



# Owner's Guide

## MFP & MCFP UNITS

### Enzyme/Manual Defrost Freezer PLUS Series

#### OWNER'S INSTRUCTIONS

How to operate and care for your appliance and how to get the best, as well as the lowest cost, performance.

#### READ THIS BOOK!

##### Note to Customer:

This merchandise was carefully packed and thoroughly inspected before leaving our plant. Responsibility for its safe delivery was assumed by the carrier, upon acceptance of the shipment. As directed on the side of your packing carton, claims for loss or damage sustained in transit must be made on the carrier as follows:

- A.) **Exterior Damage:** Make thorough damage notation on your delivery receipt and have driver acknowledge by signature and date. Send a written request asking for an inspection report from carrier. Include the name of carrier representative and the date the inspection was requested. Retain inspection report and receipt for filing of a claim.
- B.) **Concealed Damage:** This must be reported to carrier within fifteen days. Obtain inspection report from the carrier. Retain the inspection report for filing of the claim. **DO NOT RETURN DAMAGED MERCHANDISE TO MANUFACTURER - - FILE THE CLAIM WITH THE CARRIER.**

#### Lab Research Products

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Summerville, SC 29483  
Phone: 800-648-4041  
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#### Warranty:

Three-Year Parts and Labor  
5 Years Compressor Parts

Revision Date  
03/12/04

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## SPECIFICATIONS:

Enzyme/Manual Defrost Freezer PLUS Series															
Model	Cu.Ft.	Doors	Inner		Usable Int. Dim.			Ext. Dim.			H.P	Amps	BTU/hr	Ship	
			Doors/Drawers	Shelves	W"	D"	H"	W"	D"	H"				lbs	lbs
MFP-0920	9	1 swing	5/2	6 fixed	16	16	50	22	24	64*	1/6	7	850	136	176
MFP-2020	20	1 swing	5/0	4 fixed	27	18	57	32	29	77*	1/4	5	770	315	355
MFP-2030	20	1 swing	5/0	4 fixed	27	18	57	32	29	77*	1/4	5	770	315	355
MFP-2920	29	1 swing	5/0	4 fixed	32	26	65	35	32	84*	1/3	5	2174	328	368
MCFP-1520	15	1 swing	N/A	2 baskets	42	24	28	48	30	35*	1/4	5	770	191	231
MCFP-2020	20	1 swing	N/A	2 baskets	56	24	28	62	30	35*	1/4	5	770	220	265

## RECEIVING

- A. LRP ships by carriers that we have used for many years and have selected for their good service, but accidents in shipping occur regardless of how much care is taken. Therefore the following is very important:
- B. Inspect unit at once for any shipping damage, including concealed damage.
- C. You should check for any shipping damage **immediately**, preferably before the carrier leaves your receiving dock, as nearly all shipments are FOB ship point.
- D. If there is any damage, note it on the carrier's receiving documents and notify the office of the carrier immediately.
- E. The responsibility of the shipper and the delivering carrier ends five days after goods are received. It becomes the responsibility of YOU, the customer, to unpack the unit and check for concealed damage caused during shipping. Immediate attention should be given to this.
- F. Retain all packing materials if damage is found.

## INSTALLATION AND STARTING INSTRUCTIONS

**LOCATION** – This unit requires a minimum of 4 inches of air flow in back and 1 to 2 inches on the sides and top. Leveling legs are required in front only. Unit may have a slight tilt from front to back after legs are installed. This is acceptable and is recommended on this unit.

**POWER SOURCE** – The supply circuit to this cabinet must conform to all National and Local Electrical Codes. Consult the cabinet Serial-Data plate for voltage, cycle, phase, and ampere requirements before making connection. **VOLTAGE SHOULD NOT VARY MORE THAN 5% FROM SERIAL PLATE RATINGS.** A separate circuit is recommended to prevent possible loss of product due to over-loading or failure of other equipment on the same circuit. **PROTECT THE CIRCUIT WITH A 20 AMP DELAY-TYPE FUSE.**

**STARTING** – There are no compressor shipping bolts to loosen or valves to open. All that is necessary after the freezer has been properly leveled is to plug the service cord into an electrical outlet. Do not use an extension cord. Be sure your freezer is properly grounded. Use the 3-prong plug provided into a 3-prong grounded outlet. (Only this method complies with national electrical codes, local codes and ordinances.) Unless the above grounding method is followed, you are not protected against severe or lethal shock in the event of a short circuit of an electrical component or wiring of the freezer. When starting this new appliance, allow the cabinet to operate a minimum of three hours or until it has started cycling normally before placing product in the cabinet. The motor compressor may start and stop several times when the unit is first started or after defrosting, especially if the weather is very hot. This is only normal functioning of the motor overload protector. The motor compressor will cycle normally as soon as the excess heat has been removed.

