Helmer SCIENTIFIC

Pass-Thru Refrigerator Operation Manual
i.Series® and Horizon Series™

Model Group	i.Series	Horizon Series
Blood Bank	iB225, iB456	HB225, HB456
Pharmacy	iPR225, iPR456	HPR225, HPR456

ISO 13485:2003 CERTIFIED

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Document History

Revision	Date	CO	Supersession	Revision Description
B	13 JUN 2014*	9578	B supersedes A	Revised layout for ease of navigation and locating information.

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

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Contents

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Section I: General Information

1   About this Manual

1.1   Intended Audience

This manual is intended for use by end users of the refrigerator and authorized service technicians.

1.2   Model References

Generic references are used throughout this manual to group models that contain similar features. For example, "225 models" refers to all models of that size (iB225, HB225, iPR225, HPR225). This manual covers all pass-thru refrigerators, which may be identified singly, by their size, or by their respective "Series."

1.3   Copyright and Trademark

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2   Safety

The operator or technician performing maintenance or service on Helmer Scientific products must (a) inspect the product for abnormal wear and damage, (b) choose a repair procedure which will not endanger his/her safety, the safety of others, the product, or the safe operation of the product, and (c) fully inspect and test the product to ensure the maintenance or service has been performed properly.

2.1   Safety Definitions

The following general safety alerts appear with all safety statements within this manual. Read and abide by the safety statement that accompanies the safety alert symbol.

⚠	WARNING	The safety statement that follows this safety alert symbol indicates a hazardous situation which, if not avoided, could result in serious injury.
⚠	CAUTION	The safety statement that follows this safety alert symbol indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
⚠	NOTICE	The safety statement that follows this safety alert symbol indicates a situation which, if not avoided, could result in damage to the product or stored inventory.

2.2   **Product Labels**

⚠️	Caution: Risk of damage to equipment or danger to operator	UNLOCK ALL CASTERS BEFORE PUSHING TO PREVENT OVERTURNING ⚠️ OUVREZ TOUTES LES ROULETTES AVANT LE DEPLACEMENT POUR EMPÊCHER LE RENVERSEMENT	Caution: Unlock all casters
♨️	Caution: Hot surface	⏚	Earth / ground terminal
⚡	Caution: Shock/electrical hazard	⏚	Protective earth / ground terminal

2.3   **Avoiding Injury**

►   Review safety instructions before installing, using, or maintaining the equipment.
►   Before moving unit, ensure doors are closed and casters 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.
►   Use 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 Scientific or your distributor for decontamination instructions and a Return Authorization Number.
►   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.

3   General Recommendations

3.1   Intended Use

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

3.2   General Use

Allow refrigerator to come to room temperature before powering on.

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

3.3   Initial Loading

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.

4 Specifications

	225	456
Exterior Dimensions [(1)]		
Width	29" (737 mm)	59" (1499 mm)
Height	80" (2032 mm)	
Depth	36" (915 mm)	
Physical		
Weight (iB)	575 lbs (261 kg)	850 lbs (386 kg)
Weight (iPR)	530 lbs (241 kg)	795 lbs (361 kg)
Weight (HB)	570 lbs (259 kg)	845 lbs (384 kg)
Weight (HPR)	525 lbs (239 kg)	790 lbs (359 kg)
Interior Volume	26.5 ft³ / 750 L	58 ft³ / 1642 L
Refrigeration System		
Refrigerant	R-134A (non-CFC)	
Compressor	0.33 HP, air-cooled	0.5 HP, air-cooled
Initial Charge	10.1 oz. (286 g)	12.5 oz. (354 g)
Operational		
Default Set Point	4 °C (39 °F)	
Temperature Control Range	2 °C to 10 °C (36 °F to 50 °F)	
Cabinet		
Insulation	High-density, non-CFC foam	
Wall Thickness	2" (51 mm)	
Door Thickness	2" (51 mm)	
External Material	Galvannealed steel with bacteria-resistant powder-coated finish	
Internal Material	iB, HB models: Stainless steel iPR, HPR models: Galvannealed steel with bacteria-resistant powder-coated finish	
Drawer, Shelf, or Basket Load	100 lbs (46 kg)	
External Top Port	1 standard (all models)	
External Side Port	Optional (left or right side available; custom location available)	
Temperature Chart Recorder	4" (102 mm) 7-day inkless, pressure-sensitive chart paper, backup battery; standard on blood bank models; optional on pharmacy models	
Interior Configuration		
iB, HB	6 drawers	12 drawers
iPR, HPR	3 drawers, 3 shelves	6 drawers, 6 shelves
Electrical		
Input Voltage and Frequency	115 V (60 Hz)	
Voltage Tolerance	±10%	
Power Consumption	8.5 A	13.5 A
Power Source	Grounded outlet, meeting national electric code (NEC) and local electrical requirements	

(1) Includes features that protrude from the cabinet.

