

Refrigerator Operation Manual

i.Series® and Horizon Series™ - Undercounter

Laboratory / Pharmacy

i.Series

iLR104-ADA, iLR105

Horizon Series

HLR104-ADA, HLR105

Blood Bank

i.Series

iB104-ADA, iB105

Horizon Series

HB104-ADA, HB105



Document History

Revision	Date	CO	Supersession	Revision Description
A	07 DEC 2016	12369	n/a	Initial release (all units with serial numbers 2036500 and greater).
B	31 JUL 2017	12919	B supersedes A	<ul style="list-style-type: none">• Updated pictures to show new handle and shelf design.• Updated Product specifications table to reflect changes in depth and weight for units beginning with SN 2041434.• Updated Horizon Access Control procedure.• Updated Mute Active Alarms text to provide more detail.• Updated Emergo address.
C	22 JAN 2018	13277	C supersedes B	<ul style="list-style-type: none">• Updated Table 2. Application Icons.• Updated Horizon Access Control content for clarity.

* 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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1 About this Manual

This manual provides information on how to use i.Series® and Horizon Series™ undercounter laboratory, blood bank, and pharmacy refrigerators. It is intended for use by end users of the refrigerator and authorized service technicians.

Models are indicated by a distinguishing model number that corresponds to the series, type, number of doors, and capacity of the refrigerator. For example, "iLR105" refers to an i.Series Laboratory Refrigerator with 1 door and a capacity of 5 cu ft and HLR104 refers to Horizon Series Laboratory Refrigerator with 1 door and a capacity of 4 cu ft.

Generic references are used throughout this manual to group models that contain similar features. For example, "105 models" refers to all models of that size (iB105, HB105, iLR105, HLR105) while "104 models" refers to all models of that size (iB104, HB104, iLR104, HLR104). This manual covers all undercounter refrigerators, which may be identified singly, by their size, or by their respective "Series."

1.1 Safety Precautions and Symbols

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; person injury is unlikely.



CAUTION Advises the user against initiating an action or creating a situation which could result in damage to equipment or impair the quality of the products or cause minor injury.



WARNING Advises the user against initiating an action or creating a situation which could result in damage to equipment and serious personal injury to a patient or the user.



Manufacturer



Authorized representative in the European Community.

Symbols found on the units

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



CE Mark (European units only)



Earth / ground terminal



Caution: Risk of damage to equipment or danger to operator



Protective earth / ground terminal



Caution: Hot surface



Compliance with Restriction of Hazardous Substances Directive



Caution: Shock / electrical hazard



Product falls under the scope of the WEEE (Waste Electrical and Electronic Equipment) directive.



Caution: Unlock all casters

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.
- ◆ 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 refrigerator.
- ◆ 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.
- ◆ Ensure biological materials are stored safely, in accordance with all applicable organizational, regulatory, and legal requirements.
- ◆ The refrigerator is not considered to be a storage cabinet for flammable or hazardous materials.

CAUTION

Decontaminate parts prior to sending for service or repair. Contact Helmer Scientific or your distributor for decontamination instructions and a Return Authorization Number.

1.2 General Recommendations

Intended Use

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

General Use

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

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

Initial Loading

Allow the refrigerator 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 refrigerator, take care to observe the following guidelines:

- ◆ Never load refrigerators 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, heating vents, and air conditioning vents.
- ◆ Has a minimum of 3" (76 mm) of space behind the refrigerator for clearance and feature access.
- ◆ Meets the limits specified for ambient temperature (15 °C to 32 °C) and relative humidity.

2.2 Placement and Leveling

CAUTION

- To prevent tipping, ensure the casters (if installed) are unlocked and the door is closed before moving the refrigerator.
- Do not sit, lean, push or place heavy objects on top surface.

1. Move refrigerator into place. Lock casters if installed.
2. Ensure refrigerator is level.

Note

Helmer recommends the use of leveling feet and wall and floor brackets (PN 400472-2) for stabilization. Contact Helmer Technical Service for parts and instruction.

2.3 Stacked Undercounter Units

CAUTION

- 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

CAUTION

Use manufacturer supplied power cord only.

Install power cord

If packaged with modular cord, insert plug securely into the refrigerator power receptacle prior to connecting to grounded outlet.

2.5 Temperature Probes

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

Note

Temperature probes are fragile; handle with care.

