

Refrigerator Operation Manual

Scientific Series™ Undercounter

Laboratory / Pharmacy

Scientific Series
SLR104-ADA (Version A)
SLR105 (VersionA)



Document History

Revision	Date	CO	Supersession	Revision Description
A	05 MAR 2012	5897	n/a	Initial release.
B	01 FEB 2013	8227	B supersedes A	Updated format for readability and ease of use; updated Helmer logo and address.
C	20 JUN 2014*	8490	C supersedes B	<ul style="list-style-type: none">Revised layout for ease of navigation and locating information.Changed setpoint and hysteresis values, as per CO 8490
D	8 MAR 2016	11661	D supersedes C and 360169-A Rev A, B	<ul style="list-style-type: none">Combined all undercounter Scientific Series product model information in one manualAdded Product Loading Guidelines in response to CAPA 10843.Updated the AC power cord install instructions.Reformatted for ease of use
E	19 DEC 2016	12408	E supersedes D	Updated specification tables to reflect change in circuit breaker amperage values.
F	23 AUG 2017	12970	F supersedes E	<ul style="list-style-type: none">Updated WEEE directive text.Updated Emergo address.Updated the specifications table to reflect dimension changes.

* 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. 360122-1/Rev F

Contents

1	About this Manual	3
1.1	Safety Precautions and Symbols	3
1.2	General Recommendations	4
2	Installation	5
2.1	Location	5
2.2	Placement and Leveling	5
2.3	Stacked Undercounter Units	5
2.4	AC Power Cord	5
2.5	Temperature Probes	5
2.6	Chart Recorder (if included)	6
3	Scientific Series™ Operation	8
3.1	Initial Power-up	8
3.2	Change Temperature Setpoints	8
3.3	Light Operation	8
4	Specifications	9
4.1	Operating Standards	9
5	Compliance	10
5.1	Regulatory Compliance	10
5.2	WEEE Compliance	10
6	Preventive Maintenance	11
	Appendix A	12
	104 and 105 Scientific Series™ Parts	12

1 About this Manual

This manual provides information on how to use Scientific Series™ undercounter laboratory 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, “SLR104” refers to a Scientific Series Laboratory Refrigerator with 1 door and a capacity of 4 cu ft while “SLR105” refers to a Scientific Series Laboratory Refrigerator with 1 door and a capacity of 5 cu ft.

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.

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 (unless casters are installed) 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

The probe bottle kit is an optional accessory, and is required if the optional chart recorder is installed. The kit includes the probe bottle along with a container of glycerin. 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.

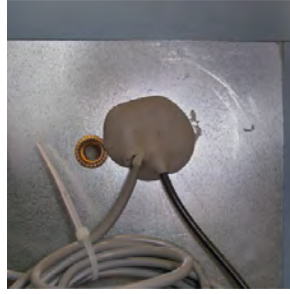
The probe bottle should contain 4 oz. (120 mL) of product simulation solution at a 10:1 ratio of water to glycerin.

Notes

- Temperature probes are fragile; handle with care.
- Remote probes may also be introduced through the existing rear port and immersed in the optional probe bottle.

CAUTION

Failure to fill probe bottle or keep probe bottle filled to the appropriate level may cause the chamber temperature to display higher or lower than the actual temperature.



Left: Probe bottle with temperature probe. Right: Rear access port.

Fill Probe Bottle

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 battery power is available, back-up power for the temperature chart recorder is available for up to 14 hours.

Note

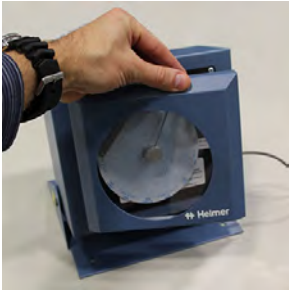
If chart recorder is operated on battery power, the battery should be replaced to ensure the back-up source has proper charge.

Prior to use:

Ensure the chart recorder probe is placed in the probe bottle and immersed at least 2" (50 mm) in product simulation solution.

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. 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.

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.