	225	456
Control and Monitoring		
Interface	iB, iPR, HB models: Monitoring and display system; separate temperature control system HPR models: Temperature control and display system	
Alarms	▶ iB, iPR models: High, low, and condenser temperature; door open; AC power failure; low battery; no battery; change chart paper ▶ HB models: High and low temperature; door open; AC power failure; change chart paper ▶ HPR models: High and low temperature; door open; AC power failure	
Remote Alarm Interface	Dry contacts (standard)	
Remote Alarm Capacity	▶ iB, iPR, HB models: 0.5 A at 30 V (RMS); 1.0 A at 24 V (DC) ▶ HPR models: 0.25 A at 30 V (RMS); 0.25 A at 60 V (DC)	
Environmental		
Operating Standards	▶ 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	

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 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.

NOTE
In the event of a power failure, the power failure alarm condition is transmitted through the remote alarm contacts.

5   Compliance

5.1   Regulatory Compliance

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

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

Sound level is less than 70 dB(A).

5.2   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.

6   Installation

6.1   Location Requirements

► Has a grounded outlet meeting national electric code (NEC) and local electrical requirements.
► Is clear of direct sunlight, high temperature sources, heating vents, and air conditioning vents.
► Minimum 8" (203 mm) above the control side of the refrigerator.
► Clearance above the clean room side may be 0".
► Top enclosure cannot be placed more than 11" (280 mm) from the front (clean room side) of the refrigerator.
► Side enclosures may be flush with both sides of the refrigerator.
► Meets the limits specified for ambient temperature and relative humidity.
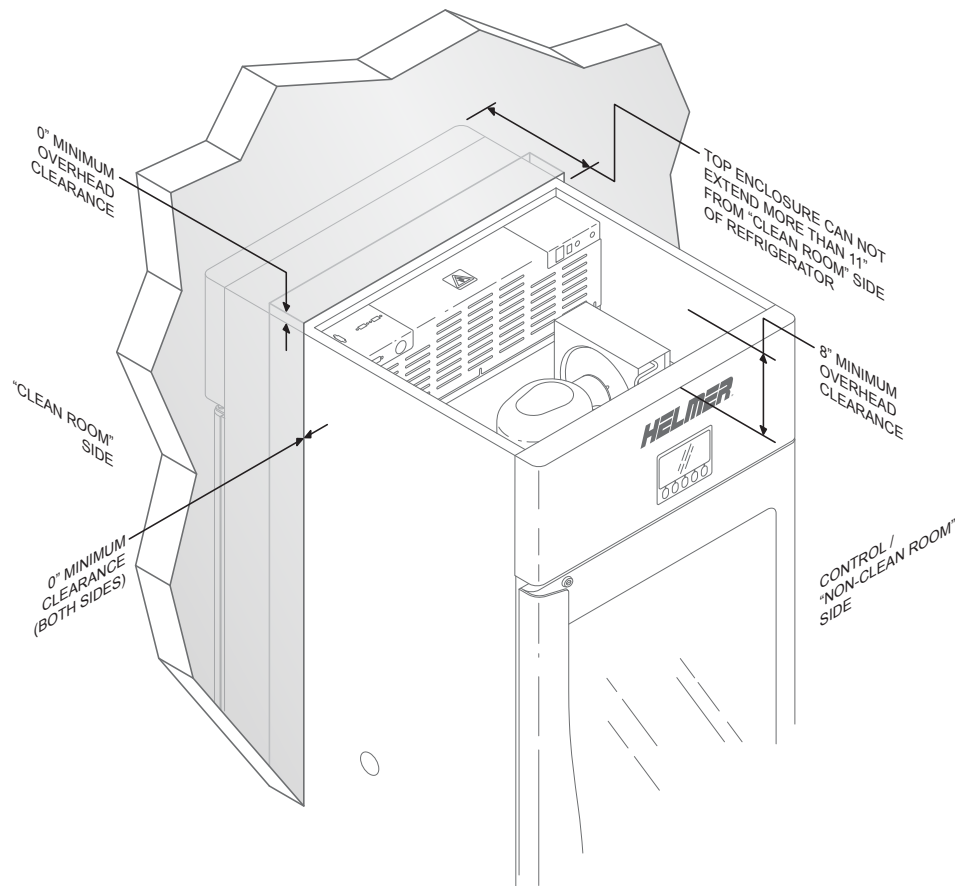
Clearance requirements for pass-thru refrigerator enclosure.

6.2   Placement

⚠️ **WARNING**   To prevent tipping, ensure the casters are unlocked and the doors are closed before moving the refrigerator.

1   Ensure all casters are unlocked and doors are closed.
2   Roll refrigerator into place and lock casters.
3   Ensure refrigerator is level.