CAUTION

Failure to fill probe bottles or keep probe bottles filled to the appropriate level may not allow the chamber temperature to stabilize at the refrigerator 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 refrigerator.



Primary monitor probe

Fill Temperature Probe Bottle

Note

Use approximately 4 oz. (120 mL) of product simulation solution (10:1 ratio of water to glycerin). Glycerin packet included in refrigerator box.

1. Remove probe(s) 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 probe(s), 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 batter power is available, back-up power for the temperature chart recorder is available for up to 14 hours.

Note

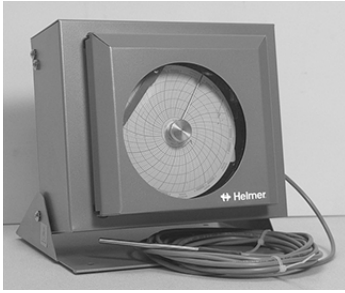
If chart recorder is operated on battery power, the battery should be replaced to ensure the back-up source has proper charge.

Prior to use:

Place the chart recorder probe in bottle with primary monitor probe.

Set up and Operation

Access the chart recorder by pulling the door open.



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 from chart paper.
3. Place new 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 batteries is either not installed or needs to be replaced.
- ◆ The LED indicator flashes red to indicated 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. Switch AC ON/OFF switch ON.
3. Switch back-up battery switch ON.

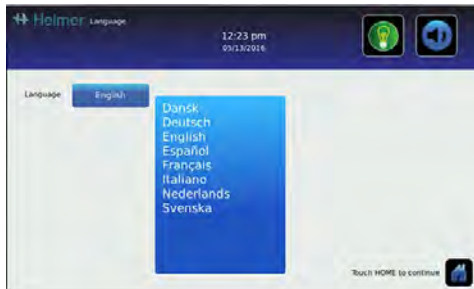
i Notes

- 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

i Note

English is the default language.

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



Home screen - alarm muted

i 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.

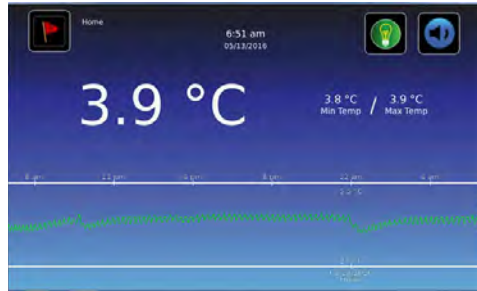
3.2 Operation

i 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)

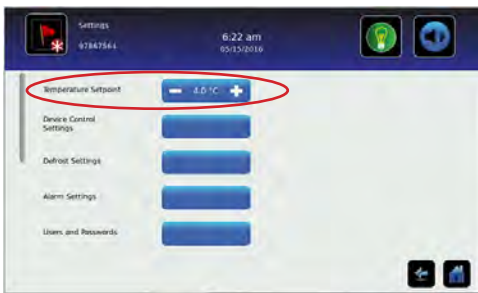
3.3 Change Temperature Setpoint

i Note

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



> 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

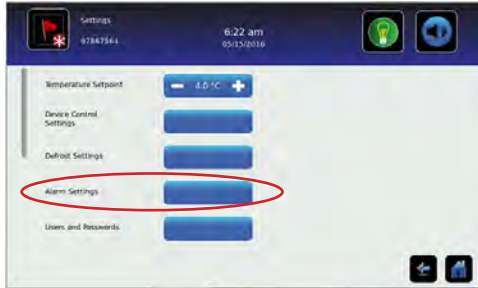
i Notes

- Default Settings password is 1234.
- Default setpoint is 4.0 °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 conditions 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
Control Probe Failure	Control 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.C ³ display board and control board 2 Communication lost between i.C ³ display board and internal system memory 3 Corrupt database

3.6 Mute Active Alarms

Audible alarms may be temporarily muted by touching the Mute icon to set delay. Touching the Mute icon repeatedly will increase the Mute delay timer incrementally between 5 - 60 minutes. The delay time remaining will be displayed in the bottom right corner of the icon. If the alarm is still active after the mute delay has ended, the audible alarm will sound.



Unmuted



Muted

3.7 Light Operation (optional)

Press Light Icon to turn LED lights ON or OFF.
Auto ON/OFF feature can be configured in Settings.