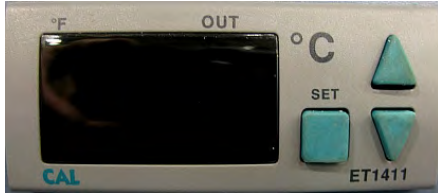
- ◆ The LED indicator glows green continually when main power is functioning and the battery is charged.
- ◆ The LED indicator glows red continually when main power is functioning and the batteries is either not installed or needs to be replaced.
- ◆ The LED indicator flashes red to indicated the recorder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

3 Scientific 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.

3.2 Change Temperature Setpoints



Model	Volts	Hz	Default Setpoint
104	115	60	3.4 °C
105	115	60	3.0 °C
105	230	50	4.0 °C
105	230	60	4.0 °C

Temperature controller.

NOTICE

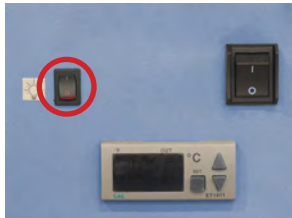
Parameter values are factory-preset and should not be changed unless directed by Helmer Technical Service.

Notes

- The setpoint for older refrigerators may be different than the value listed above. The refrigerator will operate correctly with the original setpoint value, or with the setpoint value listed above.
 - When there is no interaction for 25 seconds, the temperature controller exits program mode and returns to normal mode.
1. On the temperature controller, press and hold the **SET** button.
 2. While holding the **SET** button, press the **UP** or **DOWN** arrow buttons to change the temperature setpoint.
 3. Release all buttons. The temperature setpoint is changed.

3.3 Light Operation

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



4 Specifications

4.1 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 1 Electrical Specifications (Laboratory/Pharmacy)

	104	105
Input Voltage and Frequency	115V, 60Hz	115V, 60 Hz; 230V, 50 Hz; 230V, 60 Hz
Voltage Tolerance	±10%	
Circuit Breakers	7.0A (230V, 50 Hz); 6.0A (230V, 60 Hz) quantity 2	
Current Draw*	5.0A (115V, 60Hz)	5.0 A (115V) 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.	

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

Table 2 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	
SLR104-ADA	115V 60 Hz	5.0	4 (113)	Undercounter	Single hinged solid	2	24 x 31.5 x 28 (610 x 801 x 712)	161 (74)
SLR105	115V 50 Hz	5.0	5 (142)	Undercounter	Single hinged solid	2	24 x 33.5 x 28 (610 x 851 x 712)	165 (75)
	230V 50 Hz	4.0						
	230V 60 Hz	3.25						

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

Notes

- The maximum height added with leveling feet or casters installed is 2" (51 mm).
- Maximum load per shelf - 100 lbs (46 kg).
- Any combination of drawers, shelves or baskets may be installed.

5 Compliance

5.1 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
2514 AP The Hague
The Netherlands



5.2 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.

6 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 3. Preventive Maintenance Schedule