6.3   Temperature Probes

For each probe bottle, use:

► Approximately 4 oz. (120 mL) of product simulation solution (10:1 ratio of water to glycerin).

6.4   Chart Recorder
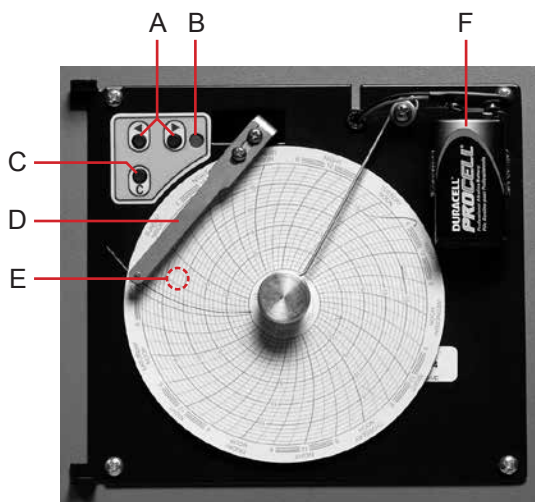
Chart recorder with paper and battery installed.

Label	Description	Function
A	Left and Right Arrow buttons	Adjust settings and stylus position
B	LED	Indicates status of chart recorder in operating mode, or selected temperature range in paper change mode
C	Chart change button	Adjust position of stylus when changing chart paper, or run a test pattern
D	Stylus	Mark temperature line on paper
E	Reset button	Restart chart recorder
F	Backup battery	Provides power during AC power failure. Connect prior to use.

6.4.1   **Install and Change Chart Paper**

   1   Press and hold **C** button. When stylus begins to move left, release button. The LED flashes to indicate current temperature range.

   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 and reinstall chart knob.

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

   6   Confirm the temperature range is set to the correct value.

   7   Press and hold **C** button. When the stylus begins to move right, release the button.

   8   Confirm the stylus is marking the temperature correctly.

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.			✓
► Inspect electrical components and wiring terminals in the electrical box for discoloration. Contact Helmer Technical Service if any discoloration is found. ► Inspect all wiring terminals for secure connection. Tighten wiring terminal connections as necessary.	✓		
Check the level of the solution in the probe bottle(s). Refill or replace solution if necessary.			✓
Examine the probe bottle(s) and clean or replace 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.

NOTE	► During a power failure, the backup batteries provide power to the monitoring system and the power failure alarm. If the backup batteries are not functioning, the power failure alarm will not be activated. ► If the backup batteries do not provide power to the monitoring system during the power failure alarm test, replace the batteries. ► If battery (batteries) have been in service for one year, replace battery (batteries).

Section II: i.Series® - All Models

NOTE	This section applies to iB and iPR models.

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8 Operation

8.1 Initial Start Up

1 Plug the power cord into a grounded outlet that meets the electrical requirements on the product specification label.

2 Insert the D-cell backup battery in the monitoring system backup battery pack.

3 Select language.

    a The **SYSTEM OPTIONS** screen is displayed.

    b To select a different language, press the **INC** or **DEC** buttons until the preferred language is displayed. This assumes the language was previously loaded from the flash memory card.

    c Press the **HOME** button. All text will display in the selected language.

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.

8.2 Normal Operation

The HOME screen displays temperature and alarm information, and provides buttons for reaching other functions of the i.Center monitoring system. If the temperature graph is enabled, a graph of the chamber temperature is displayed over time on the HOME screen. Temperature setpoints and calibration settings are configured through the temperature controller.

i.Center Home screen.
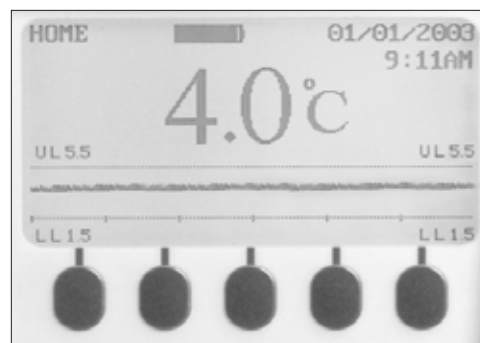
i.Center temperature graph.

8.3   **Change Temperature Setpoint**

Independent temperature controller.

⚠	**NOTICE**	► Do not change the setpoint to a value outside the temperature control range.
		► Parameter values are factory-preset and should not be changed unless directed by Helmer Technical Service.

NOTE	► Default setpoint is 4.0 °C.
	► When there is no interaction for 25 seconds, the temperature controller exits program mode and returns to normal mode.
	► The reference temperature displayed on the temperature controller may not be the same as the temperature displayed on the i.Center monitoring system.