Light ON/OFF

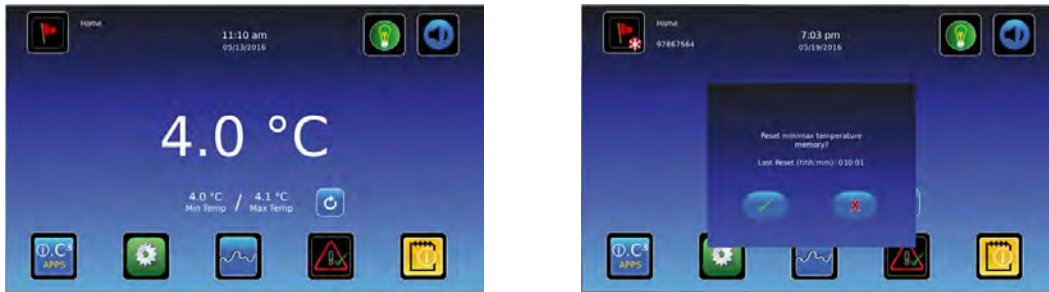
Table 2. Application Icons

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 Forward/Back
	i.C³ Applications		Icon Transfer		Alarm Conditions		Battery Power
	Settings		Download		Cancel Test		

* = units with serial numbers prior to 2047345. Some exceptions may apply.
Contact Helmer Technical Service at techservice@helmerinc.com for details.

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 refrigerator.

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 refrigerator contents.
- Refer to i.C³ User Guide for complete information regarding Access Control.

5.1 Setup

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



Access Control Setup password screen



Access Control Setup screen

Enter the supervisor PIN to set up Access Control. Select the Add User button and follow the on-screen prompts to set up users.

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 Refrigerator with Access Control



Access Control keypad

Enter a valid PIN using the keypad.

6 Horizon Series™ Operation

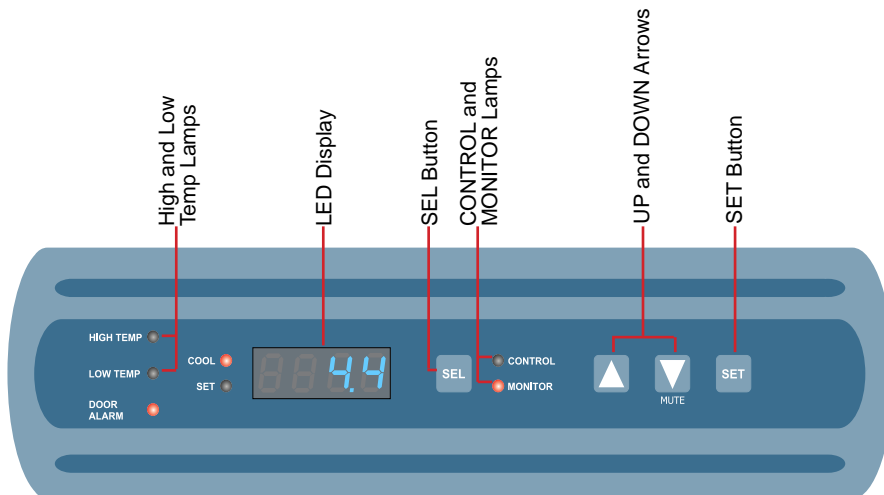
6.1 Initial Power Up

1. Plug the power cord into a grounded outlet that meets the electrical requirements on the product specification label.
2. Switch AC ON/OFF switch **ON**.
3. Remove the 9 V battery from the literature box and install it.
4. Press **Down Arrow** (Mute) if high temperature alarm sounds.



Notes

- For models equipped with the optional Access Control, switch the back-up battery key switch **ON**.
- During a power failure, the back-up battery continues to provide power to the optional Access Control lock (if equipped). If the back-up battery is not functioning, the optional Access Control lock will not secure the door.
- If an alarm condition other than High Temperature occurs, refer to the service manual for troubleshooting.



Horizon Series™ temperature monitor and control interface

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 that 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 reading

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.
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.
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.

 **Change Refrigerator Temperature Setpoint** **Note**

Default setpoint is 4.0 °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 **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.