## **OPERATING INSTRUCTIONS**

- A. DEFROSTING-This is a manual defrost system. If ice build up is present  $\frac{1}{4}$  inch or more on the fixed shelves, defrosting is recommended. Large ice build-up will reduce cooling efficiency.
- B. CLEANING
  - 1. Cabinet Exterior – Wash with a mild soap and water solution. Rinse with clear water and dry.
  - 2. Cabinet Interior – Wash with 2 tbs. of baking soda and 1 qt. warm water solution or mild soap.

DO NOT USE STRONG CLEANERS, SCOURING POWDER OR PADS.

## **COMPRESSOR – CONDENSER**

- A. The compressor is hermetically sealed and will require no attention. The condenser is located between the inside and outside walls of the freezer and also requires no attention. Its natural heat keeps the exterior free of moisture; because of this, the outside may feel warm to the touch. This condition entirely normal.

## **SERVICE**

- A. In the event this freezer does not operate properly, check the following before calling the service man:
  - 1. Is there adequate air circulation around the unit and in the room?
  - 2. Is electrical power reaching the unit? (Check for blown fuse.)
  - 3. Is service cord connected to outlet?
  - 4. Is door closed tightly?

If this does not correct the difficulty, contact a competent service man.

# Operation Manual for LR5 TempGuard Refrigeration Control



## Safety:

This product operates at 120 VAC or 220 VAC power. Please unplug the power cord from the wall socket before performing any work on any of the electrical components of this system. Performing work while the unit is plugged in could result in a severe electrical shock.

## Introduction:

The LR-5 TempGuard control system was designed to provide many years of reliable service. This control utilizes micro-controller technology to continuously monitor the temperature in the refrigerator/freezer and to maintain the temperature within the limits set by the user. The control settings are easily adjusted through the LR5 TempGuard front panel and the control “remembers” the coldest and the warmest temperatures achieved in operation.

## Hardware Requirements:

- LR5: LR5 TempGuard temperature control
- LR3-S: The laser trimmed sensor for the LR5 TempGuard

## Setting up the LR5 TempGuard Control:

### **Setting the high temperature and low temperature of the control range.**

1. Press the **HIGH TEMP** button and the corresponding LED will start flashing
2. Use the ↑ and the ↓ buttons to change the temperature.
3. Press the **HIGH TEMP** button again to lock in the desired temperature. The LED will stop flashing.
4. Follow the same steps for the low temperature using the **LOW TEMP** button.

## **Set the high temperature alarm and the low temperature alarm.**

1. Press the High Alarm button and the corresponding LED will start flashing
2. Use the ↑ and the ↓ buttons to change the alarm temperature.
3. Press the High Alarm button again to lock in the desired alarm. The LED will stop flashing.
4. Follow the same steps for the low temperature alarm using the Low Alarm button.

Pressing and holding the ↑ and the ↓ buttons cause a rapid increase or decrease in the value on the display. This can be used for large changes in the temperature settings. Also, after the High Temp, the Low Temp, the High Alarm, or the Low Alarm button is pressed, the user has 15 seconds to press the ↑ or the ↓ buttons. If no activity is detected, the control reverts to its main control activity while leaving the settings unchanged.

## **How the LR5 Control works:**

The LR5 TempGuard control continuously monitors the temperature of the refrigerator/freezer through its sensor assembly. When the temperature warms to the point where it reaches the upper temperature limit, the LR5 sends a signal to turn on the compressor, which cools the unit. The compressor is kept running until the temperature reaches the cold setting. When this lower temperature set point is reached the LR5 turns off the compressor. The refrigerator/freezer warms over time and the process continues.

The LR5 TempGuard records the warmest and the coldest temperatures seen by the control. To access these temperatures, press the ↑ button for the warmest temperature or press the ↓ button for the coldest temperature. To clear out the warmest and coldest temperature, press both ↑ and ↓ buttons at the same time and hold them until the display blinks (approximately 5 seconds). The warmest and coldest temperatures are reset to equal the High Temp and the Low Temp settings.

The new LR-5 includes the following features:

- Red LED for visual indication of an error condition
- Beeper for audible indication of an error condition
- Battery for indication of error even when the control has lost power
- Door open indication and door open too long alarm
- Remote Alarm Dry Contacts

The LR5 TempGuard provides a flashing red LED and an audible tone for alarm situations. The alarms are run off a NiMH battery so that an alert occurs regardless of whether or not the control has power. The feature package can be enabled/disabled with a switch installed on the main circuit board. Moving the switch to the ON position activates these features and moving it to the OFF position deactivates these features.