1   Observe the chamber temperature displayed on the i.Center monitoring system.

2   Determine how much the refrigerator setpoint will be changed.

EXAMPLE	► Current setpoint is 4.0 °C
	► Target setpoint is 5.0 °C
	► Setpoint adjustment value is +1.0 °C

3   On the temperature controller, press and hold the **SET** button.

4   While holding the **SET** button, press the **UP** or **DOWN** arrow buttons to change the temperature setpoint by the same value as determined in step 2.

5   Release all buttons. The temperature setpoint is changed.

8.4   **Set Alarm Parameters**
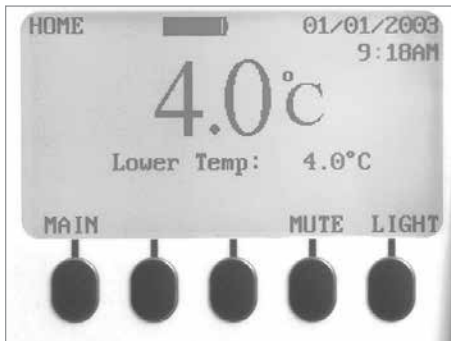
i.Center Home screen.

1   Press the **MAIN** button.
2   Press the **DOWN** button to highlight Edit Configuration. Press the **SELECT** button.
3   Enter the password when prompted.
4   Press the **DOWN** button to highlight Alarm Setpoints. Press the **SELECT** button.
5   Press the **DOWN** button to highlight the desired alarm setting.
6   Press the **INC** or **DEC** buttons to set the alarm setpoint.
7   Press the **BACK** button to return to the Edit Configuration screen, or press the **HOME** button to exit. The new settings are saved.

8.5   **Active Alarms**

The HOME screen displays the number and type of alarms that are active.

Alarm	Description
High Temperature	Chamber temperature reading is above high temperature alarm setpoint
Low Temperature	Chamber temperature reading is below low temperature alarm setpoint
Low Battery	Battery voltage is low
No Battery	Battery voltage is depleted or batteries have been removed
Power Failure	Power to unit has been disrupted
Door Open	Door is open beyond user-specified duration
Condenser Temperature	Condenser temperature reading is above high temperature alarm setpoint

8.6   **Mute and Disable Active Alarms**
1   On the HOME screen, press the **MUTE** button once to mute an alarm for five minutes.
     ►   "MUTE05" is displayed, indicating that five minutes remain on the mute timer.
2   Each additional press of the **MUTE** button adds five minutes of muting.
     ►   The timer duration is changed, and the new time is displayed.

8.7   **Light Operation**

Press the Light ON/OFF button to turn the light on or off.

9   **i.Center Screen Reference**

HOME screen
     MAIN button
         MAIN screen
     MUTE button (changes mute timer)
     LIGHT button (turns light on or off)

MAIN screen
     Event Log option
         (Press the **SELECT** button)
         EVENT LOG screen
     System Alarm Test & Status option
         SYSTEM ALARM TEST & STATUS screen
     Edit Configuration option
         (Enter the password)
         CONFIGURATION screen
     View Configuration option
         VIEW CONFIGURATION screen
     Product/Company Information option
         INFORMATION screen
     i.Help Index option
         i.Help screen

EVENT LOG screen
     EVENT LOG DETAIL screen

SYSTEM ALARM TEST & STATUS screen
     Start High Alarm Auto Test option
     Start Low Alarm Auto Test option
     Cancel High or Low Test option
     Chart Paper Days Left or Chart Paper Timer display
     Door Status display
     Condenser Temp display

CONFIGURATION screen
     Set Date & Time option
         SET DATE & TIME screen
     System Options option
         SYSTEM OPTIONS screen
     Alarm Setpoints option
         SET ALARM SETPOINT screen
     Temperature Calibration option
         TEMPERATURE CALIBRATION screen
     Factory Default Settings option
         FACTORY DEFAULT SETTINGS screen
     Change Password option
         (Enter a new password)

SYSTEM OPTIONS screen
      Language option
      Date Format option
      Alarm Volume option
      Alarm Pulse option
      Temperature Units option
      Chart Paper Timer option

SET ALARM SETPOINT screen
      High Alarm Setpoint option
      Low Alarm Setpoint option
      Cond. Alarm Setpoint option
      Door Ajar Timeout option
      Power Failure Timeout option
   **Temperature Graph** option

TEMPERATURE CALIBRATION screen
      Select Temp Probe option
      Temperature option

VIEW CONFIGURATION screen
      Clock Mode display
      Date Format display
      Door Ajar Timeout display
      Pwr Failure Timeout display
      High Alarm Setpoint display
      Low Alarm Setpoint display
      Cond. Alarm Setpoint display
      Alarm Volume display
      Alarm Pulse display
      Chart Paper Days Left or **Chart Paper Timer** display
      Temperature Graph display