6.3 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 3. Parameter Values

Parameter	Visual Indicator	Range	Default
Celsius or Fahrenheit	None	°C, °F	°C
High Temperature	MONITOR Lamp & HIGH Lamp	-40.0 to 25.0 (°C) -40 to 77 (°F)	5.5 °C
Low Temperature	MONITOR Lamp & LOW Lamp	-40.0 to 25.0 (°C) -40 to 77 (°F)	1.5 °C (HB); 2.0 °C (HLR & HPR)
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)	Varies

6.4 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 will display .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.

6.5 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.

6.6 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 refrigerator. 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 Active Alarms

The controller displays temperature and alarm information.

Table 4. 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.

6.8 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.

6.9 Light Operation (optional)

The light switch is located on the monitoring and control panel and controls the LED light within the chamber.

7 Horizon Series™ Access Control (Optional)

Allows user-specific secure access to the refrigerator.

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 refrigerator contents.
- Refer to Horizon Series Access Control manual for complete information.

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.

Note

The master code 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 followed by the * (asterisk) key
2. Press **1** to initiate user code programming function
3. Enter the location number (00 - 99)
4. Enter the user code (4 - 8 digit number) followed by the # (pound) key
5. Press * (asterisk) to save changes and return to normal operation

Delete User Code

1. Enter the master code followed by the * (asterisk) key
2. Press **1** to initiate delete user code programming function
3. Enter the location number (00 - 99) followed by the # (pound) key
4. Press * (asterisk) to save changes and return to normal operation

Open Refrigerator with Access Control



1. Enter the user code
2. Press # (pound) key

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: 2 °C to 10 °C

Table 5 Electrical Specifications (Laboratory, Blood Bank, and Pharmacy)

	104	105
Input Voltage and Frequency	115V, 60Hz	115V, 60Hz; 230V, 50Hz; 230V, 60Hz
Voltage Tolerance	±10%	
Circuit Breakers	7.0A (230V, 50 Hz); 6.0A (230V, 60 Hz) quantity 2	
Current Draw*	5.0A (115V, 60Hz)	5.0A (115V, 60Hz) 4.0A (230V, 50Hz) 3.25A (230V, 60Hz)
Power Source	Grounded outlet, meeting national electric code (NEC) in the U.S. and local electrical requirements in all locations.	
Remote Alarm Capacity	0.5A at 125V (AC); 1.0A at 250V (DC)	

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

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 33V (RMS) or 70V (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 0.5 (12mm) to depth for units with serial number 2041434 and prior.
- Add 0.375" (10 mm) to width for optional access control.
- The maximum height added with leveling feet or casters installed is 2" (51 mm).
- Net weight may vary depending on storage configuration.
- Maximum load per shelf - 100 lbs (46 kg).

Table 6. Laboratory/Pharmacy Refrigerator Specifications

Model	Voltage Code	Amps*	Cu. Ft/ Liters	Cabinet	Door	Shelves	Dimensions W x H x D in. (mm)	Net Wt. lbs (kg)
							Exterior	
iLR104-ADA	115V 60 Hz	5.0	4 (113)	Undercounter	Single hinged solid	2	24 x 31.5 x 28 (610 x 801 x 712)	187 (85)
HLR104-ADA	115V 60 Hz	5.0	4 (113)	Undercounter	Single hinged solid	2	24 x 31.5 x 28 (610 x 801 x 712)	181 (83)
iLR105	115V 60 Hz	5.0	5 (142)	Undercounter	Single hinged solid	2	24 x 33.5 x 28 (610 x 851 x 712)	191 (87)
	230V 50 Hz	4.0						
	230 V 60 Hz	3.25						
HLR105	115V 60 Hz	5.0	5 (142)	Undercounter	Single hinged solid	2	24 x 33.5 x 28 (610 x 851 x 712)	185 (84)
	230V 50 Hz	4.0						
	230 V 60 Hz	3.25						