The LR-5 TempGuard provides an indication if a door is opened by sounding a single beep. If the door stays open for 10 minutes then the LR5 indicates that an error condition has occurred by activating the red LED and the beeper.

Control Limits:

- The High Temp and Low Temp can be adjusted within the entire range as desired. The range varies depending on the model of refrigerator or freezer that was purchased. The High Temp cannot be lower than the Low Temp.
- If the High Temp is being lowered and it runs into the Low Temp it will push the Low Temp lower. The Low Temp will always be at least 4 degrees C less than the High Temp.
- If the Low Temp is being raised and it runs into the High Temp it will push the High Temp higher. The High Temp will always be at least 4 degrees C higher than the Low Temp.
- The High Alarm can be adjusted in the range from the (High Temp + 2) to the upper limit.
- The Low Alarm can be adjusted in the range from the (Low Temp – 2) to the lower limit.
- If the High Temp is being raised and it runs into the High Alarm, the High Alarm will automatically be adjusted upward. The High Alarm is always at least 2 degrees higher than the High Temp.
- If the Low Temp is being lowered and it runs into the Low Alarm, the Low Alarm will automatically be adjusted downward. The Low Alarm is always at least 2 degrees lower than the Low Temp.

- If the High Alarm is being lowered and it runs into the High Temp, it will go no lower than the (High Temp + 2).
- If the Low Alarm is being raised and it runs into the Low Temp, it will go no higher than the (Low Temp – 2).

## Control Status and Error Conditions:

When the control is operating normally, the temperature detected by the sensor assembly is displayed on the control panel. If the temperature gets too warm and reaches the High Alarm setting, the display will flash alternatively between the actual temperature and the message Hi. If the temperature gets too cold and reaches the Low Alarm setting, the display will flash alternatively between the actual temperature and the message Lo. If the sensor assembly is disconnected or gets damaged the display will read Er.

## Temperature Zones & Validation:

Each refrigerator or freezer will display its own characteristics in regard to the temperature gradient throughout the inner chamber. The uniformity of the temperature throughout the inner chamber can be influenced by many factors such as location of the sensor, air flow patterns, mass of the sensor, location of shelves, location of the product stored, quantity of the product stored, mass of the product stored, number of doors, insulation and frequency of door openings/closings. Some temperature variation in the refrigerator or freezer should be expected and is a normal occurrence. The LR5 TempGuard control monitors and controls the temperature at the location of its sensor assembly. At the location of the sensor the temperature will be accurate to within 1 degree C.

Validation can be performed on the LR5 TempGuard control by testing at a known temperature. Ice water has a known temperature of 0o C. To validate the control, dip the sensor assembly into a bath of ice water made from distilled water. After letting the temperature settle, the LR5 TempGuard will display a temperature of 0 degrees +/- 1 degree. This test validates the temperature accuracy of the sensor assembly.

## Wiring the LR5 TempGuard:

The LR5 Tempguard is supplied with a green 7-contact plug to make wiring easy. A plug legend is attached to the back plate of the control. It is summarized below:

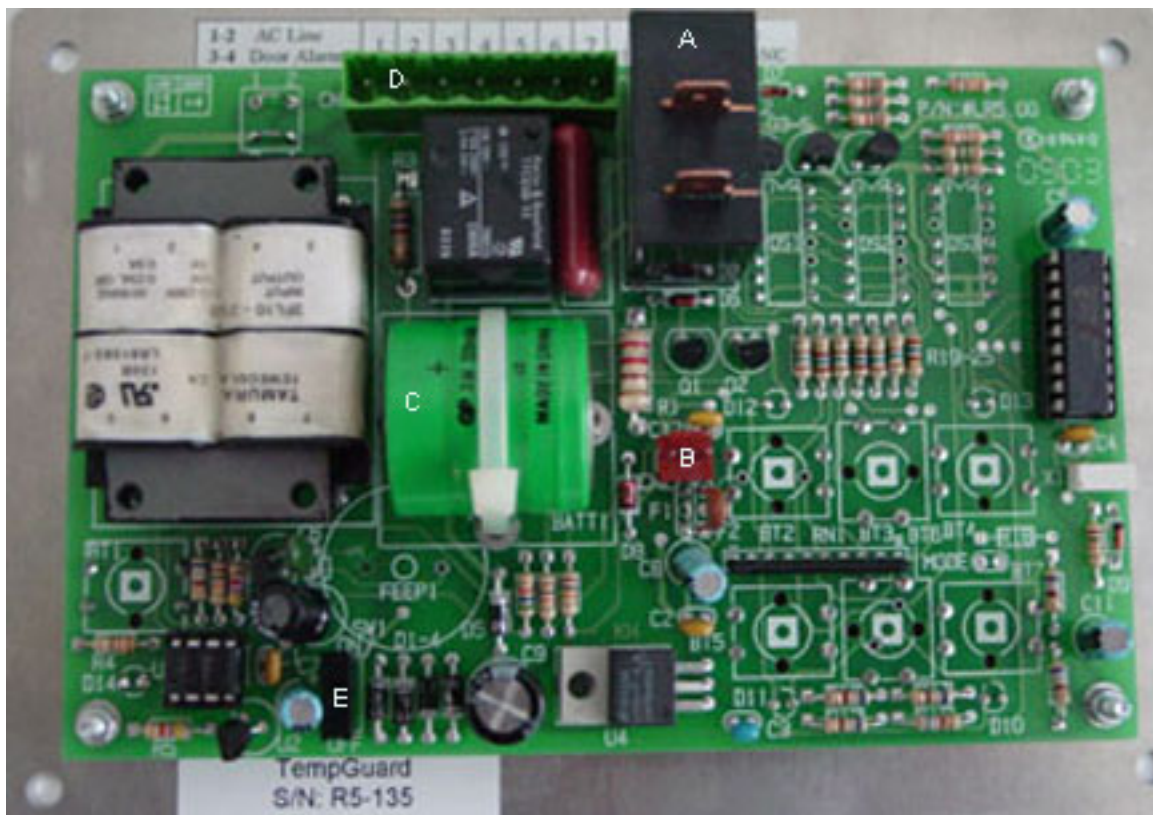
Pin 1	AC Line (polarity does not matter)
Pin 2	AC Line (polarity does not matter)
Pin 3	Door Alarm (polarity does not matter)
Pin 4	Door Alarm (polarity does not matter)
Pin 5	Remote alarm (normally open contact)
Pin 6	Remote alarm (common)
Pin 7	Remote alarm (normally closed contact)

**AC Line** - Power wired into AC line of the system.

**Door alarm** - The door alarm circuit on the LR5 detects an open or closed circuit. An open circuit indicates that a door has been opened while a closed circuit indicates that all doors are closed. The circuit should be wired in series through switches attached at each door.

**Remote Alarm** - A relay is provided on the LR5 to signal an error condition. Continuity exists between pins 6 & 7 in a normal condition. An error condition provides continuity between pins 5 & 6.

## Roadmap to the Circuit Board:



- A – Contactor: Connects to the refrigeration compressor.
- B - Sensor Connector: The LR5 sensor assembly connects here.
- C – Battery: NiMH battery provides alarm capability when power is lost.
- D – 7-pin connector: Wiring for LR-5 Tempguard system into connector.
- E – Optional Feature Switch: Turns on/off the optional features of the control.

## Specifications:

### **Power:**

- 120 VAC or 240 VAC

### **Alarms:**

- Relay output for remote alarm
- 12A max load for 120 VAC
- 10A max load for 240 VAC
- Visual – red LED (optional)
- Audible (optional)
- Battery backed (optional)
- Door Open too long (optional)

### **Temperature Detection:**

- DS1821 Digital Thermometer

### **Dimensions:**

- 6  $\frac{3}{4}$  " wide x 4  $\frac{3}{4}$  " high x 2" high

## Lab Research Products PRODUCT WARRANTY

**Lab Research Products** warrants to the original purchaser every new **Lab Research Products** refrigerated unit, the cabinet and all parts thereof, to be free from defects in material or workmanship, under normal use and service, for a period of three (3) year. The warranty period starts two weeks from the date of shipment from **Lab Research Products**. This two week period allows ample shipping time so that the warranty will go into effect at approximately the same time your equipment is delivered. Unless subject to prior written agreement with **Lab Research Products**, this warranty does not allow for any warranty start deferment greater than two weeks from date of shipment due to a delayed installation and/or start-up.

Under this warranty, **Lab Research Products**, through its authorized service organizations, will repair, or at its option, replace any part found to contain a manufacturing defect in material or workmanship without charge to the owner for parts, service labor or any shipping or cartage costs. Replacement or repaired parts will be warranted for only the unexpired portion of the original warranty.