10 Components

10.1 Front and Chamber
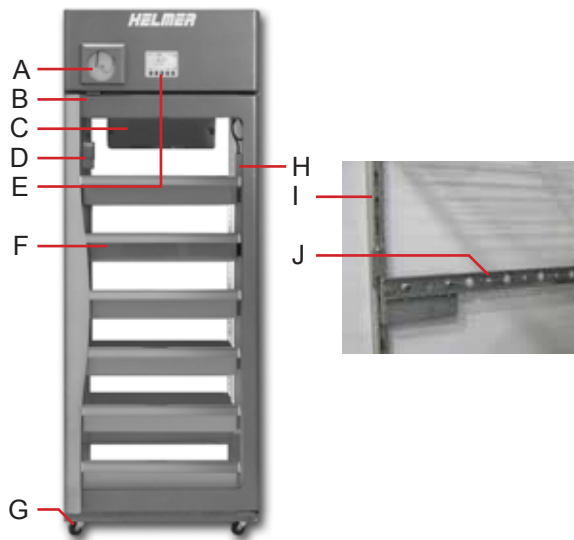
Chamber and front features (iB225 model shown).

Label	Description
A	Chart recorder (standard on blood bank models, optional on pharmacy models)
B	Door lock
C	Unit cooler with fan guard
D	Upper probe bottle
E	i.Center monitoring system
F	Drawer
G	Caster
H	Light
I	Standard for adjusting storage components
J	Drawer/basket slide
Not shown	Lower probe bottle

NOTE   Blood bank models (iB) feature drawers as the standard storage configuration. Pharmacy models (iPR) feature drawers and shelves as the standard storage configuration. Any combination of drawers, baskets, or shelves may be installed.

10.2   Top
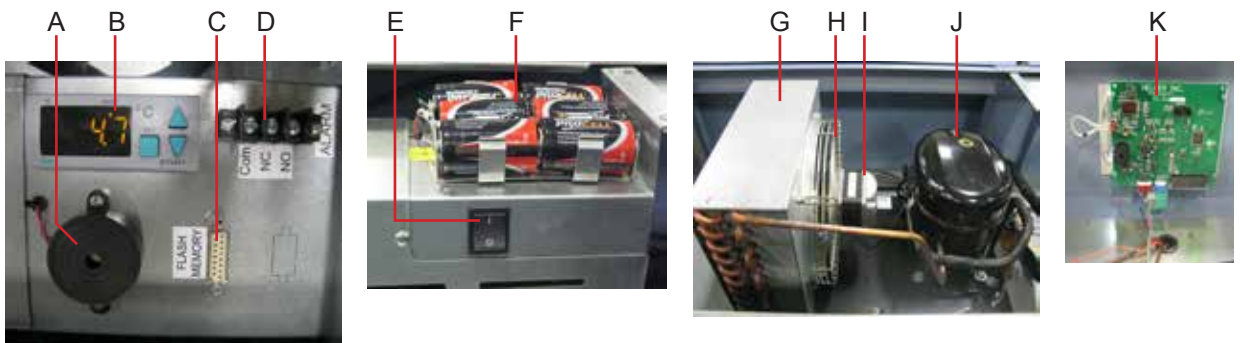
Top features (iB225 model shown).

Label	Description
A	Alarm buzzer
B	Independent temperature controller
C	Flash port
D	Remote alarm interface
E	AC ON/OFF power switch
F	Monitoring system backup batteries
G	Condenser
H	Condenser fan
I	Condenser fan motor
J	Compressor
K	i.Center monitoring system display board

Section III: Horizon Series™ - Blood Bank Models

NOTE	This section applies to HB models.

## 11   Operation

11.1   Initial Start Up

1   Plug the power cord into a grounded outlet that meets the electrical requirements on the product specification label.

2   Insert the D-cell backup battery in the monitoring system backup battery pack.

3   Select language.

    a   The SYSTEM OPTIONS screen is displayed.

    b   To select a different language, press the **INC** or **DEC** buttons until the preferred language is displayed. This assumes the language was previously loaded from the flash memory card.

    c   Press the **HOME** button. All text will display in the selected language.

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.

4   If an alarm sounds, temporarily mute the alarm by pressing the **MUTE** button.

11.2   Normal Operation

The HOME screen displays temperature and alarm information, and provides buttons for reaching other functions of the Horizon Series monitoring system. Temperature setpoints and calibration settings are configured through the temperature controller.
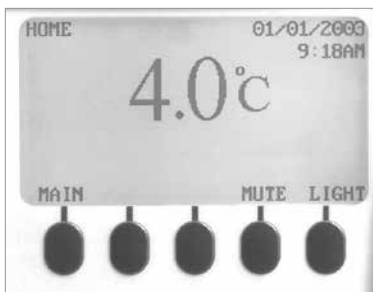
Horizon Series Home screen.