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

Table 7. Blood Bank Refrigerator Specifications

Model	Voltage Code	Amps*	Cu. Ft/ Liters	Cabinet	Door	Drawers	Dimensions W x H x D in. (mm)	Net Wt. lbs (kg)
							Exterior	
iB104-ADA	115V 60 Hz	5.0	4 (113)	Undercounter	Single hinged solid	2	24 x 31.5 x 28 (610 x 801 x 712)	196 (89)
HB104-ADA	115V 60 Hz	5.0	4 (113)	Undercounter	Single hinged solid	2	24 x 31.5 x 28 (610 x 801 x 712)	190 (87)
iB105	115V 60 Hz	5.0	5 (142)	Undercounter	Single hinged solid	2	24 x 33.5 x 28 (610 x 851 x 712)	202 (92)
	230V 50 Hz	4.0						
	230 V 60 Hz	3.25						
HB105	115V 60 Hz	5.0	5 (142)	Undercounter	Single hinged solid	2	24 x 33.5 x 28 (610 x 851 x 712)	196 (89)
	230V 50 Hz	4.0						
	230 V 60 Hz	3.25						

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

Notes

- Add 0.5 (12mm) to depth for units with serial number 2041434 and prior.
- Add 0.375" (10 mm) to width for optional access control.
- The maximum height added with leveling feet or casters installed is 2" (51 mm).
- Net weight may vary depending on storage configuration.
- Maximum load per shelf - 100 lbs (46 kg).

9 Compliance

9.1 Regulatory Compliance

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



Sound level is less than 70 dB(A).



Emergo Europe
Prinsessegracht 20
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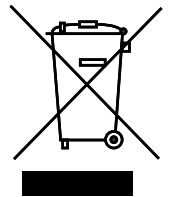


9.2 WEEE Compliance

The WEEE symbol (right) indicates this product falls under the scope of the WEEE (Waste Electrical and Electronic Equipment) directive.

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.

10 Preventive Maintenance

Notes

- It is important to ensure that all scientific equipment is maintained regularly for optimum performance.
- These are recommended minimum requirements. Regulations for your organization or physical conditions at your facility may require maintenance items to be performed more frequently, or only be designated service personnel.

Maintenance tasks should be completed according to the following schedule. Refer to the service manual and the i.C³ User Guide for detailed information on tasks.

Table 9. Preventive Maintenance Schedule

Task	Frequency			
	Quarterly	1 year	2 years	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.	✓			
Replace the monitoring system back-up battery.		✓ (Horizon Series)	✓ (i.Series)	
Models with Access Control Test the Access Control battery.	✓			
Replace the Access Control back-up battery.			✓	
Models with chart recorders Check the back-up 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.				✓
Electrical compartment: <ul style="list-style-type: none"> • Inspect electrical components and wiring terminal strips for discoloration. Contact Helmer Technical Service if any discoloration is found. • Inspect wiring terminal strips for secure connections. Tighten connections as necessary. 	✓			
Check the level of the solution in the probe bottles. Refill or replace solution if necessary.				✓
Examine the probe bottle and clean or replace 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.				✓