### **ADDITIONAL TWO YEAR COMPRESSOR WARRANTY**

In addition to the three (3) year warranty stated above, **Lab Research Products** warrants its hermetically and semi-hermetically sealed compressors to be free from defects in both material and workmanship under normal use and service for a period of two (2) additional years from the end of the initial three (3) year warranty period, but not to exceed five (5) years after shipment from **Lab Research Products**.

Compressors determined by **Lab Research Products** to have been defective within this extended time period will, at **Lab Research Products'** option, be either repaired or replaced with a compressor or compressor parts of similar design and capacity.

The two (2) year extended compressor warranty applies only to hermetically and semi-hermetically sealed parts of the compressor and does not apply to any other parts or components, including, but not limited to, cabinet, paint finish, temperature control, refrigerant, metering device, driers, motor starting equipment, fan assembly or any other electrical components.

**Lab Research Products'** sole obligation under this warranty is limited to either repair or replacement of parts, subject to the additional limitations below. This warranty neither assumes nor authorizes any person to assume obligations other than expressly covered by this warranty.

**NO CONSEQUENTIAL DAMAGES.** **Lab Research Products** is not responsible for economic loss; profit loss; or special, indirect or consequential damages, including without limitation, losses or damages arising from contents spoilage claims whether or not on account of refrigeration failure.

**WARRANTY IS NOT TRANSFERABLE.** This warranty is not assignable and applies only in favor of the original purchaser/user to whom delivered. Any such assignment or transfer shall void the warranties herein made and shall void all warranties, express or implied, including any warranty of merchantability or fitness for a particular purpose.

**NO IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.** There are no other warranties, express, implied, or statutory, except the three (3) year warranty and the additional two (2) year compressor warranty as described above. These warranties are exclusive and in lieu of all other warranties, including implied warranty and merchantability or fitness for a particular purpose. There are no warranties which extend beyond the description on the face hereof.

**ALTERATION, NEGLIGENCE, ABUSE, MISUSE, ACCIDENT, DAMAGE DURING TRANSIT OR INSTALLATION, FIRE, FLOOD OR OTHER EXTERNAL CAUSES.**

**Lab Research Products** is not responsible for the repair or replacement of any parts that **Lab Research Products** determines have been subjected after the date of manufacture to alteration, neglect, abuse, misuse, accident, damage during transit or installation, fire, flood or other external causes. It does not apply to defects resulting from failure to properly install, operate or maintain the product in accordance with the printed instructions provided, or damage caused by the storage of any corrosive material that comes in contact with the interior or exterior portions of the cabinet, or the use of spark producing equipment or containers (such as galvanized or carbonized steel containers) that come in contact with any interior portion of the cabinet.

**TRANSPORTATION COSTS.** **Lab Research Products** will accept parts covered under this warranty freight collect, provided that shipment has received prior approval.

**OUTSIDE U.S./CANADA.** This warranty does not apply to, and **Lab Research Products** is not responsible for, any warranty claims made on products sold or used outside the United States and Canada.

**WARRANTY CLAIMS.** To obtain prompt warranty service, simply contact **Lab Research Products** at 800-648-4041. **Lab Research Products'** shipping records showing date of shipment shall be conclusive in establishing the warranty period. All claims should include: model number of the refrigerator, the serial number of the cabinet, proof of purchase, date of installation, and all pertinent information supporting the existence of the alleged defect. Any action or breach of these warranty provisions must be commenced within one (1) year after that cause of action has accrued.

## MFP-2030

### This section pertains to -30°C FREEZER ONLY

This freezer has been factory set to run at -30°C. The LR-5 TempGuard may require adjustment depending on the final ambient operating condition. The freezer has reserve range and will average -30°C, **depending on load and ambient temperature.** Plug into a standard 110-120 volt electrical outlet. The unit will start to operate. It will require 5 amps. The freezer's operation will be extremely quiet due to the unique design of the compressor system.

As with the -20 models, pre-cool unit before placing any product into the chamber. The temperature will reach -30°C in less than four hours; however, let the chamber cool for 8 hours minimum to allow for total heat removal from the cabinet.

Again, this is a manual defrost system. If ice build up is present ¼ inch or more on the fixed shelves, defrosting is recommended. Large ice build up will reduce cooling efficiency.

If this system is equipped with a temperature display or alarm system it is not uncommon to observe a rise in temperature on the display following a door opening. Unless the door is left open for long periods of time this should not affect product temperature. The temperature display is independent of the thermostat that is actually controlling the off/on cycling of the compressor. Door opening will greatly affect air temperature but generally does not affect product temperature.