11.3   Change Temperature Setpoint

Independent temperature controller.

| ⚠ | **NOTICE** | ▶ Do not change the setpoint to a value outside the temperature control range. |
| | | ▶ Parameter values are factory-preset and should not be changed unless directed by Helmer Technical Service. |

	NOTE	▶ Default setpoint is 4.0 °C.
		▶ When there is no interaction for 25 seconds, the temperature controller exits program mode and returns to normal mode.
		▶ The reference temperature displayed on the temperature controller may not be the same as the temperature displayed on the Horizon Series monitoring system.

1   Observe the chamber temperature displayed on the Horizon Series monitoring system.
2   Determine how much the refrigerator setpoint will be changed.

EXAMPLE	▶ Current setpoint is 4.0 °C
	▶ Target setpoint is 5.0 °C
	▶ Setpoint adjustment value is +1.0 °C

3   On the temperature controller, press and hold the **SET** button.
4   While holding the **SET** button, press the **UP** or **DOWN** arrow buttons to change the temperature setpoint by the same value as determined in step 2.
5   Release all buttons. The temperature setpoint is changed.

11.4   **Set Alarm Parameters**
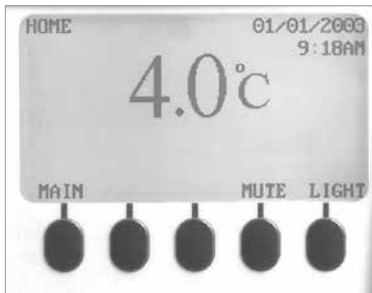
Horizon Series Home screen.

1   Press the **MAIN** button.
2   Press the **DOWN** button to highlight Edit Configuration. Press the **SELECT** button.
3   Enter the password when prompted.
4   Press the **DOWN** button to highlight Alarm Setpoints. Press the **SELECT** button.
5   Press the **DOWN** button to highlight the desired alarm setting.
6   Press the **INC** or **DEC** buttons to set the alarm setpoint.
7   Press the **BACK** button to return to the Edit Configuration screen, or press the **HOME** button to exit. The new settings are saved.

11.5   **Active Alarms**

The HOME screen displays the number and type of alarms that are active.

Alarm	Description
High Temperature	Chamber temperature reading is above high temperature alarm setpoint
Low Temperature	Chamber temperature reading is below low temperature alarm setpoint
Power Failure	Power to unit has been disrupted
Door Open	Door is open beyond user-specified duration

11.6   **Mute and Disable Active Alarms**
1   On the HOME screen, press the **MUTE** button once to mute an alarm for five minutes.
     ►   "MUTE05" is displayed, indicating that five minutes remain on the mute timer.
2   Each additional press of the **MUTE** button adds five minutes of muting.
     ►   The timer duration is changed, and the new time is displayed.

11.7   **Light Operation**

Press the Light ON/OFF button to turn the light on or off.

12   **Horizon Series Screen Reference**

HOME screen
    MAIN button
        MAIN screen
    MUTE button (changes mute timer)
    LIGHT button (turns light on or off)

MAIN screen
    Edit Configuration option
        (Enter the password)
        CONFIGURATION screen
    View Configuration option
        VIEW CONFIGURATION screen
    Product/Company Information option
        INFORMATION screen

CONFIGURATION screen
    Set Date & Time option
        SET DATE & TIME screen
    System Options option
        SYSTEM OPTIONS screen
    Alarm Setpoints option
        SET ALARM SETPOINT screen
    Temperature Calibration option
        TEMPERATURE CALIBRATION screen
    Factory Default Settings option
        FACTORY DEFAULT SETTINGS screen
    Change Password option
        (Enter a new password)

SYSTEM OPTIONS screen
    Language option
    Date Format option
    Alarm Volume option
    Alarm Pulse option
    Temperature Units option
    Chart Paper Timer option

SET ALARM SETPOINT screen
    High Alarm Setpoint option
    Low Alarm Setpoint option
    Door Ajar Timeout option
    Power Failure Timeout option