NOTICE

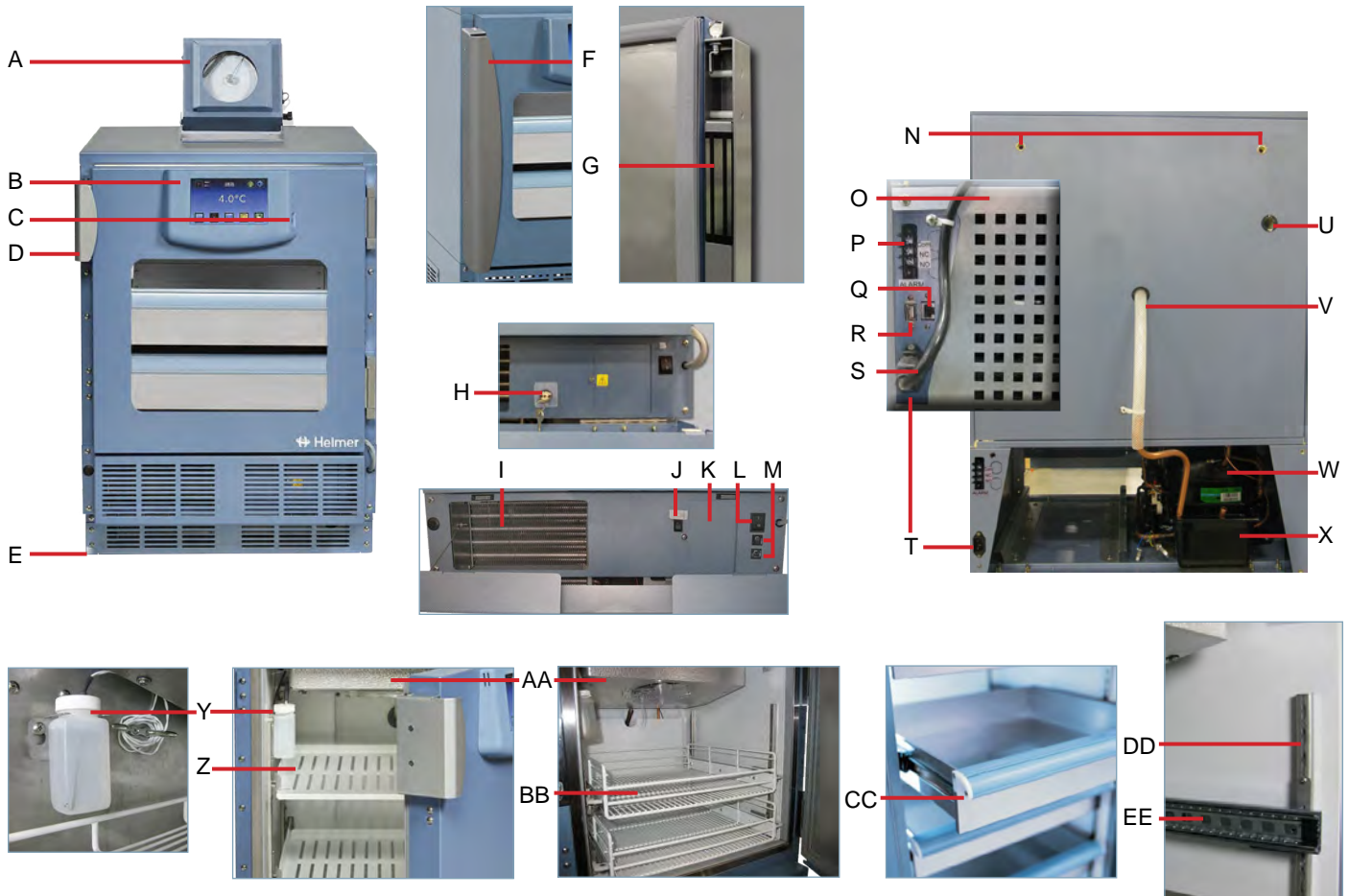
Clean the condenser grill on a quarterly basis.

Notes

- During a power failure the back-up battery provides power to the monitoring system, power failure alarm, and optional Access Control. If the back-up battery is not functioning, the power failure alarm will not be activated and the battery should be replaced.

