leveling feet or casters installed is 2” (51 mm),

Table 7. Laboratory Freezer Specifications - Upright

Model	Voltage Code	Amps	Cu. Ft/ Liters	Cabinet	Door	Shelves	Dimensions W x H x D in. (mm) Exterior	Net Wt. lbs (kg)
iLF120	115V 60 Hz	8.5	20 (566)	Upright	Single hinged solid	4	30.75 x 80 x 32.5 (782 x 2032 x 826)	443 (201)
	230V 50 Hz	3.8						
	208/230 V 60 Hz	4.3						
HLF120	115V 60 Hz	8.5	20 (566)	Upright	Single hinged solid	4	30.75 x 80 x 32.5 (782 x 2032 x 826)	440 (200)
	230V 50 Hz	3.8						
	208/230 V 60 Hz	4.3						
iLF125	115V 60 Hz	8.5	25 (708)	Upright	Single hinged solid	4	30.75 x 80 x 38.5 (782 x 2032 x 978)	481 (219)
	230V 50 Hz	3.8						
	208/230 V 60 Hz	4.3						
HLF125	115V 60 Hz	8.5	25 (708)	Upright	Single hinged solid	4	30.75 x 80 x 38.5 (782 x 2032 x 978)	478 (217)
	230V 50 Hz	3.8						
	208/230 V 60 Hz	4.3						

Table 8. Laboratory Freezer Specifications - Undercounter

Model	Voltage Code	Amps	Cu. Ft/ Liters	Cabinet	Door	Shelves	Dimensions W x H x D in. (mm) Exterior	Net Wt. lbs (kg)
iLF104-ADA	115V, 60 Hz	5.75	4 (113)	Undercounter	Single hinged solid	2	24 x 32 x 26.75 (610 x 813 x 680)	211 (96)
HLF104-ADA	115V, 60 Hz	5.75	4 (113)	Undercounter	Single hinged solid	2	24 x 32 x 26.75 (610 x 813 x 680)	205 (93)
iLF105	115V 60 Hz	5.75	5 (142)	Undercounter	Single hinged solid	2	24 x 33.5 x 28.5 (610 x 851 x 724)	215 (98)
	230V 50 Hz	2.9						
	230 V 60 Hz	3.1						
HLF105	115V 60 Hz	5.75	5 (142)	Undercounter	Single hinged solid	2	24 x 33.5 x 28.5 (610 x 851 x 724)	209 (95)
	230V 50 Hz	2.9						
	230 V 60 Hz	3.1						

Table 9. Plasma Storage Freezer Specifications - Upright

Model	Voltage Code	Amps	Cu. Ft/ Liters	Cabinet	Door	Drawers	Dimensions W x H x D in. (mm) Exterior	Net Wt. lbs (kg)
iPF120	115V 60 Hz	8.5	20 (566)	Upright	Single hinged solid	8	30.75 x 80 x 32.5 (782 x 2032 x 826)	505 (230)
	230V 50 Hz	3.8						
	208/230 V 60 Hz	4.3						
HPF120	115V 60 Hz	8.5	20 (566)	Upright	Single hinged solid	8	30.75 x 80 x 32.5 (782 x 2032 x 826)	502 (228)
	230V 50 Hz	3.8						
	208/230 V 60 Hz	4.3						
iPF125	115V 60 Hz	8.5	25 (708)	Upright	Single hinged solid	8	30.75 x 80 x 38.5 (782 x 2032 x 978)	557 (253)
	230V 50 Hz	3.8						
	208/230 V 60 Hz	4.3						
HPF125	115V 60 Hz	8.5	25 (708)	Upright	Single hinged solid	8	30.75 x 80 x 38.5 (782 x 2032 x 978)	554 (252)
	230V 50 Hz	3.8						
	208/230 V 60 Hz	4.3						

Table 10. Plasma Storage Freezer Specifications - Undercounter

Model	Voltage Code	Amps	Cu. Ft/ Liters	Cabinet	Door	Drawers	Dimensions W x H x D in. (mm) Exterior	Net Wt. lbs (kg)
iPF104-ADA	115V, 60 Hz	5.75	4 (113)	Undercounter	Single hinged solid	2	24 x 31.5 x 28.5 (610 x 801 x 724)	217 (99)
HPF104-ADA	115V, 60 Hz	5.75	4 (113)	Undercounter	Single hinged solid	2	24 x 31.5 x 28.5 (610 x 801 x 724)	211 (96)
iPF105	115V 60 Hz	5.75	5 (142)	Undercounter	Single hinged solid	2	24 x 33.5 x 28.5 (610 x 851 x 724)	221 (101)
	230V 50 Hz	2.9						
	230 V 60 Hz	3.1						
HPF105	115V 60 Hz	5.75	5 (142)	Undercounter	Single hinged solid	2	24 x 33.5 x 28.5 (610 x 851 x 724)	215 (98)
	230V 50 Hz	2.9						
	230 V 60 Hz	3.1						

9 Compliance

9.1 Safety Compliance

CE 2797 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.

9.2 Environmental Compliance

RoHS COMPLIANT This device complies with the 2011/65/EU Directive for the Restriction of Hazardous Substances (RoHS).

This device falls under the scope of Directive 2102/19/EU Waste Electrical and Electronic Equipment (WEEE).

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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