**TEMPERATURE CALIBRATION** screen
    Upper Temperature Probe display
    Temperature option

VIEW CONFIGURATION screen

    Clock Mode display

    Date Format display

    Door Ajar Timeout display

    Pwr Failure Timeout display

    High Alarm Setpoint display

    Low Alarm Setpoint display

    Alarm Volume display

    Alarm Pulse display

    Chart Paper Days Left or **Chart Paper Timer** display
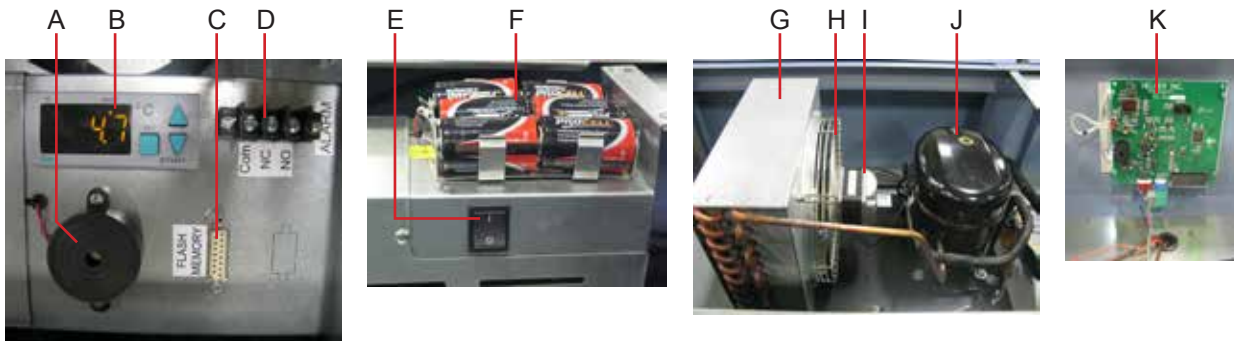
13   Components

13.1   Front and Chamber
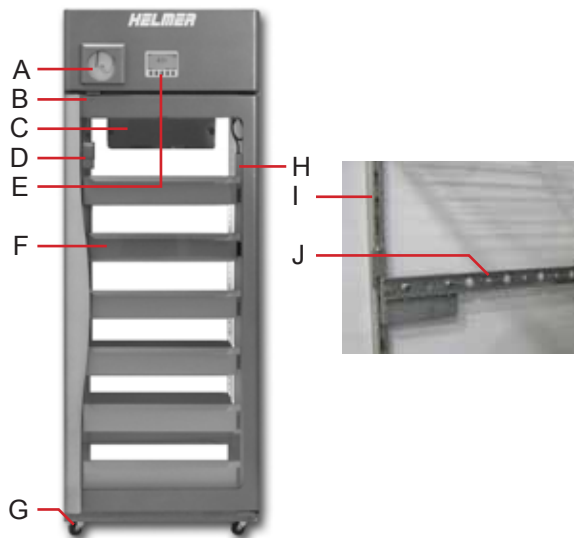
Chamber and front features (HB225 model shown).

Label	Description
A	Chart recorder (standard on blood bank models, optional on pharmacy models)
B	Door lock
C	Unit cooler with fan guard
D	Probe bottle
E	Horizon Series monitoring system
F	Drawer
G	Caster
H	Light
I	Standard for adjusting storage components
J	Drawer/basket slide

13.2 **Top**

Top features (HB225 model shown).

Label	Description
A	Alarm buzzer
B	Independent temperature controller
C	Flash port
D	Remote alarm interface
E	AC ON/OFF power switch
F	Monitoring system backup batteries
G	Condenser
H	Condenser fan
I	Condenser fan motor
J	Compressor
K	Horizon Series monitoring system display board

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Section IV: Horizon Series™ - Pharmacy Models

NOTE	This section applies to HPR models.

14 Operation

14.1 Initial Start Up

1 Plug the power cord into a grounded outlet that meets the electrical requirements on the product specification label.
2 Remove the 9 V battery from the accessory package and install it.

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

3 Press **Down Arrow** (Mute) if high temperature alarm sounds.

14.2 Temperature Setpoints

Horizon Series monitoring and control interface.

14.2.1 Change Setpoint

NOTE	Default setpoint is 4.0 ºC

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

EXAMPLE	► Current setpoint is 4.0 ºC
	► Target temperature is 5.0 ºC
	► Setpoint adjustment value is +1.0 ºC

14.2.2   **Monitor Offset**

► Adjust if temperature displayed on the monitor does not match measured chamber temperature.

► Value is factory-set to match an independent thermometer.

► Value can be changed from -10.0 ºC to +10.0 ºC.

► Refer to the service manual for instructions in changing the Monitor Offset.

NOTE	If the variance is within acceptable limits, changing the offset value is optional.

14.2.3   **Control Sensor Offset**

► Controls chamber temperature.

► Factory-set to match an independent thermometer.

► Varies for each refrigerator.

⚠	**NOTICE**	Control Sensor Offset is factory-preset and should not be changed unless directed by Helmer Technical Service.

14.2.4   **Hysteresis**

► Allowable temperature variance above the refrigerator setpoint.

⚠	**NOTICE**	Hysteresis is factory-preset and should not be changed unless directed by Helmer Technical Service.

14.2.5   Change a Temperature Alarm Setpoint

Flashing Lamp	Selected Setting
HIGH TEMP and MONITOR	High Temp alarm setpoint
LOW TEMP and MONITOR	Low Temp alarm setpoint
MONITOR only	Monitor Offset
CONTROL only	Control Sensor Offset
CONTROL only	Control Hysteresis

1   Hold **Up Arrow** and **Down Arrow** for three seconds. MONITOR lamp will flash to indicate entry into program mode.

2   Press **SEL** until desired setting appears.

NOTE   The control lamp flashes when the Control Sensor Offset setting is selected. Press and release the **SEL** button again to select Control Hysteresis. The control lamp will continue to flash.

3   Hold **SET**, then press **Up Arrow** or **Down Arrow** to change the setpoint.

4   Release **SET** button.

5   To change another setting, repeat steps 2-4.

6   Hold **Up Arrow** and **Down Arrow** for three seconds. MONITOR lamp stops flashing to indicate exit from program mode. New settings are saved.

14.3   **Active Alarms**

The laboratory controller displays temperature and alarm information.

DOOR ALARM lamp lights	Door is open (less than 3 minutes)
DOOR ALARM lamp flashes	Door has been open 3 minutes or longer *
HIGH TEMP lamp flashes	Temperature reaches high temperature set point
LOW TEMP lamp flashes	Temperature reaches low temperature set point
"PoFF" appears on display	AC power failure
"Prob" appears on display	Probe circuit is open

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

14.4   **Mute and Disable Audible Alarms**

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

         Press **Down Arrow** (Mute) to mute audible alarms.

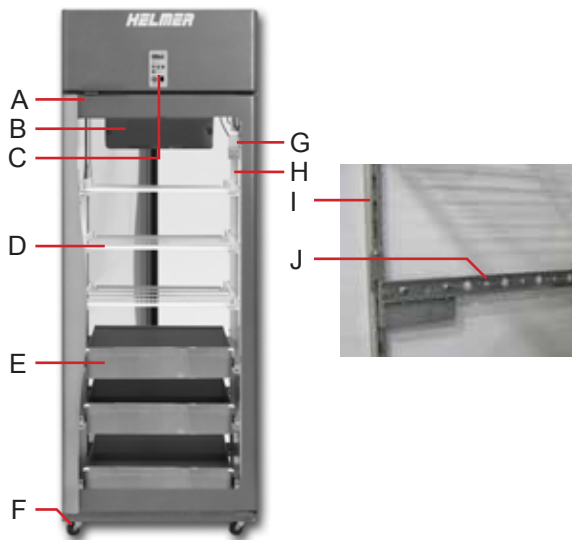   To disable all audible alarms, insert the key in the Alarm Disable switch and turn.

14.5   **Light Operation**

The light switch is located on the monitoring and control panel.

15 Components

15.1 Front and Chamber

Chamber and front features (HPR225 model shown).

Label	Description
A	Door lock
B	Unit cooler with fan guard
C	Laboratory combined monitoring and control system
D	Shelf
E	Drawer
F	Caster
G	Probe bottle
H	Light
I	Standard for adjusting storage components
J	Drawer/basket slide

15.2   Top
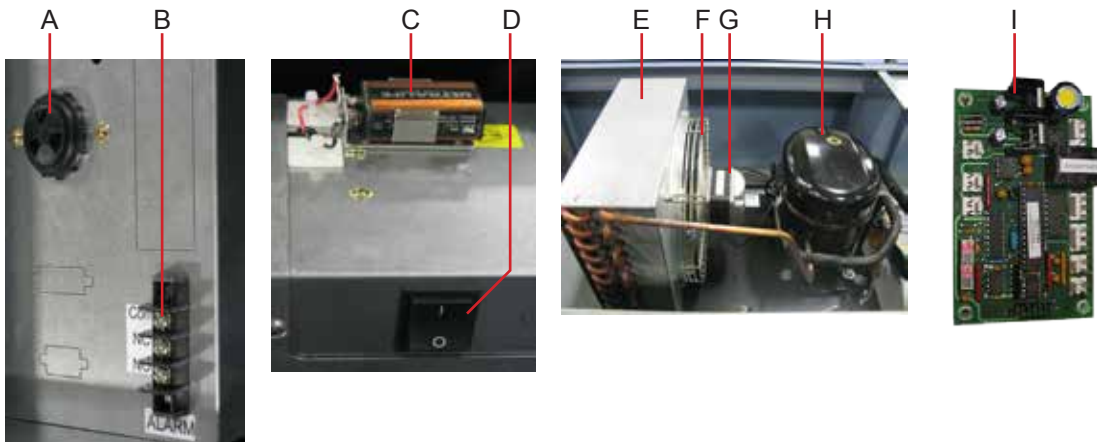
Top features (HPR225 model shown).

Label	Description
A	Alarm buzzer
B	Remote alarm interface
C	Monitoring system backup battery
D	AC ON/OFF power switch
E	Condenser
F	Condenser fan
G	Condenser fan motor
H	Compressor
I	Laboratory combined monitoring and control system control board

END OF MANUAL

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