Appendix A

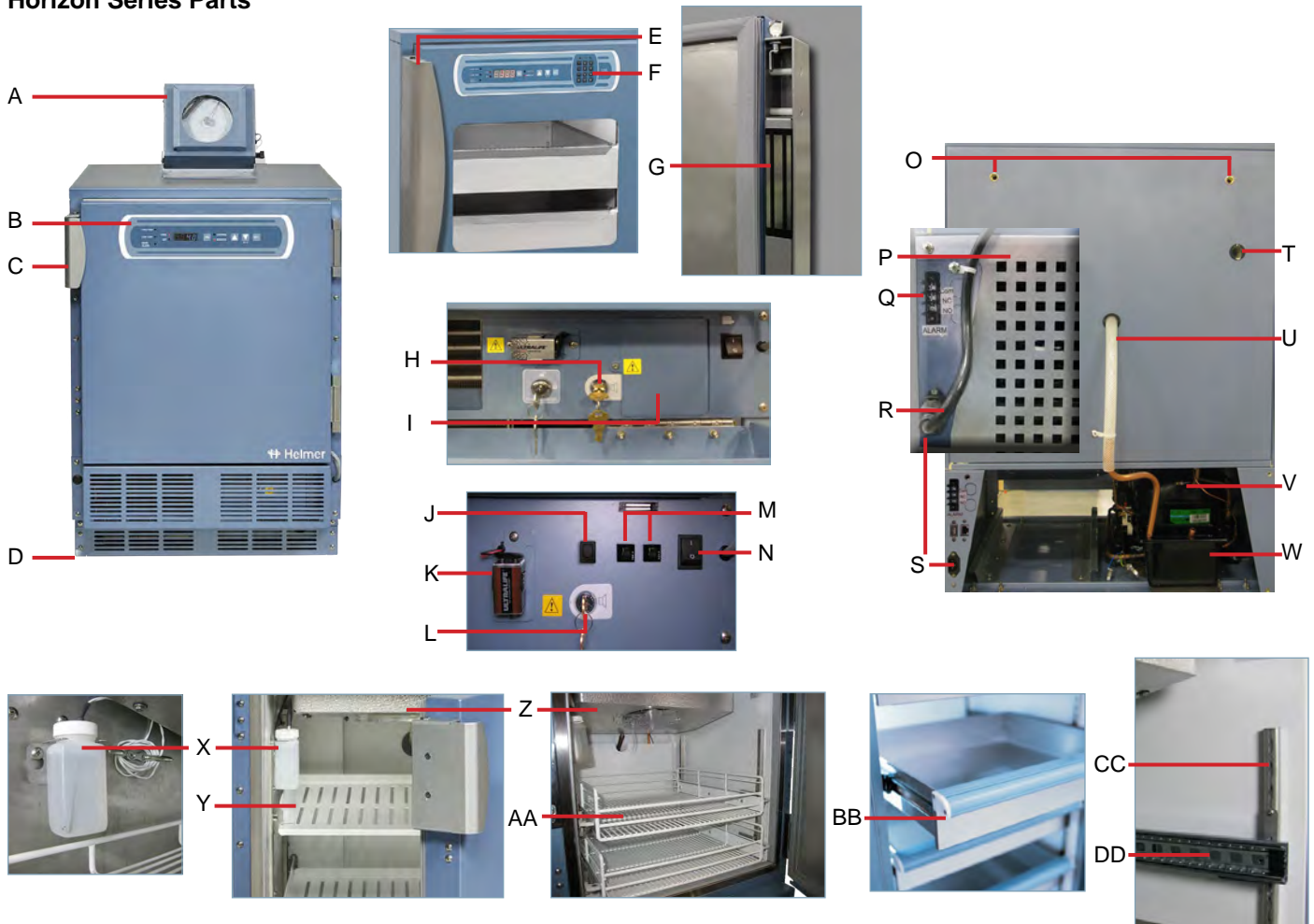
i.Series Parts



Letter	Description	Letter	Description
A	Chart recorder (standard on blood bank models, optional on laboratory and pharmacy models)	Q	RJ-45 Ethernet port
B	i.C ³ control	R	USB port
C	USB port	Not Shown	RS-232 Comm port (optional)
D	Door handle with lock	S	Power cord
E	Leveling feet (casters are optional)	T	AC output power cord receptacle
F	Door handle (includes manual keyed lock)	U	Access port
G	Magnetic lock assembly (includes magnet and handle)	V	Drain Line
H	Back-up battery key switch (optional Access Control)	W	Compressor
I	Condenser grill	X	Condensate evaporator
J	Monitoring system back-up battery switch	Y	Primary monitor probe bottle
K	Monitoring system back-up battery (behind access panel)	Z	Shelf (laboratory/pharmacy models)
L	Main power switch	AA	Unit cooler with fan guard
M	Circuit breakers (230V only)	BB	Rollout basket (optional)
N	Inserts for stacking bracket	CC	Drawer (blood bank models)
O	Rear panel	DD	Standard
P	Remote alarm interface	EE	Slide

Appendix B

Horizon Series Parts



Letter	Description	Letter	Description
A	Chart recorder (standard on blood bank models, optional on laboratory and pharmacy models)	P	Rear panel
B	Temperature monitor and control display	Q	Remote alarm interface
C	Door handle with lock	R	Power cord
D	Leveling feet (casters are optional)	S	AC output power cord receptacle
E	Door handle (includes manual keyed lock)	T	Access Port
F	Keypad	U	Drain Line
G	Magnetic lock assembly (includes magnet and handle)	V	Compressor
H	Back-up battery key switch (optional Access Control)	W	Condensate evaporator
I	Back-up battery (optional Access Control / located behind battery cover)	X	Primary monitor probe bottle
J	Light switch	Y	Shelf (laboratory/pharmacy models)
K	Monitoring system back-up battery	Z	Unit cooler with fan guard
L	Alarm disable key switch	AA	Rollout basket (optional)
M	Circuit breakers (230V only)	BB	Drawer (blood bank models)
N	Main power switch	CC	Standard
O	Inserts for stacking bracket	DD	Slide

END OF MANUAL