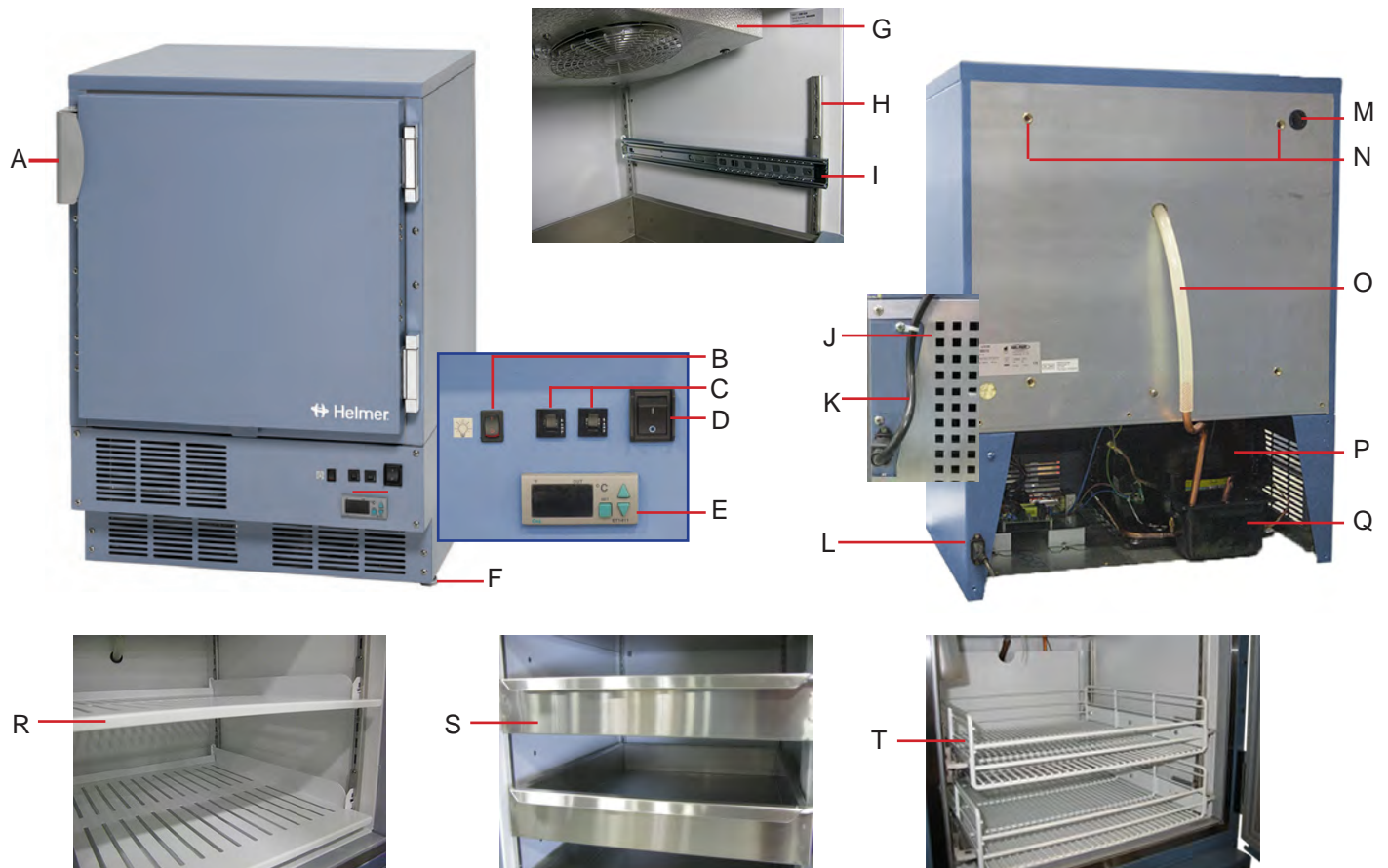
Task	Frequency			
	Quarterly	1 year	2 years	As Needed
Models with chart recorders Check the back-up battery for the chart recorder after an extended power failure and change it if necessary, or change the battery if it has been in service for one year. Refer to the Temperature Chart Recorder Operation 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 found. • Inspect wiring terminal strips for secure connections. Tighten connections as necessary. 	✓			
Check the level of the solution in the probe bottle (if equipped). Refill or replace solution if necessary.				✓
Examine the probe bottle (if equipped) and clean or replace if necessary.		✓		
Check the chamber lights (if equipped) 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.

Appendix A

104 and 105 Scientific Series™ Parts



Label	Description
A	Door handle
B	Light switch (optional)
C	Circuit breakers (230V only)
D	Main power switch
E	Temperature controller
F	Leveling foot (casters are optional)
G	Unit cooler with fan guard
H	Standard for adjusting storage components
I	Slide for drawer or basket
J	Rear panel

Label	Description
K	Power cord
L	Power connector
M	Access port
N	Inserts for stacking bracket
O	Drain line
P	Compressor
Q	Condensate evaporator
R	Shelf (standard)
S	Drawer (optional)
T	Roll out basket (optional)

END OF MANUAL

Notes:

