



**EVEREST REFRIGERATION**

**BuSung America Corp.**

## SERVICE MANUAL & PARTS LIST



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## *SAFETY NOTICES*

As you work on the reach-in, be sure to pay close attention to the safety notices in this manual. Disregarding the notices may lead to serious personal injury and/or damage to the reach-ins.

The following types of safety notices will be seen throughout the manual.

### **WARNING**

Text in a "WARNING" box alerts you to a potential personal injury situation. Be sure to read the warning statement before proceeding, and work carefully.

### **CAUTION**

Text in a "CAUTION" box alerts to a potential situation in which damage to the reach-in may occur. Be sure to read the caution statement before proceeding, and work carefully.

## *PROCEDURAL NOTICES*

When working on the reach-in, be sure to read the procedural notices in the manual. These notices supply helpful information which may assist in the work.

You will see the following types of procedural notices, throughout the manual.

### **IMPORTANT**

Text in an "IMPORTANT" box will provide information that may help to perform a procedure more efficiently. Disregarding this information will not cause damage or injury, but it may slow you down.

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**MODELS AND SERIAL NUMBERS**

When a service is required, a service technician will need to provide the model and serial number of the defect unit. Without the serial number, the manufacturer cannot supply right parts and support the service technician with right technical information.

**a. Location of Label**

The model and serial number are located on the inside left wall of the reach-in, see Figure 1-1.

**b. About Model Numbers**

<Example>

- ESR1 – "E" stands for "Everest"
- "S" stands for "Solid Door"
- "R" stands for "Refrigerator"
- "1" means number of doors

- ESRF2 – "E" stands for "Everest"
- "S" stands for "Solid Door"
- "RF" stands for "Ref & Fzr"
- "2" means number of doors

**c. About Serial Numbers**

<Example>

- BSR1-0106-0001
- "B" stands for "Busung", factory name
- "S" stands for "Solid Door"
- "R" stands for "Refrigerator"
- "1" means number of doors
- "0106" means year (2001) and month (June)
- "0001" means 1st unit made in June 2001

**d. About Barcodes**

Barcodes have been printed on the label from March 2003 to present.

<Example>

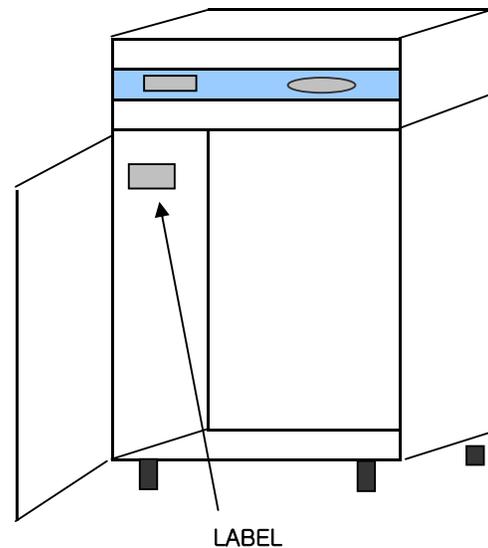
- BKDKE0001A
- Alphabet stands for number, see Table 1-1.
- "B" stands for "Busung", factory name
- "KD" means Year; "03", 2003
- "KE" means Month; "04", April
- "0001" means 1st unit made in April 2003
- "A" means export product

B	C	D	E	F	G	H	I	J	K
1	2	3	4	5	6	7	8	9	0

[Table 1-1: Alphabet Conversion Table]

**MODELS INCLUDED IN THIS SERVICE MANUAL**

MODEL	DESCRIPTION
ESR1	1 Door Upright Refrigerator
ESRH2	2 Half Door Upright Refrigerator
ESR2	2 Door Upright Refrigerator
ESWR2	2 Wide Door Upright Refrigerator
ESR3	3 Door Upright Refrigerator
ESGR1	1 Glass Door Upright Refrigerator
ESGR2	2 Glass Door Upright Refrigerator
ESWGR2	2 Glass Wide Door Upright Refrigerator
ESF1	1 Door Upright Freezer
ESFH2	2 Half Door Upright Freezer
ESF2	2 Door Upright Freezer
ESWF2	2 Wide Door Upright Freezer
ESF3	3 Door Upright Freezer
ESRF2	2 Door Upright Dual Temps
ESWQ3	1 Full & 2 Half Wide Door Dual Temps
ESWRF2	2 Wide Door Upright Dual Temps
ESRF3	3 Door Upright Dual Temps



[Figure 1-1: Location of Label]

**WARRANTY COVERAGE**

Everest warrants only the original purchaser of the Everest unit(s) and all parts to be free from defects in material or workmanship under normal and proper use, and maintenance.

**CAUTION**

**No warranty coverage applies when refrigeration system or reach-in cabinet is used in conjunction with other products.**

**a. Warranty Claims**

All claims for labor and parts must be made directly through Everest and assigned Everest dealers or distributors. All claims should include model and serial number of the unit, proof of purchase, date of installation and all pertinent information supporting the existence of the alleged defect.

**b. One (1) Year for Parts & Labor**

Parts and labor warranty is limited to a period of one (1) year from the date of installation or fifteen (15) months after shipment from Everest's warehouse if the warranty registration card(s) is not returned.

**c. Five (5) Year for Compressors**

Everest warrants five (5) years on the hermetically sealed compressor itself, not to exceed sixty (60) months from the date of shipment from Everest's warehouse.

This compressor warranty does not apply to parts such as electrical components, accumulator, condensing & evaporator coil, wiring harness etc. These items are covered by the one (1) year standard warranty.

**d. Instant Six Months Ext. Warranty**

EVEREST offers an instant additional six (6) months parts & labor warranty to only purchaser who returns the warranty card to EVEREST headquarter office within a month from the date of installation, which is enclosed in the user's manual. If not, the purchasers will have the standard one (1) year parts & labor warranty only.

(This special offer has been provide to all customers who purchased Everest product

from Jan. 2004)

**e. Additional Warranty**

An extended parts and labor warranty is available for purchase which covers a second year.

**WARRANTY EXCLUSIONS**

The following items are not included in the warranty coverage.

- a. Nomal maintenance, adjustments, and cleaning.
- b. Interior cabinet light bulb.
- c. Repairs due to unauthorized modifications to all Everest products or the use of non-standard parts without prior written approval from the manufacturer.
- d. Improper electrical connections resulting from electrical power failures, the use of extension cords, and low voltage or voltage drops to the unit.
- e. Damage caused by improper installation, electrical supply, water supply or drainage; floods, storms, and/or other acts of God.
- f. Parts or assemblies subjected to misuse, abuse, neglect, and/or accidents.
- g. Damage to the interior of the cabinet or refrigeration system as a result of storing open acidic food containers.
- h. Claims for special, indirect or consequential damages including, without limitation, food spoilage or product loss.
- i. Outside of the United States.
- j. Warranty is limited to only the original purchaser. It is not transferable.
- k. Premium labor rates due to holidays, overtime, etc.; travel time; flat rate service call charges; mileage and miscellaneous tools and material charges not listed on the payment schedule. Additional labor charges resulting from the inaccessibility of the refrigeration system/reach-in cabinet are also excluded.

*WARRANTY SERVICE LABOR ALLOWANCE*

When submitting a bill for warranty work, the labor hours must be within the guidelines listed below. Everest Refrigeration has the right to pay no more than the average commercial hourly rates within the territory or region of the repair. To diagnose and repair or replace more than one item, use up to the highest allowable time for the single repair, then add 1/2 hour for each additional repair.

Name of Components	Description	Replacement (Hour)	Repair (Hour)	Adjustment (Hour)
All Freon Leak	At any joint in the system		2-3	
Compressor	Compressor	2-3		
	Relay/Overload/Start Capacitor	1		
	Self Contained Condensing Unit	2		
Coil	Evaporator/Condenser	2-3		
	Capillary Tube	1-2		
	Filter Drier	1-2		
Door	Door Hinge	1		
	Door Spring Tension			1
	Door	1		
	Door Gasket	1		
Drainage	U-Trap (or P-Trap)	1		
	Evaporator Drain Cover w/ Pan Heater	1		
Electrical Wire	Harness	1		
	Wiring		1	1
	Power Cord	1		
Fan Motor	Condenser/Evaporator Fan Blades	1		
	Evaporator Fan Motor	1		
	Condenser Fan Motor	1		
Heater	Defrost Heater	1		
	Condensate Pan & Heater	1		
Lighting	Light Bulb Socket	1		
	Light (Door) Switch	1		
Sensor	Overheat Protect (Evap) Sensor	1-2		
	Cabinet (Room) Sensor	1-2		
Control System	PCB Board	1-2		
	PCB Mode Changes			1
	Transformer	1		
Vacuum Control	Pressure (Vacuum) Relief Control	1	1	
Valve	Solenoid Valve	2-3	2-3	
	Other Valves	2-3	2-3	
Defrost	Evaporator Coil		1	
Others	All Other Parts' Replacements	1		

[Table 2-1: Labor Hour Allowance]

Above hourly rate includes diagnosis and repair or replacement of the defective parts under Everest Refrigeration's warranty procedures.

***MATERIAL COST ALLOWANCE***

The table shows the maximum that the manufacturer will pay for the listed materials on a warranty claim.

<u>Material</u>	<u>Maximum Pay</u>
Access valve	\$5.00
Nitrogen	\$5.00
R134A refrigerant per system	\$15.00
R404A refrigerant per system	\$20.00
Refrigerant recovery	\$20.00
Vacuum	\$0.00
Welding Material	\$20.00

***VERIFICATION OF WARRANTY***

1. Service company must verify warranty status of product through below methods before a warranty work begins if the warranty work was not directly ordered by the manufacturer. Failure to do so, the manufacturer has a right to refuse to pay the warranty labor claim.
  - a. By the receipt of product from the customer or dealer/distributor where the product purchased from
  - b. Contact the manufacturer (1-800-444-6285) to verify the status

**Note:**

The product information will not be found in the system if the customer did not return the warranty card to the manufacturer.

Please read the "SECTION 2" about the warranty coverage.

***WHEN SUBMITTING WARRANTY BILL TO MANUFACTURER***

1. Service company should supply below information.
  - a. Model & Serial number
  - b. Installation Date
  - c. Correct customer's Information
2. The service bill should be submitted within a month from the date of service.

The manufacturer will refuse to pay for the warranty claim to the service company if anything of above information was not provided.

**WHERE TO INSTALL**

1. The product should be installed on a level surface.

**CAUTION**

Drain & temperature problems will be occurred if the product tilts even slightly forward or back. Please adjust the height of the caster(s) for the product to be leveled by using washer if required.

2. The unit is designed for indoor and commercial use. Outdoor installation will cause a decrease in performance and significant damage if exposed to sunlight and rain.
3. Do not install the unit under a shelf or place where a foreign object could fall into the condensing unit area; on top of the cabinet.
4. Select a location away from heat and moisture generating equipment such as a stove, oven, dish washer, etc.
5. Minimum Clearance Requirements [Figure 3-1]

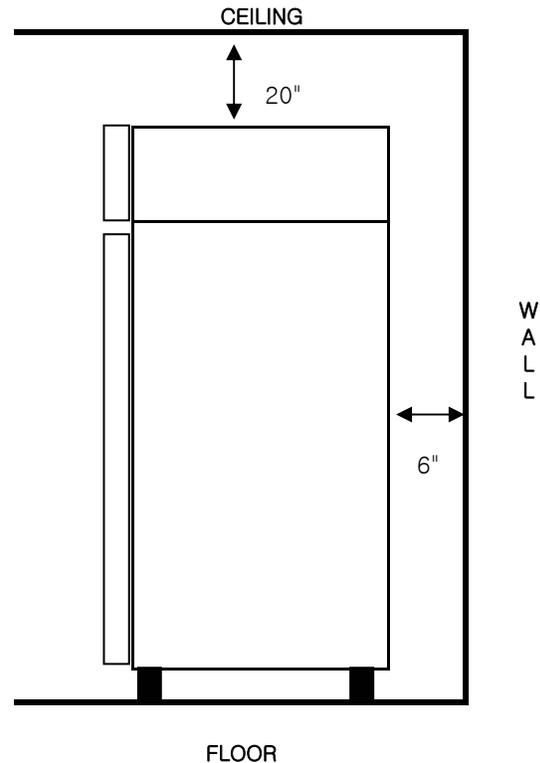
Top : 20" above the condensing unit  
 Back & Side : 6" at the back and each side

6. Do not tilt the unit during delivery and installation. Compressor oil might run into condensing coil through high pressure pipe, which causes a temperature problem due to clog in the capillary tube.

**CAUTION**

If minimum clearances are not maintained, cooling capacity will be reduced. This may lead to product loss or premature component failure.

6. Four casters supplied by manufacturer must be installed. Failure to do that, it will cause a malfunction of condensate pan heater which was built-in underneath of the cabinet.
7. Ambient Temperature for Condenser  
 Minimum : 50F  
 Maximum : 100F



[Figure 3-1: Side View of Cabinet]

*ELECTRICAL REQUIREMENTS***CAUTION**

All wiring must conform to local, state and national codes.

**CAUTION**

Never use an extension cord.

Product	Model	Description	Compressor (HP)	Volt/Cycle/Phase	Total Amps
Upright Reach -Ins	ESR1	1 DR Upright Refrigerator	1/3	115V/60/1	3.38
	ESRH2	2 Half Door Upright Refrigerator	1/3	115V/60/1	3.38
	ESR2	2 DR Upright Refrigerator	1/3	115V/60/1	4.5
	ESWR2	2 DR Wider Upright Refrigerator	1/3	115V/60/1	4.5
	ESR3	3 DR Upright Refrigerator	1/3 X 2	115V/60/1	9.49
	ESGR1	1 Glass Door Refrigerator	1/3	115V/60/1	4.5
	ESGR2	2 Glass Door Refrigerator	1/2	115V/60/1	4.5
	ESWGR2	2 Wide Glass Door Refrigerator	1/2	115V/60/1	8.12
	ESF1	1 DR Upright Freezer	1/2	115V/60/1	8.12
	ESFH2	2 Half Door Upright Freezer	1/2	115V/60/1	8.12
	ESF2	2 DR Upright Freezer	1/2 X 2	115V/60/1	15.89
	ESWF2	2 DR Wider Upright Freezer	1/2 X 2	115V/60/1	15.89
	ESF3	3 DR Upright Freezer	1/2 X 3	208-230V/60/1	12.36
	ESRF2	2 DR Uprigt Dual Temp	1/3 (Ref) 1/2 (Fzr)	115V/60/1	12.08
	ESWRF2	2 DR Wider Uprigt Dual Temp	1/3 (Ref) 1/2 (Fzr)	115V/60/1	12.08
	ESWQ3	2 Section 3/4 Refrigerator & 1/4 Freezer Dual Temp	1/3 (Ref) 1/2 (Fzr)	115V/60/1	12.08
ESRF3	3 DR Upright Dual Temp	1/3 (Ref) 1/2 (Fzr)	115V/60/1	12.62	

[Table 3-1: Electrical Requirements]

**NOTE**

It will take about one (1) minute to operate the system after plug-in.

**NOTE**

Plug for ESF3 is not provided from the manufacturer.

**NOTE**

There is a 5 second time delay on compressor operations for reach-ins that have two or three condensing units. (Model ESF2, ESWF2, ESRF2, ESWRF2, ESR3, ESF3, ESRF3)

*INTERIOR AND EXTERIOR CLEANING*

Use ONLY stainless steel cleaner to clean the interior and exterior of the cabinet.

**WARNING**

Exterior stainless steel is made of 430 series material which might be rusted if it is cleaned by a cleaner other than general stainless steel ones.

**CAUTION**

Never use steel wool; strong acids, or abrasive cleaners to clean any interior or exterior of the cabinet.

**CAUTION**

Acidic products or products containing vinegar must be stored in sealed containers to prevent acid damage to the interior of the cabinet and evaporator coil.

*LIGHT BULB REPLACEMENT*

- Step 1 Unscrew and remove the white plastic protective cover over the light bulb.
- Step 2 Unscrew and remove the used light bulb.
- Step 3 Install a new 25 watt appliance light bulb. (Be sure it is screwed in securely)
- Step 4 Reinstall the protective cover over the light bulb. (Be sure it is screwed in securely)

*CONDENSER CLEANING*

A dirty condenser restricts airflow, resulting in excessively high operating temperatures. This reduces efficiency and shortens component life.

**WARNING**

Disconnect the electric power to the unit before cleaning the condenser.

**WARNING**

The condenser fan blade is sharp. Be careful when cleaning.

**IMPORTANT**

Use this procedure to clean the condenser once a month

- Step 1 Unscrew and remove the gray plastic condenser cover.
- Step 2 Clean the outside of the condenser with a soft brush or vacuum with a brush. Clean from the top to the bottom, not side to side. Be careful not to bend the condenser fins.
- Step 3 Shine a flashlight through the condenser to check for dirt between the fins. If dirt remains:
- Blow compressed air through the condenser coil.
  - Use a commercial condenser coil cleaner. Follow the directions and any precautions supplied with the cleaner.
- Step 4 Repeat Step 3 until all dirt is removed.
- Step 5 Carefully wipe off the fan blade and motor with a soft cloth. Do not bend the fan blades. If the fan blades are excessively dirty, wash with warm, soapy water and rinse thoroughly.

**CAUTION**

If you are cleaning the condenser fan blades, cover the fan motor to prevent water damage.

**ABOUT CONTROL BOX****1. General**

All electrical operations for Everest products are governed by a microchip installed control box, including the compressor, door heater, condensate pan heater, defrost heater, condensing & evaporator fan motor, lighting, temperature, setting, changing control modes; see page 5-2.

**2. Circuit Boards**

The control system is composed of two circuit boards.

- a. Main(LED) Circuit Board
  - contains microchip, LED & buttons
- b. Power Circuit Board
  - contains relays & wire pins

**HOW TO SET DESIRED TEMPERATURE**

Please make sure that the main power is connected to 115V/60Hz power supply. And the power button is "ON".

**1. Single Temperature Units**

- Step 1 Push the "TEMP. SET" button. The red light will blink.
- Step 2 While the light is blinking, set your desired temperature by pushing the "HIGH" or "LOW" button.
- Step 3 The LED read-out will display the actual temperature of the cabinet a few seconds later if the above procedures are successfully completed.
- Step 4 Push the "TEMP. SET" button to check for your new desired temperature.



[Pic. 5-1: Single Temperature Unit Control Box]

**2. Dual Temperature Units**

- Step 1 Push the "TEMP. SET" button. Refrigerator side light will blink.
- Step 2 While the light is blinking, set your desired temperature by pushing the "HIGH" or "LOW" button.
- Step 3 The LED read-out will display the actual temperature of the cabinet a few seconds later if the above procedures are successfully completed.
- Step 4 Push the "TEMP SET" button twice. Freezer side light will blink.
- Step 5 Repeat Step 2 for setting the freezer side temperature.
- Step 6 Push the "TEMP. SET" button to check for your new desired temperature; pushing once for refrigerator and twice for freezer.



[Pic. 5-2: Dual Temperature Unit Control Box]

**Location of Display Windows for Dual Temps**

Upright Duals : Left (REF) Right (FZR)  
Undercounter Duals : Left (FZR) Right (REF)

**FACTORY PRESETS****1. Temperature Preset**

- Refrigerator : 35F
- Freezer : -4F

**2. Defrost Cycle Preset**

- Four (4) times a day for both refrigerator and freezer.

*ABOUT PCB CONTROL MODES (OLD Control System)*

The old control boxes have three modes as shown below in Table 5-2. The applicable serial numbers are on all Everest reach-ins made from April 2001 to August 2002; from BXXX(X)-0104-0001 to BXXX(X)-0208-XXXX.

Mode	Symbol on LED		Factory Preset		Range		Brief Description
	Ref	Fzr	Ref	Fzr	Ref	Fzr	
Temp. Range - High	R3	F1	54F	54F	-22F to 86F	-22F to 86F	Highest temperature range the unit can go up to when setting desired temperature.
Temp. Range - Low	R4	F2	33F	-15F	-22F to 86F	-22F to 86F	Lowest temperature range the unit can go down to when setting desired temperature.
Defrost Cycle	R5	F5	06	06	01 to 24	01 to 24	Interval time (hour) of defrost operation

[Table 5-2: Control Modes]

**a. Temperature Range - High "R3" or "F1"**

The highest temperature setting range the unit can go up to. The highest temperature can be adjusted from -22F to 86F. Factory preset is 54F for both refrigerators and freezers.

**c. Temperature Range - Low "R4" or "F2"**

The lowest temperature setting range the unit can go down to. The lowest temperature can be adjusted from -22F to 86F. Factory preset is 33F for refrigerators and -15F freezers.

**f. Defrost Cycle "R5" or "F5"**

Defrost cycles can be adjusted depending on the type of food in the cabinet and customer's use. It is set by interval time; from every 1 to 24 hrs. The factory preset is 6 hrs intervals for both refrigerators and freezers. The clock starts from the time the unit is plugged in.

*MODE CHANGES FOR SINGLE TEMP UNITS  
(OLD BSR Type Control System)*

**IMPORTANT**

**Please read and completely understand  
page 5-2-1 before adjusting any modes.**

Open the top grill to reach the control box, and make sure the power is "ON".

**a. Temperature Range – High**

- Step 1 Press and hold the "TEMP SET" button for a few seconds until "R3" for Ref. (or "F1" for fzr.) is displayed on the LED read-out. Now you are in the Temperature Range – High Mode. You can check the factory preset for this mode by pushing the "HIGH" or "LOW" button once.
- Step 2 Reset the new highest temperature in the range by pushing the "HIGH" or "LOW" button. The LED will display the cabinet temperature after a few seconds. This means that the reset has been successfully completed.

**b. Temperature Range – Low**

- Step 1 Press and hold the "TEMP SET" button for a few seconds until "R3" for Ref. (or "F1" for fzr.) is displayed on the LED read-out. Now you are in the Temperature Range – High Mode. You can check the factory preset for this mode by pushing the "HIGH" or "LOW" button once.
- Step 2 Push the "TEMP SET" button one more time. You will see "R4" for ref. (or "F-2" for fzr.) on the LED. You can check the factory preset for this mode by pushing the "HIGH" or "LOW" button once.
- Step 3 Reset the new lowest temperature in the range by pushing the "HIGH" or "LOW" button. The LED will display the cabinet temperature after a few seconds. This means that the reset has been successfully completed.

**c. Defrost Cycle**

- Step 1 Press and hold the "TEMP SET" button for a few seconds until "R3" for Ref. (or "F1" for fzr.) is displayed on the LED read-out. Now you are in the Temperature Range – High Mode. You can check the factory preset for this mode by pushing the "HIGH" or "LOW" button once.
- Step 2 Push the "TEMP SET" button twice. You will see "R4" for ref. (or fzr for "F-5") on the LED. You can check the factory preset for this mode by pushing the "HIGH" or "LOW" button once.
- Step 3 Reset the new number of hour intervals for the defrost cycle by pushing the "HIGH" or "LOW" button. The LED will display cabinet temperature a few seconds later. This means that the reset has been successfully completed.

**ABOUT PCB CONTROL MODES (AS-50 Type)**

- For **SINGLE** temperature units

Applicable serial numbers for these modes are on all Everest products made from September 2002; BXXX(X)-0209-0001 to BXXX(X)-0506-XXXX.

Mode	Symbol on LED	Factory Preset		Range		Brief Description
		Ref	Fzr	Ref	Fzr	
Temp. Mark	C-F	F	F	N/A	N/A	Celsius or Fahrenheit
Temp. Range - High	H-1	54F	54F	-22F to 86F	-22F to 86F	Highest temperature range the unit can go up to when setting the desired temperature.
Temp. Range - Low	L-1	33F	-15F	-22F to 86F	-22F to 86F	Lowest temperature range the unit can go down to when setting the desired temperature.
Temp. Differential	F-1	03F	02F	2 to 6	2 to 6	Differential temperature when compressor stops and restarts.
Calibration	S-1	00	00	-20F to 20F	-20F to 20F	Calibration of temperature sensing bulb.
Defrost Cycle	S-3	06	06	01 to 24	01 to 24	Interval time(hour) of defrost operation.
Defrost Time	S-4	20 Min	20 Min	01 to 60	01 to 60	Operation time(minute) of defrost.

[Table 5-1: PCB Control Modes]

**a. Temp Mark "C-F"**

The PCB control system is designed for Celsius and Fahrenheit. Factory preset is "Fahrenheit".

**b. Temp. Range - High "H-1"**

The highest temperature setting range the unit can go up to. The highest temperature can be adjusted from -22F to 86F. Factory preset is 54F for both the refrigerators and freezers.

**c. Temp. Range - Low "L-1"**

The lowest temperature setting range the unit can go down to. The lowest temperature can be adjusted from -22F to 86F. Factory preset is 33F for refrigerators and -15F for freezers.

**d. Differential Temp. "F-1"**

A differential temperature can be set for compressor operations. For example, the refrigerator is preset at 35F. The compressor stops when the cabinet temperature reaches 32F and restarts at 38F (3F differential).

**e. Calibration "S-1"**

The cabinet sensing bulb can be calibrated if it reads the wrong temperature. For example, if the actual cabinet temperature is 30F, but the LED displays 35F, you have to set at "-5".

**f. Defrost Cycle "S-3"**

Defrost cycles can be adjusted depending on the types of food in the cabinet and customer's use. It is set by interval time; from every 1 to 24 hrs. The factory preset is 6 hrs intervals for both refrigerators and freezers. The clock starts from the time the unit is plugged in.

**g. Defrost Time "S-4"**

The defrost operation time can be adjusted from 1 to 20 minutes. Factory preset is 20 minutes. If the sensor reads 61F within 20 minutes then defrost is automatically terminated.

**IMPORTANT**

The defrost operation is terminated by both requirements; time (within 20 minutes) and temperature (evaporator coil temp: 61F).

**ABOUT PCB CONTROL MODES (AS-50 Type)**  
**- For DUAL temperature units**

Applicable serial numbers for these modes are on all Everest products made from September 2002; BXXX(X)-0209-0001 to BXXX(X)-0506-XXXX.

Mode	Symbol on LED		Factory Preset		Range		Brief Description
	Ref	Fzr	Ref	Fzr	Ref	Fzr	
Temp. Mark	C-F	C-F	F	F	N/A	N/A	Celsius or Fahrenheit
Temp. Range - High	H-1	H-2	54F	54F	-22F to 86F	-22F to 86F	Highest temperature range the unit can go up to when setting the desired temperature.
Temp. Range - Low	L-1	L-2	33F	-15F	-22F to 86F	-22F to 86F	Lowest temperature range the unit can go down to when setting the desired temperature.
Temp. Differential	F-1	F-2	03F	02F	2 to 6	2 to 6	Differential temperature when compressor stops and restarts.
Calibration	S-1	S-2	00	00	-20F to 20F	-20F to 20F	Calibration of temperature sensing bulb.
Defrost Cycle	S-3	S-5	06	06	01 to 24	01 to 24	Interval time(hour) of defrost operation.
Defrost Time	S-4	S-6	20 Min	20 Min	01 to 60	01 to 60	Operation time(minute) of defrost.

[Table 5-1: PCB Control Modes]

**a. Temp Mark "C-F"**

The PCB control system is designed for Celsius and Fahrenheit. Factory preset is "Fahrenheit".

**b. Temp. Range - High "H-1" or "H-2"**

The highest temperature setting range the unit can go up to. The highest temperature can be adjusted from -22F to 86F. Factory preset is 54F for both the refrigerators and freezers.

**c. Temp. Range - Low "L-1" or "L-2"**

The lowest temperature setting range the unit can go down to. The lowest temperature can be adjusted from -22F to 86F. Factory preset is 33F for refrigerators and -15F for freezers.

**d. Differential Temp. "F-1" or "F-2"**

A differential temperature can be set for compressor operations. For example, the refrigerator is preset at 35F. The compressor stops when the cabinet temperature reaches 32F and restarts at 38F (3F differential).

**e. Calibration "S-1" or "S-2"**

The cabinet sensing bulb can be calibrated if it reads the wrong temperature. For example, if the actual cabinet temperature is 30F, but the LED displays 35F, you have to set at "-5".

**f. Defrost Cycle "S-3" or "S-5"**

Defrost cycles can be adjusted depending on the types of food in the cabinet and customer's use. It is set by interval time; from every 1 to 24 hrs. The factory preset is 6 hrs intervals for both refrigerators and freezers. The clock starts from the time the unit is plugged in.

**g. Defrost Time "S-4" or "S-6"**

The defrost operation time can be adjusted from 1 to 20 minutes. Factory preset is 20 minutes. If the sensor reads 61F within 20 minutes then defrost is automatically terminated.

**IMPORTANT**

The defrost operation is terminated by both requirements; time (within 20 minutes) and temperature (evaporator coil temp: 61F).

*MODE CHANGES FOR SINGLE TEMP UNITS*  
(AS-50 Type)

<b>IMPORTANT</b>
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Please read and completely understand page 5-3-1 before adjusting any modes.
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Open the top grill to reach the control box, and make sure the power is "ON".

**a. Temperature Range – High**

- Step 1 Press and hold the "TEMP SET" button for a few seconds until "C-F" is displayed on the LED read-out. Now you are in the Temp Mark Mode.
- Step 2 Push the "TEMP SET" button one more time. You will see "H-1" on the LED. You can check the factory preset for this mode by pushing the "HIGH" or "LOW" button once.
- Step 3 Reset the new highest temperature in the range by pushing the "HIGH" or "LOW" button. The LED will display the cabinet temperature after a few seconds. This means that the reset has been successfully completed.

**b. Temperature Range – Low**

- Step 1 Press and hold the "TEMP SET" button for a few seconds until "C-F" is displayed on the LED read-out. Now you are in the Temp Mark Mode.
- Step 2 Push the "TEMP SET" button twice. You will see "L-1" on the LED. You can check the factory preset for this mode by pushing the "HIGH" or "LOW" button once.
- Step 3 Reset the new lowest temp in the range by pushing the "HIGH" or "LOW" button. The LED will display the cabinet temperature after a few seconds. This means that the reset has been successfully completed.

**c. Differential Temp**

- Step 1 Press and hold the "TEMP SET" button for a few seconds until "C-F" is displayed

on the LED read-out. Now you are in the Temp Mark Mode.

- Step 2 Push the "TEMP SET" button three times. You will see "F-1" on the LED. You can check the factory preset for this mode by pushing the by "HIGH" or "LOW" button.

- Step 3 Reset the new differential temperature by pushing the "HIGH" or "LOW" button. The LED will display the cabinet temperature after a few seconds. This means that the reset has been successfully completed.

**d. Calibration**

- Step 1 Press and hold the "TEMP SET" button for a few seconds until "C-F" is displayed on the LED read-out. Now you are in the Temp Mark Mode.
- Step 2 Push the "TEMP SET" button four times. You will see "S-1" on the LED. You can check the factory preset for this mode by pushing the "HIGH" or "LOW" button once.
- Step 3 Reset calibration by pushing the "HIGH" or "LOW" button.  
**[Example]**  
Actual cabinet temp is 30F, but the LED displays 35F, so you will have to set at "-5" in this mode.

The LED will display the cabinet temperature after a few seconds. This means that the reset has been successfully completed.

**e. Defrost Cycle**

- Step 1 Press and hold the "TEMP SET" button for a few seconds until "C-F" is displayed on the LED read-out. Now you are in the Temp Mark Mode.
- Step 2 Push the "TEMP SET" button five times. You will see "S-3" on the LED. You can check the factory preset for this mode by pushing the "HIGH" or "LOW" button once.

Step 3 Reset the new number of hour intervals for the defrost cycle by pushing the "HIGH" or "LOW" button. The LED will display the cabinet temperature after a few seconds. This means that the reset has been successfully completed.

**IMPORTANT**

The number you see on the LED is interval hours. For example, "6" means that defrost operates every 6 hours; 4 times a day.

**f. Defrost Time**

Step 1 Press and hold the "TEMP SET" button for a few seconds until "C-F" is displayed on the LED read-out. Now you are in the Temp Mark Mode.

Step 2 Push the "TEMP SET" button six times. You will see "S-1" on the LED. You can check the factory preset for this mode by pushing the "HIGH" or "LOW" button once.

Step 3 Reset the new defrost time(minute) by pushing the "HIGH" or "LOW" button. The LED will display cabinet temperature after a few seconds. (This means that the reset has been successfully completed.

# of pushes on "TEMP SET" Button	LED
1	H-1
2	L-1
3	F-1
4	S-1
5	S-3
6	S-4

[Table 5-5-1: LED Symbols for REFRIGERATOR]

# of pushes on "TEMP SET" Button	LED
1	H-1
2	L-1
3	F-1
4	S-1
5	S-3
6	S-4

[Table 5-5-2: LED Symbols for FREEZER]

**MODE CHANGES FOR DUAL TEMP UNITS (AS-50 Type)**

**IMPORTANT**

Please read and completely understand page 5-3-2 before adjusting any modes.

1. Open the top grill to reach the control box, and make sure the power is "ON".
2. Press and hold the "TEMP SET" button for a few seconds until "C-F" is displayed on the both LEDs. Now you are in the Temp Mark Mode.
3. Then, keep pushing the same "TEMP SET" button. The LEDs will display following symbols consecutively.

# of push on "TEMP SET" Button	Left LED (Ref Side)	Right LED (Fzr Side)
1	H-1	Number
2	L-1	Number
3	Number	H-2
4	NUmber	L-2
5	F-1	Number
6	Number	F-2
7	S-1	Number
8	Number	S-2
9	S-3	Number
10	S-4	Number
11	Number	S-5
12	Number	S-6

**Note:**

"Number" is the current temperature of cabinet.

[Table 5-5-3: LED Symbols for Dual]

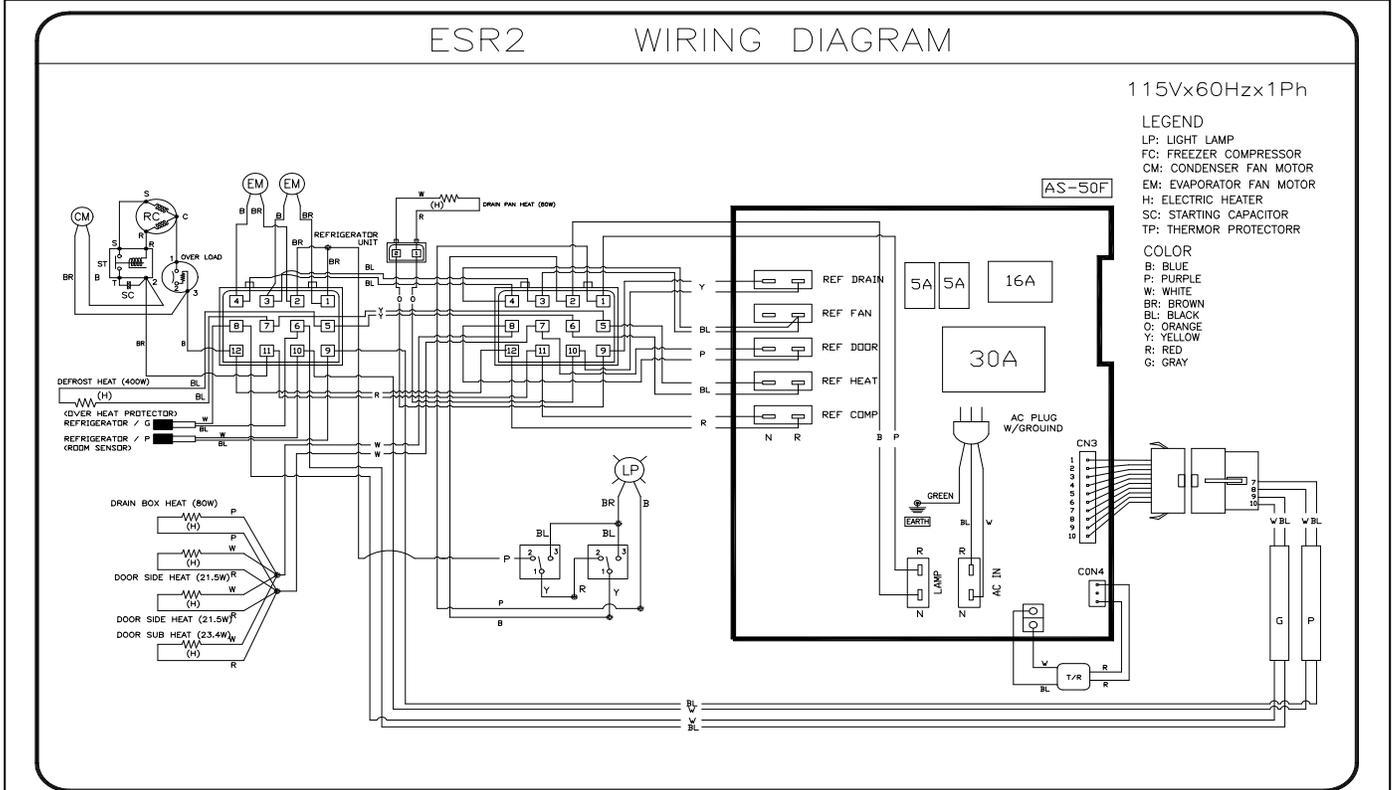
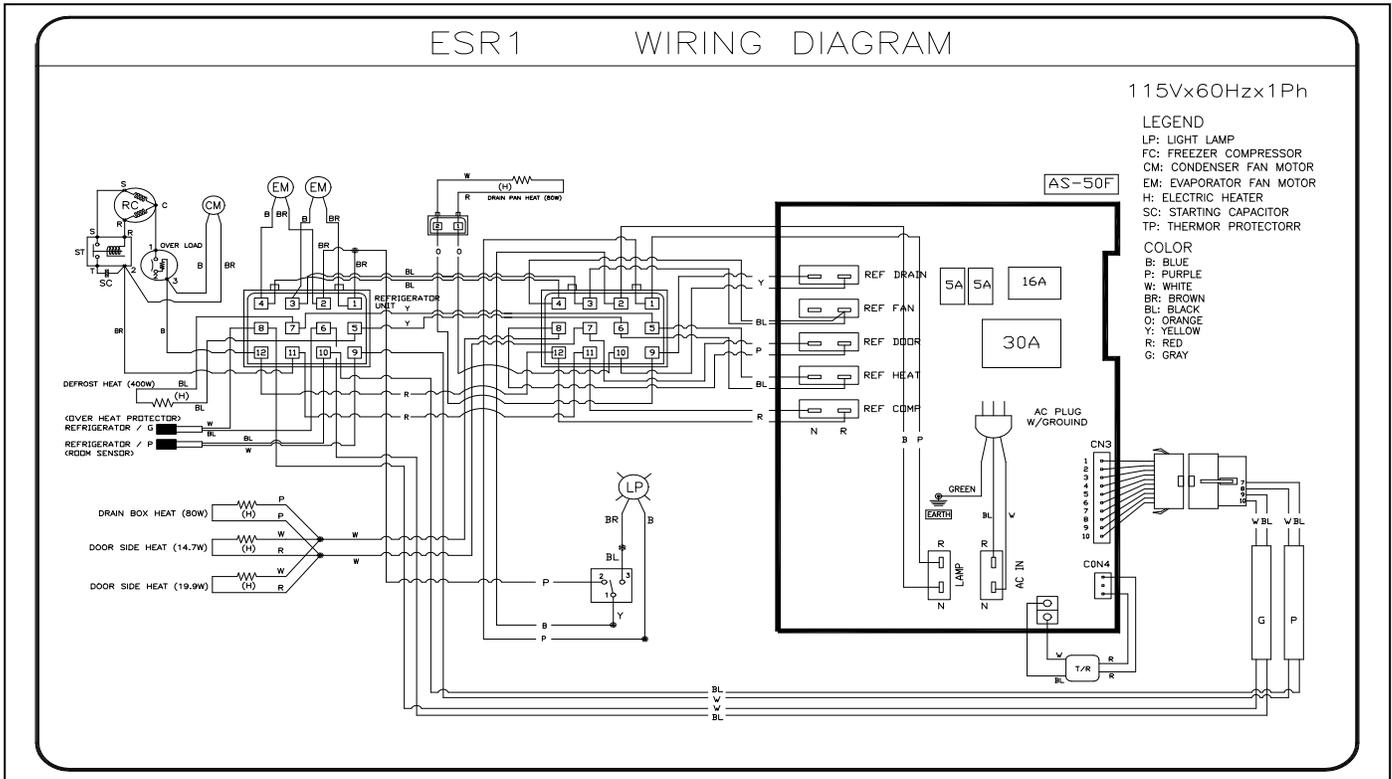
**Note:**

The location of LED display of ref & fzr is reverse for undercounter dual temps; model ETRF2, ETRF3

4. When you see a symbol on the LED, you can check the factory preset for the mode by pushing the "HIGH" or "LOW" button once.
5. Reset the new setting by pushing the "HIGH" or "LOW" button.

The LED will display the cabinet temperature after a few seconds. This means that the reset for this mode has been successfully completed.

CONTROL CIRCUIT BOARD WIRING DIAGRAM (AS-50 TYPE)



CONTROL CIRCUIT BOARD WIRING DIAGRAM (AS-50 TYPE) -CONTINUED

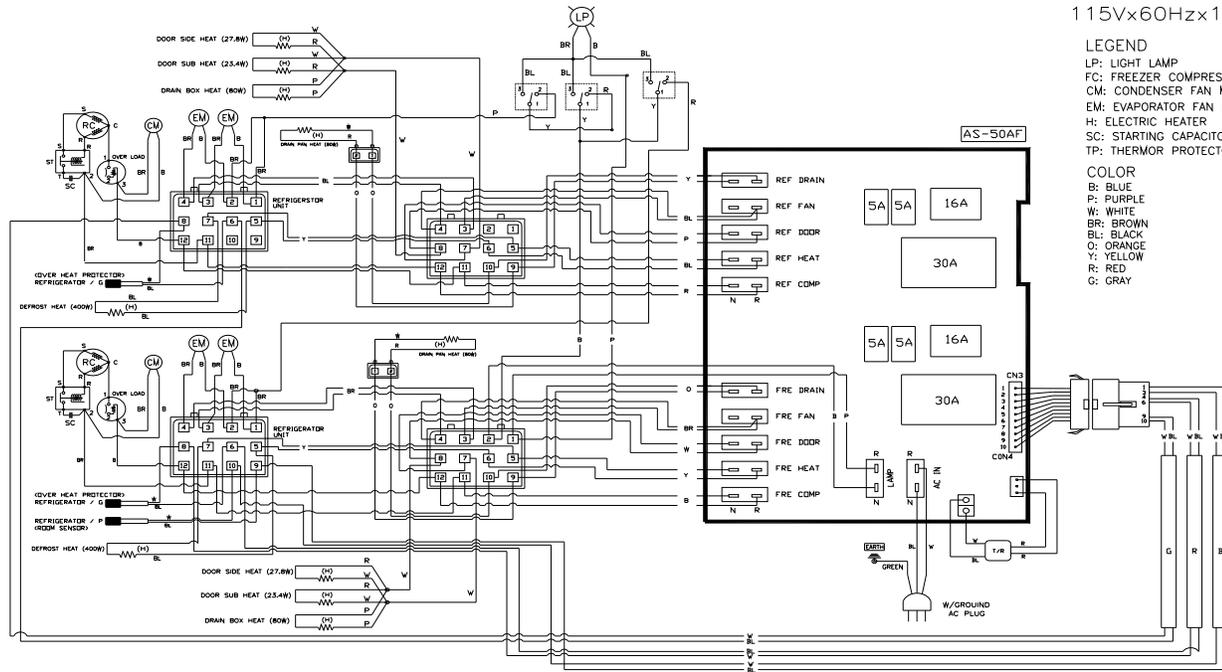
ESR3 WIRING DIAGRAM

115Vx60Hzx1Ph

- LEGEND  
 LP: LIGHT LAMP  
 FC: FREEZER COMPRESSOR  
 CM: CONDENSER FAN MOTOR  
 EM: EVAPORATOR FAN MOTOR  
 H: ELECTRIC HEATER  
 SC: STARTING CAPACITOR  
 TP: THERMOR PROTECTOR

COLOR

- B: BLUE  
 P: PURPLE  
 W: WHITE  
 BR: BROWN  
 BL: BLACK  
 O: ORANGE  
 Y: YELLOW  
 R: RED  
 G: GRAY



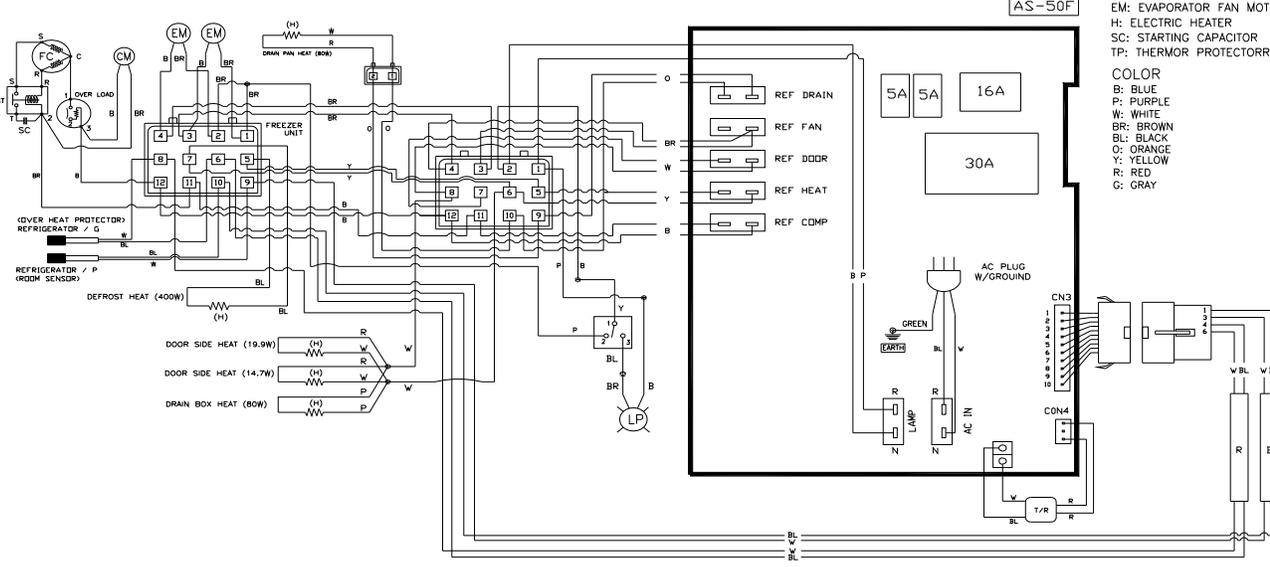
ESF1 WIRING DIAGRAM

115Vx60Hzx1Ph

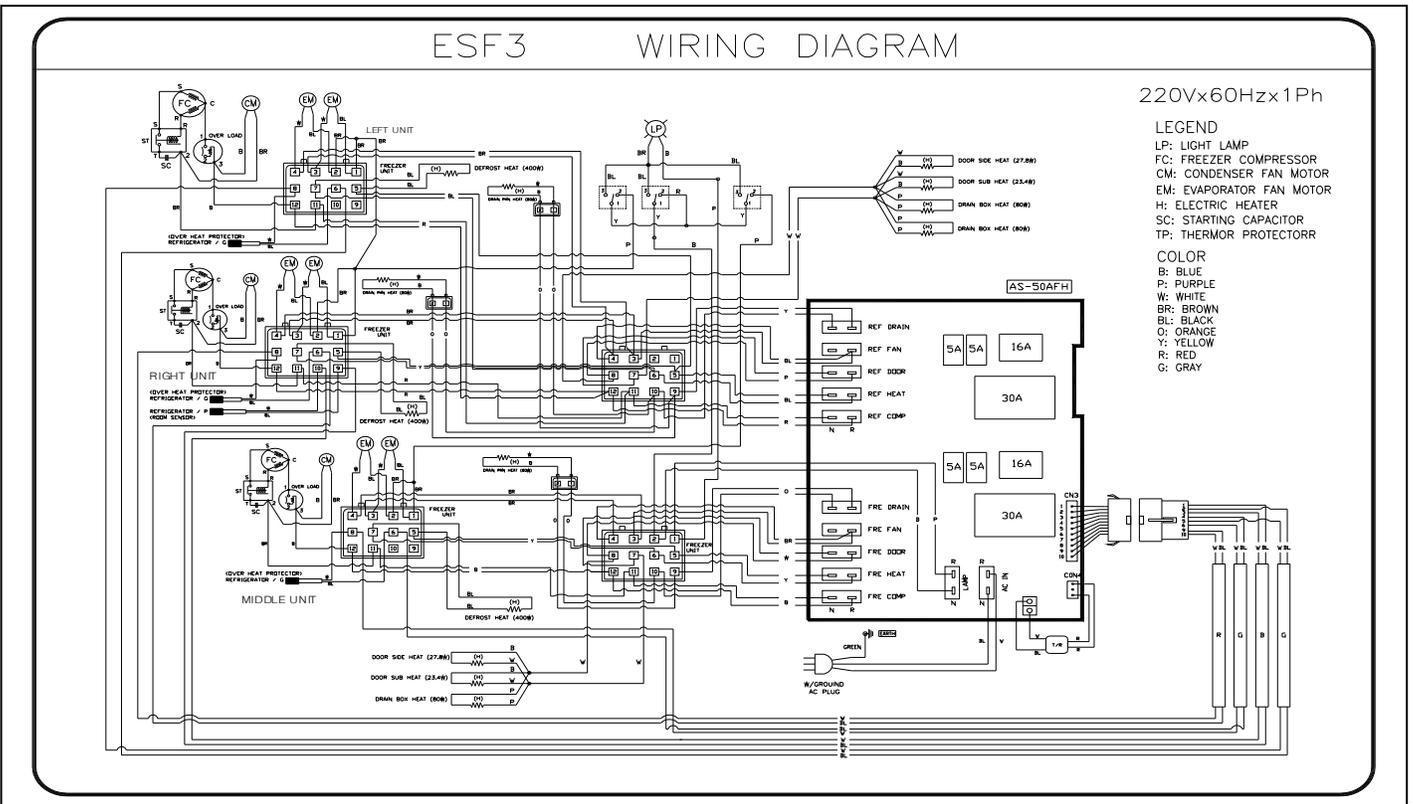
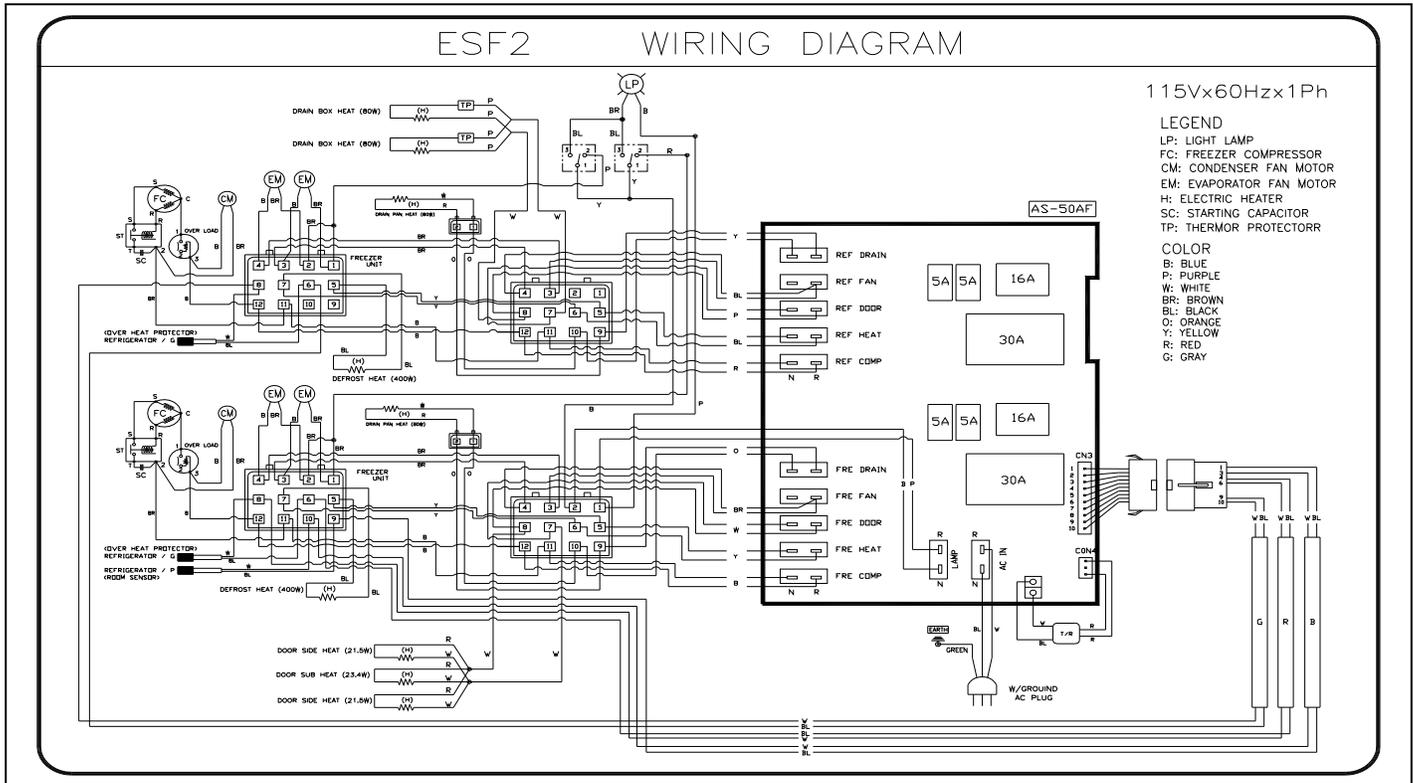
- LEGEND  
 LP: LIGHT LAMP  
 FC: FREEZER COMPRESSOR  
 CM: CONDENSER FAN MOTOR  
 EM: EVAPORATOR FAN MOTOR  
 H: ELECTRIC HEATER  
 SC: STARTING CAPACITOR  
 TP: THERMOR PROTECTOR

COLOR

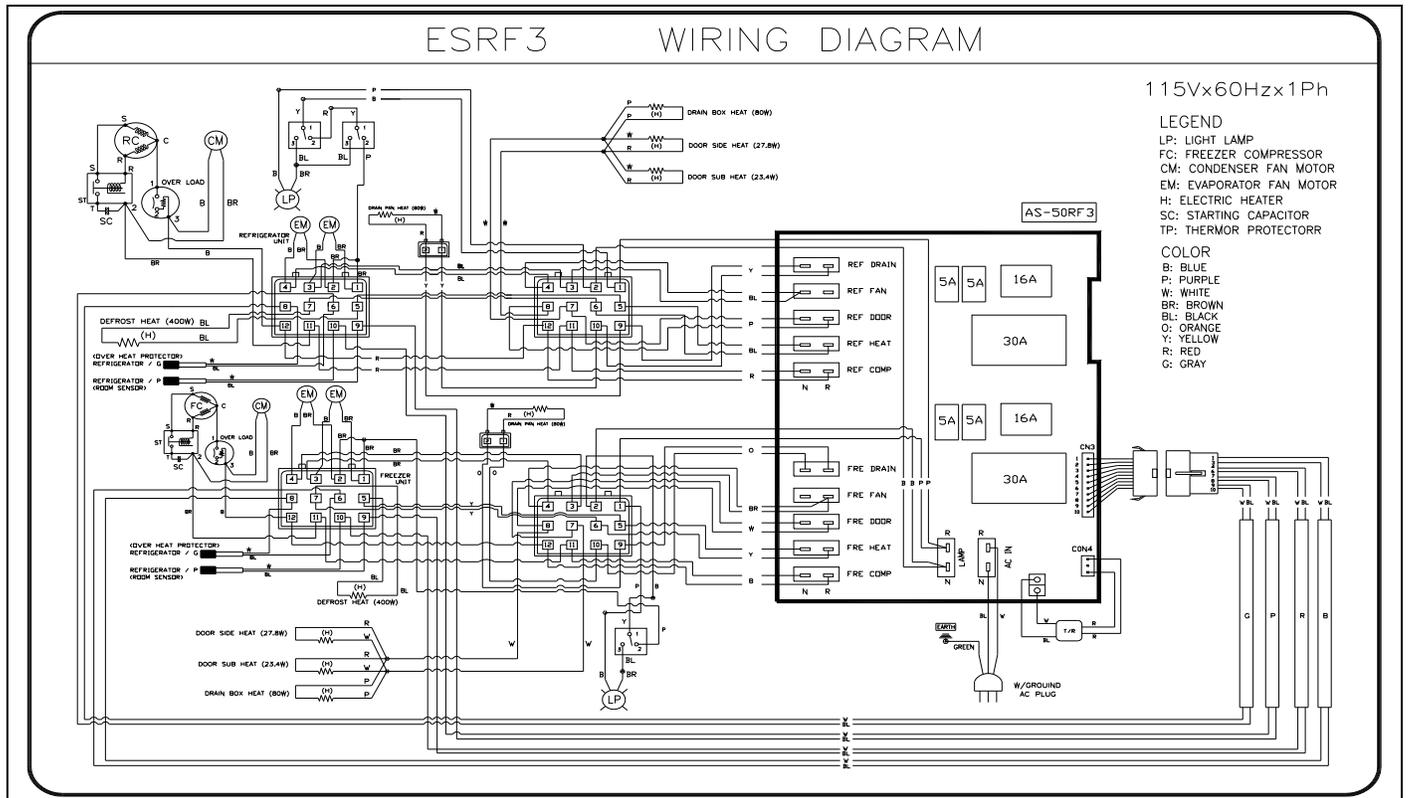
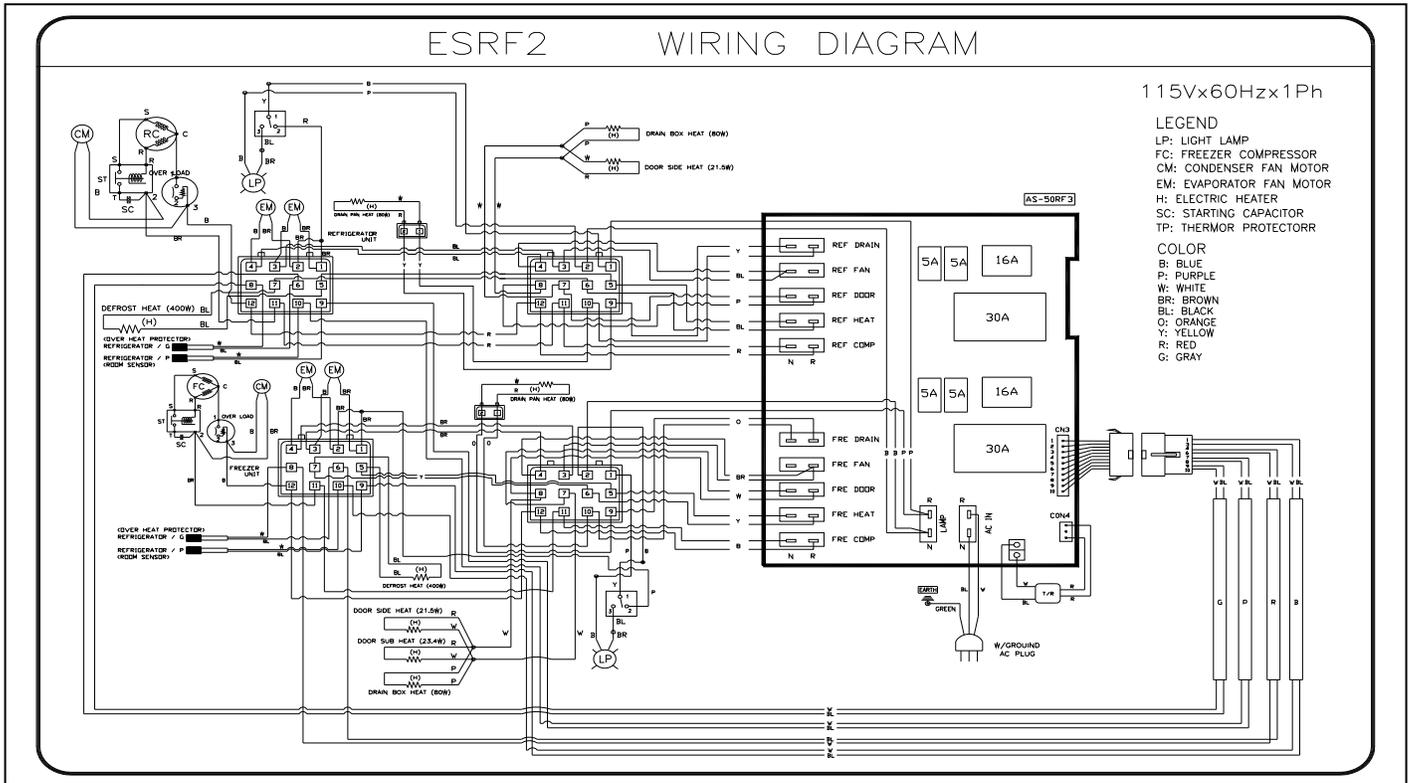
- B: BLUE  
 P: PURPLE  
 W: WHITE  
 BR: BROWN  
 BL: BLACK  
 O: ORANGE  
 Y: YELLOW  
 R: RED  
 G: GRAY



CONTROL CIRCUIT BOARD WIRING DIAGRAM (AS-50 TYPE) - CONTINUED



CONTROL CIRCUIT BOARD WIRING DIAGRAM (AS-50 TYPE) - CONTINUED



**ABOUT PCB CONTROL MODES (NEW BSR-450 Type)**  
 – For *SINGLE* temperature units

Applicable serial numbers for these modes are on all Everest products made from July 2005 BXXX(X)-0507-0001 to present.

Mode	Symbol on LED	Factory Preset		Range		Brief Description
		Ref	Fzr	Ref	Fzr	
Temp Range	H1	r	F	N/A	N/A	Temperature range for refrigerator or freezer
Temp. Differential	F1	03F	02F	2 to 6	2 to 6	Differential temperature when compressor stops and restarts.
Calibration	S1	00	00	-20F to 20F	-20F to 20F	Calibration of temperature sensing bulb.
Defrost Cycle	S3	06	06	01 to 24	01 to 24	Interval time(hour) of defrost operation.

[Table 5-1: PCB Control Modes]

**a. Temp Range "H1"**

Cabinet temperature setting range for refrigerator or freezer. Temp range for refrigerator is from 33F to 54F; setting symbol is small letter "r" and freezer is from -15F to 54F; setting symbol is capital letter "F".

**b. Differential Temp. "F1"**

A differential temperature can be set for compressor operations. For example, the refrigerator is preset at 35F. The compressor stops when the cabinet temperature reaches 32F and restarts at 38F (3F differential).

**c. Calibration "S1"**

The cabinet sensing bulb can be calibrated if it reads a wrong temperature. For example, if the actual cabinet temperature is 30F, but the LED displays 35F, you have to set at "-5".

**d. Defrost Cycle "S3"**

Defrost cycles can be adjusted depending on the types of food in the cabinet and customer's use. It is set by interval time; from every 1 to 24 hrs. The factory preset is 6 hrs intervals for both refrigerators and freezers. The clock starts from the time the unit is plugged in.

**IMPORTANT**

The defrost operation is terminated by both requirements; time (within 20 minutes) and temperature (evaporator coil temp: 50F).

**[How to check evaporator temperature]**

Press and hold "HIGH" button for 5 to 10 seconds until a number flashes on the display. This flashing number is current evaporator temperature. A few seconds later it will go back to the cabinet temperature.

**[How to get into the modes]**

Press and hold "TEMP SET" button for 5 to 10 seconds until either "H1" or "H2" shows on the display. Pressing "HIGH" button will show the setting of the mode on the display. Press "HIGH" or "LOW" button to change the setting. And pressing "TEMP SET" will go to the next mode.

**ABOUT PCB CONTROL MODES (NEW BSR-450 Type)**  
 – For Dual temperature units

Applicable serial numbers for these modes are on all Everest products made from July 2005 BXXX(X)-0507-0001 to present.

Mode	Symbol on LED		Factory Preset		Range		Brief Description
	REF	FZR	Ref	Fzr	Ref	Fzr	
Temp Range	H1	H2	r	F	N/A	N/A	Temperature range for refrigerator or freezer
Temp. Differential	F1	F2	03F	02F	2 to 6	2 to 6	Differential temperature when compressor stops and restarts.
Calibration	S1	S2	00	00	-20F to 20F	-20F to 20F	Calibration of temperature sensing bulb.
Defrost Cycle	S3	S5	06	06	01 to 24	01 to 24	Interval time(hour) of defrost operation.

[Table 5-1: PCB Control Modes]

**a. Temp Range "H1" or "H2"**

Cabinet temperature setting range for refrigerator or freezer. Temp range for refrigerator is from 33F to 54F; setting symbol is small letter "r" and freezer is from -15F to 54F; setting symbol is capital letter "F".

**b. Differential Temp. "F1" or "F2"**

A differential temperature can be set for compressor operations. For example, the refrigerator is preset at 35F. The compressor stops when the cabinet temperature reaches 32F and restarts at 38F (3F differential).

**c. Calibration "S1" or "S2"**

The cabinet sensing bulb can be calibrated if it reads a wrong temperature. For example, if the actual cabinet temperature is 30F, but the LED displays 35F, you have to set at "-5".

**d. Defrost Cycle "S3" or "S5"**

Defrost cycles can be adjusted depending on the types of food in the cabinet and customer's use. It is set by interval time; from every 1 to 24 hrs. The factory preset is 6 hrs intervals for both refrigerators and freezers. The clock starts from the time the unit is plugged in.

**IMPORTANT**

The defrost operation is terminated by both requirements; time (within 20 minutes) and temperature (evaporator coil temp: 50F).

**[How to check evaporator temperature]**

Press and hold "HIGH" button for 5 to 10 seconds until a number flashes on the display. This flashing number is current evaporator temperature. A few seconds later it will go back to the cabinet temperature.

**[How to get into the modes]**

Press and hold "TEMP SET" button for 5 to 10 seconds until either "H1" or "H2" shows on the display. Pressing "HIGH" button will show the setting of the mode on the display. Press "HIGH" or "LOW" button to change the setting. And pressing "TEMP SET" will go to the next mode.

**MODE CHANGES FOR SINGLE TEMP UNITS**  
(NEW BSR-450 Type)

**IMPORTANT**

Please read and understand about the modes in the page 5-5-1 before making any changes.

Open the top grill to reach the control box, and make sure power of the unit is "ON".

**a. Temperature Range – "H1"**

Step 1 Press and hold the "TEMP SET" button for a few seconds until "H1" is displayed on the LED read-out. Now you are in the Temp Range Mode.

Step 2 Press "HIGH" button to see the factory setting. Display should show "r" for refrigerator setting and "F" for freezer setting.

You can change the setting by pressing "HIGH" or "LOW" button.

The LED will display the cabinet temperature after a few seconds. This means that the reset has been successfully completed.

**b. Differential Temp – "F1"**

Step 1 Press and hold the "TEMP SET" button for a few seconds until "H1" is displayed on the LED read-out. Now you are in the Temp Range Mode.

Step 2 Press the "TEMP SET" button one more time. You will see "F1" on the LED. Now you are in the Differential Temp Mode. You can check the factory preset for this mode by pressing the "HIGH" button.

Step 3 Reset a new differential temperature by pressing the "HIGH" or "LOW" button. The LED will display the cabinet temperature after a few seconds. This means that the reset has been successfully completed.

**c. Calibration – "S1"**

Step 1 Press and hold the "TEMP SET" button for

a few seconds until "H1" is displayed on the LED read-out. Now you are in the Temp Range Mode.

Step 2 Press the "TEMP SET" button twice. You will see "S1" on the LED. Now you are in the Calibration Mode. You can check the factory preset for this mode by pressing the "HIGH" button.

Step 3 Reset a new calibration by pressing the "HIGH" or "LOW" button.

**[Example]**

Actual cabinet temp is 30F, but the LED displays 35F. You have to set at "-5" to match actual cabinet temperature with LED display.

The LED will display the cabinet temperature after a few seconds. This means that the reset has been successfully completed.

**d. Defrost Cycle – "S3"**

Step 1 Press and hold the "TEMP SET" button for a few seconds until "H1" is displayed on the LED read-out. Now you are in the Temp Range Mode.

Step 2 Press the "TEMP SET" button three times. You will see "S3" on the LED. Now you are in the Defrost Cycle Mode. You can check the factory preset for this mode by pressing the "HIGH" button.

Step 3 Reset a new defrost cycle (interval hour) by pressing the "HIGH" or "LOW" button. The LED will display the cabinet temperature after a few seconds. This means that the reset has been successfully completed.

**IMPORTANT**

The number you see on the LED is interval hour. For example, "6" means that defrost operates every 6 hours; 4 times a day.

**MODE CHANGES FOR DUAL TEMP UNITS**  
(NEW BSR-450 Type)

**IMPORTANT**

Please read and understand about the modes in the page 5-5-1 before making any changes.

1. Open the top grill to reach the control box, and make sure power of the unit is "ON".
2. Press and hold the "TEMP SET" button for a few seconds until "H1" or "H2" is displayed on the LED read-out. Now you are in the Temp Range Mode.
3. Keep pressing the same "TEMP SET" button until you reach a mode that you wish to change.

# of press on "TEMP SET" Button	Left LED {Refrigerator}	Right LED (Freezer)
1 (Press & Hold)	H1	Number
2	Number	H2
3	F1	Number
4	Number	F2
5	S1	Number
6	Number	S2
7	S3	Number
8	Number	S5

[LED Symbols for Dual]

**Note:**

"Number" in the table above means a current temperature of the cabinet.

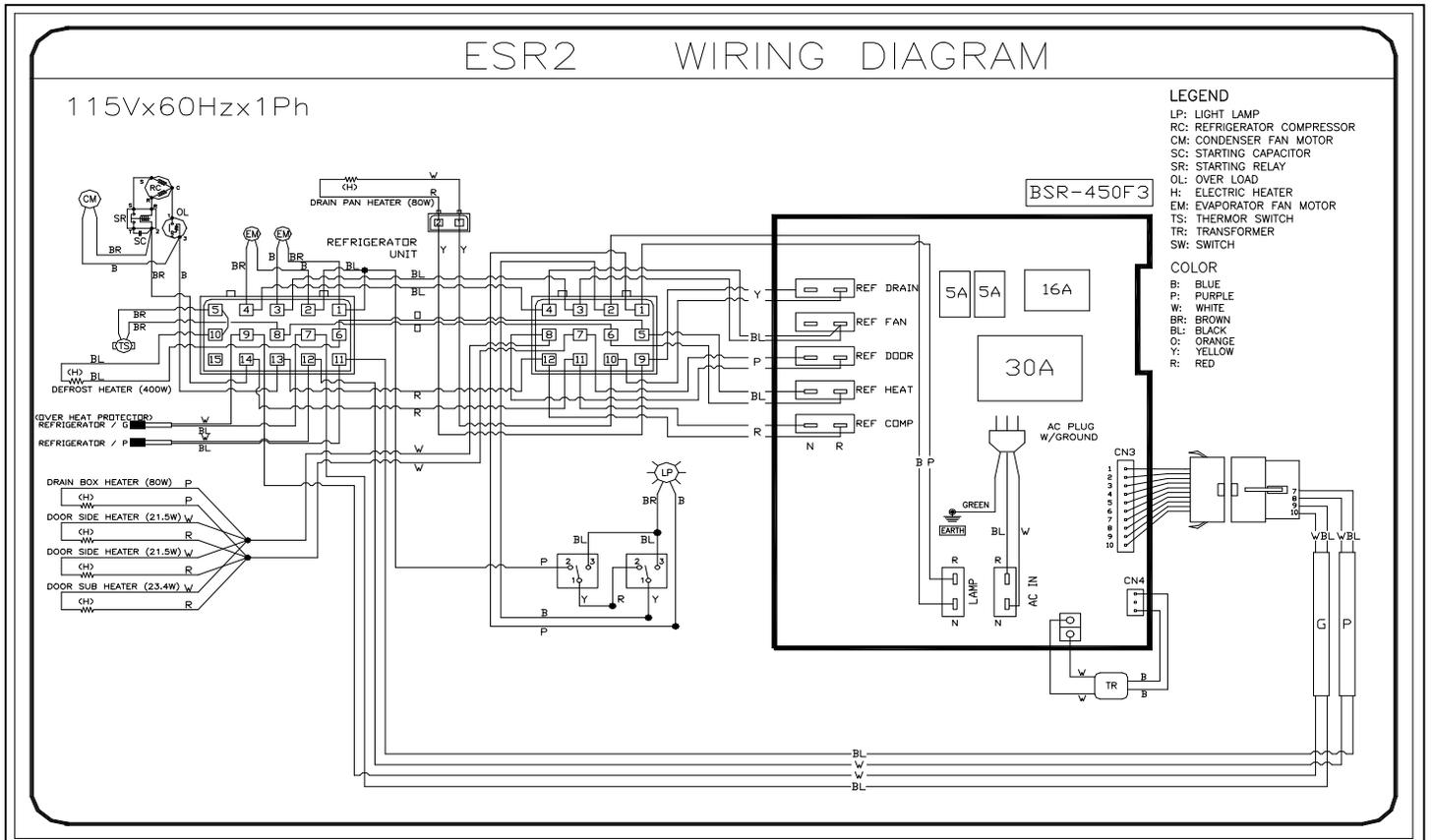
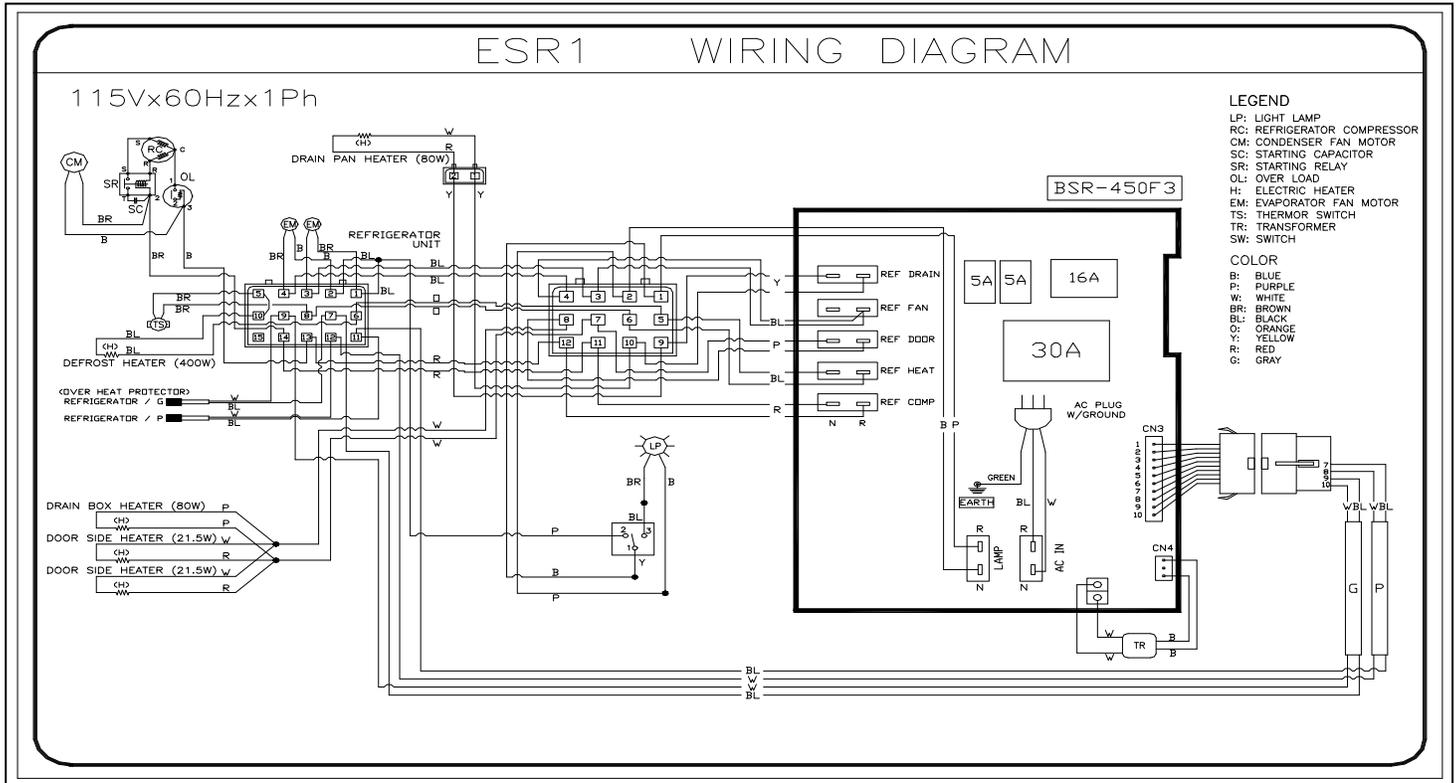
**Note:**

The location of LED display of ref & fzs is reverse for undercounter dual temps; model ETRF2 & ETRF3

4. When you see a symbol on the LED, you can check the factory preset for the mode by pressing the "HIGH" button.
5. Reset a new setting by pressing the "HIGH" or "LOW" button.

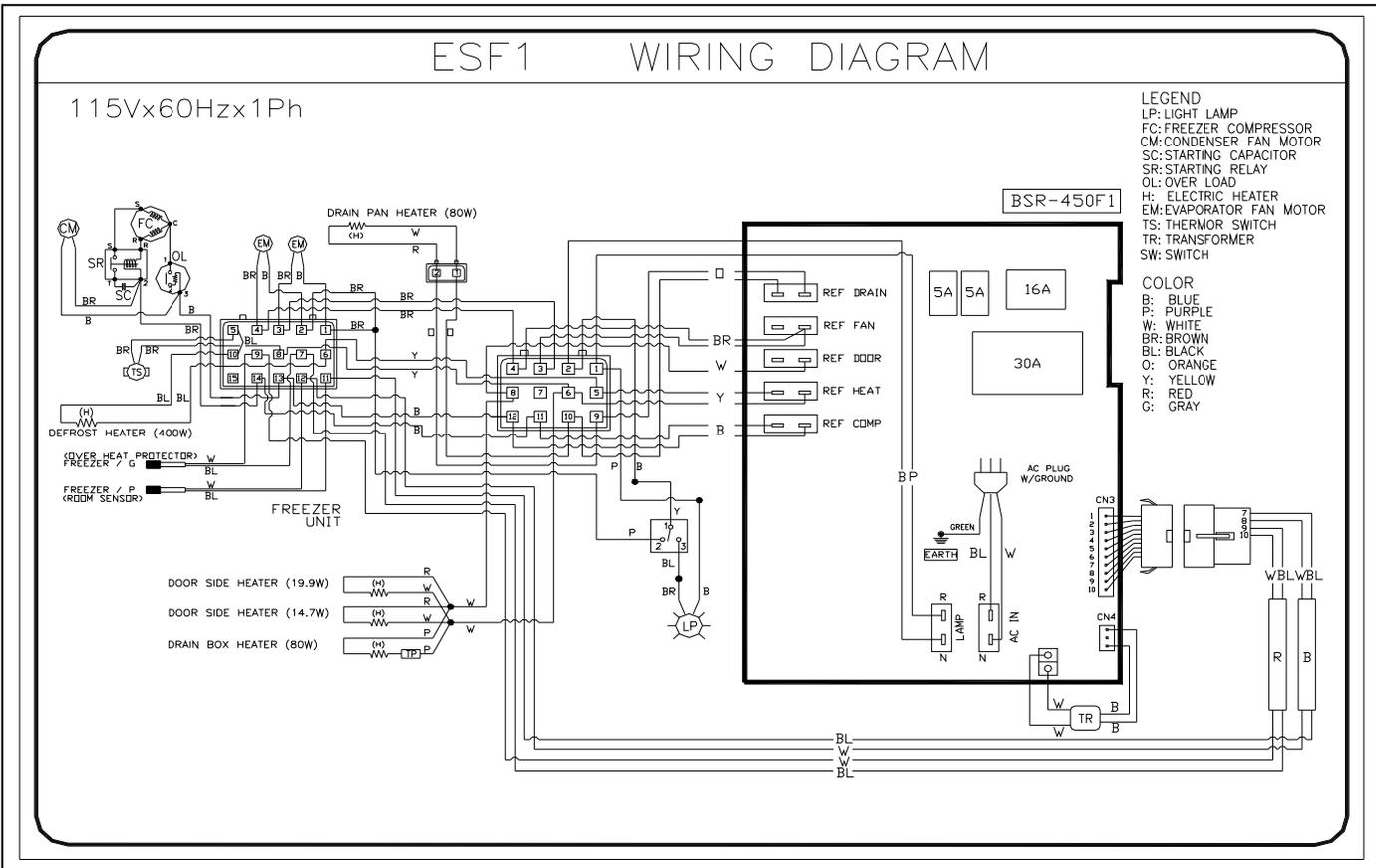
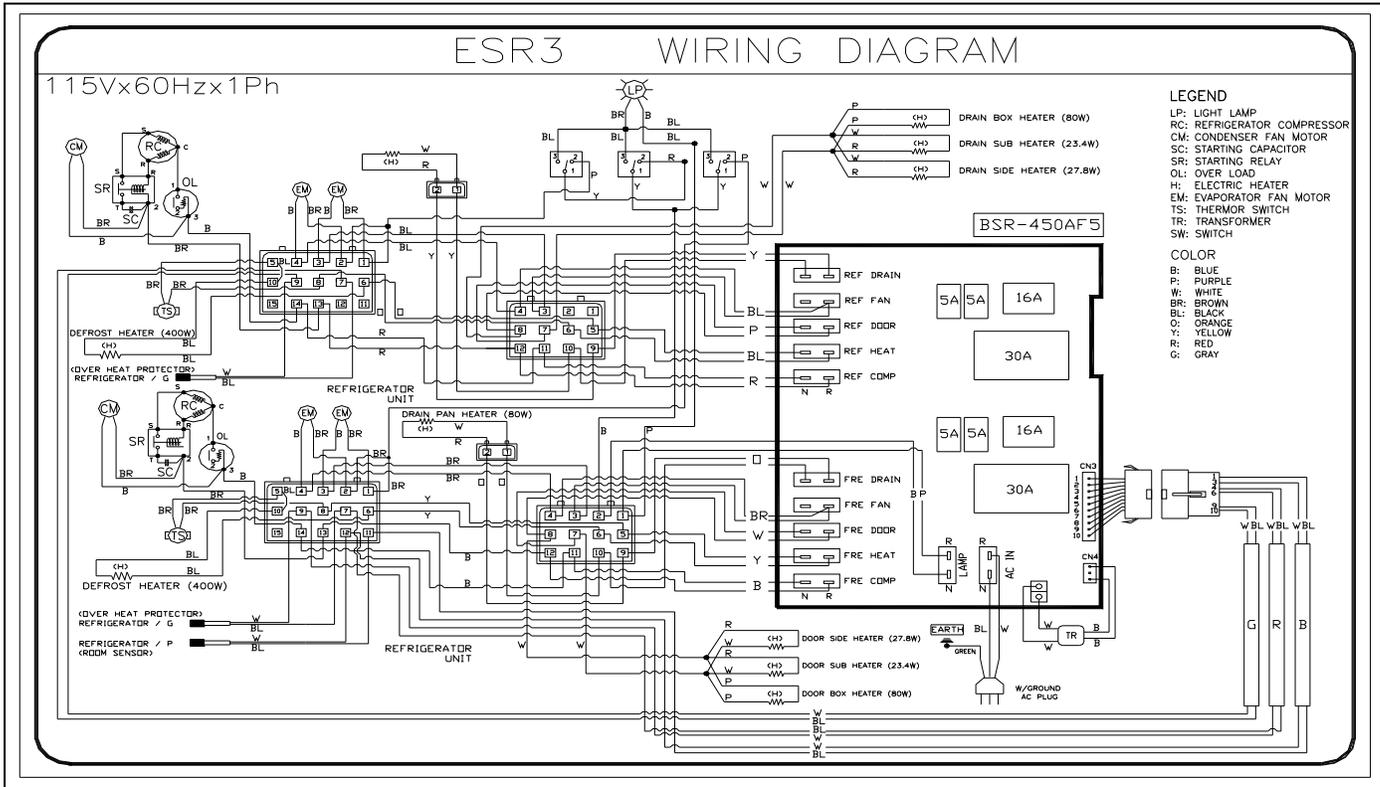
The LED will display the cabinet temperature after a few seconds. This means that the reset for this mode has been successfully completed.

CONTROL CIRCUIT BOARD WIRING DIAGRAM (New BSR-450 TYPE)



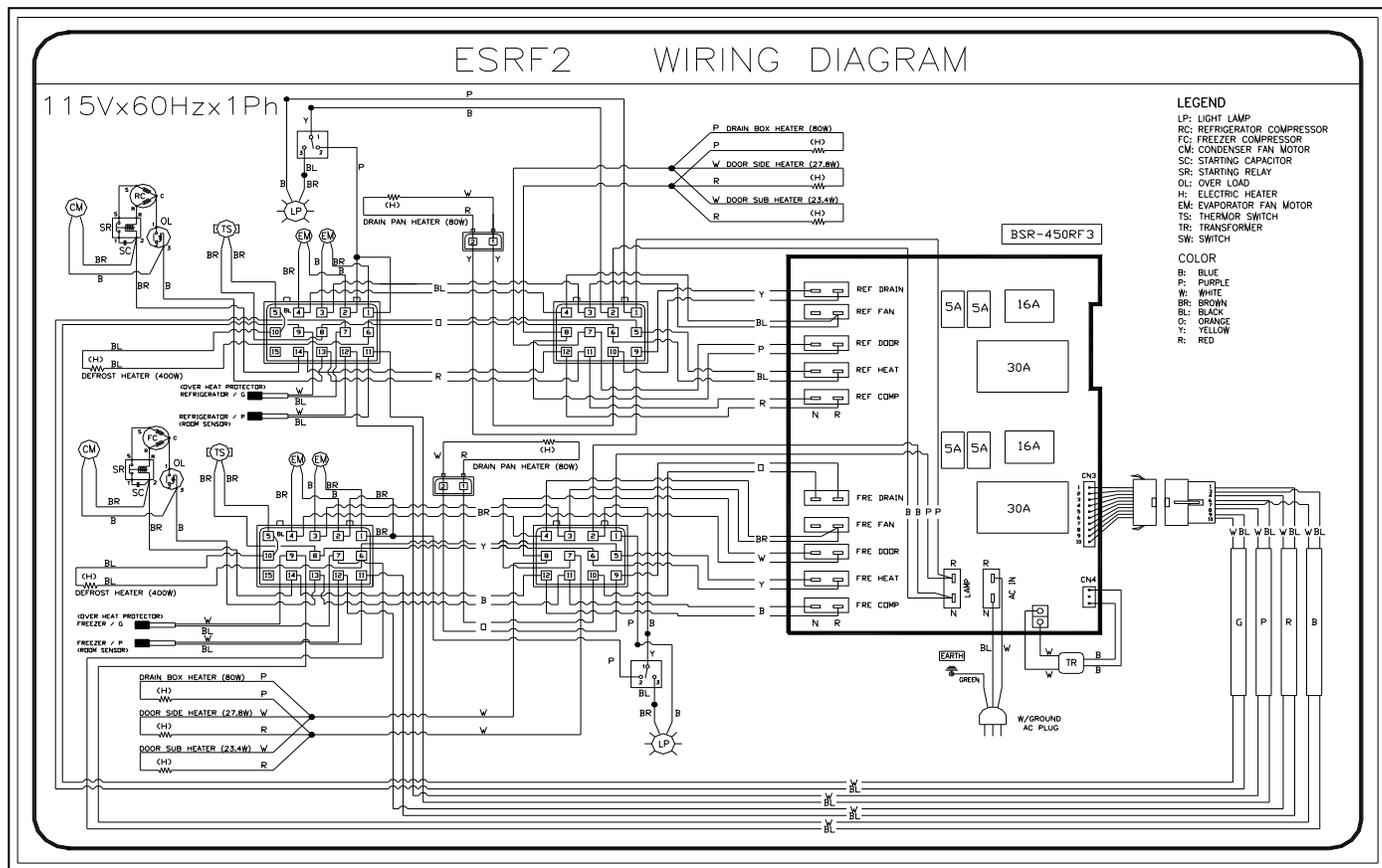
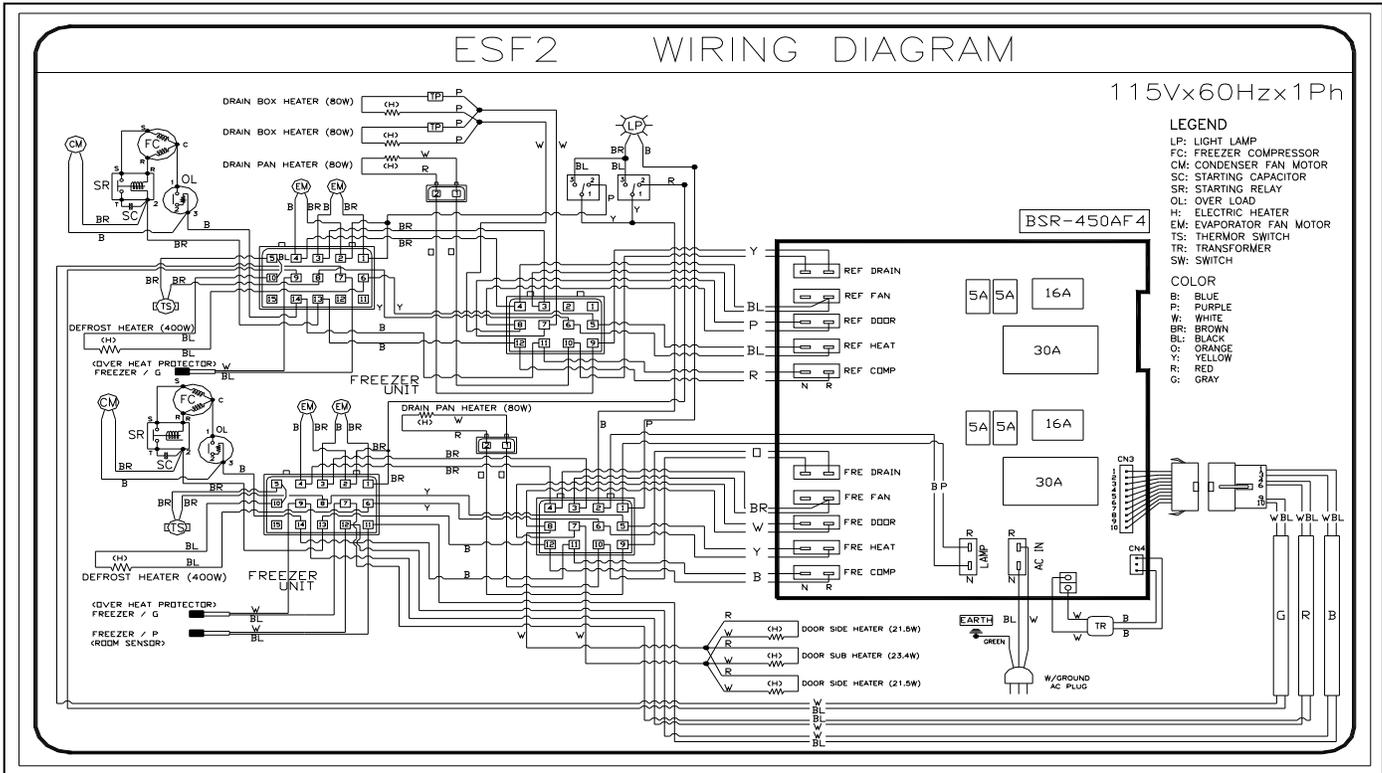
# SECTION 5

## CONTROL CIRCUIT BOARD WIRING DIAGRAM (New BSR-450 TYPE) - Continued



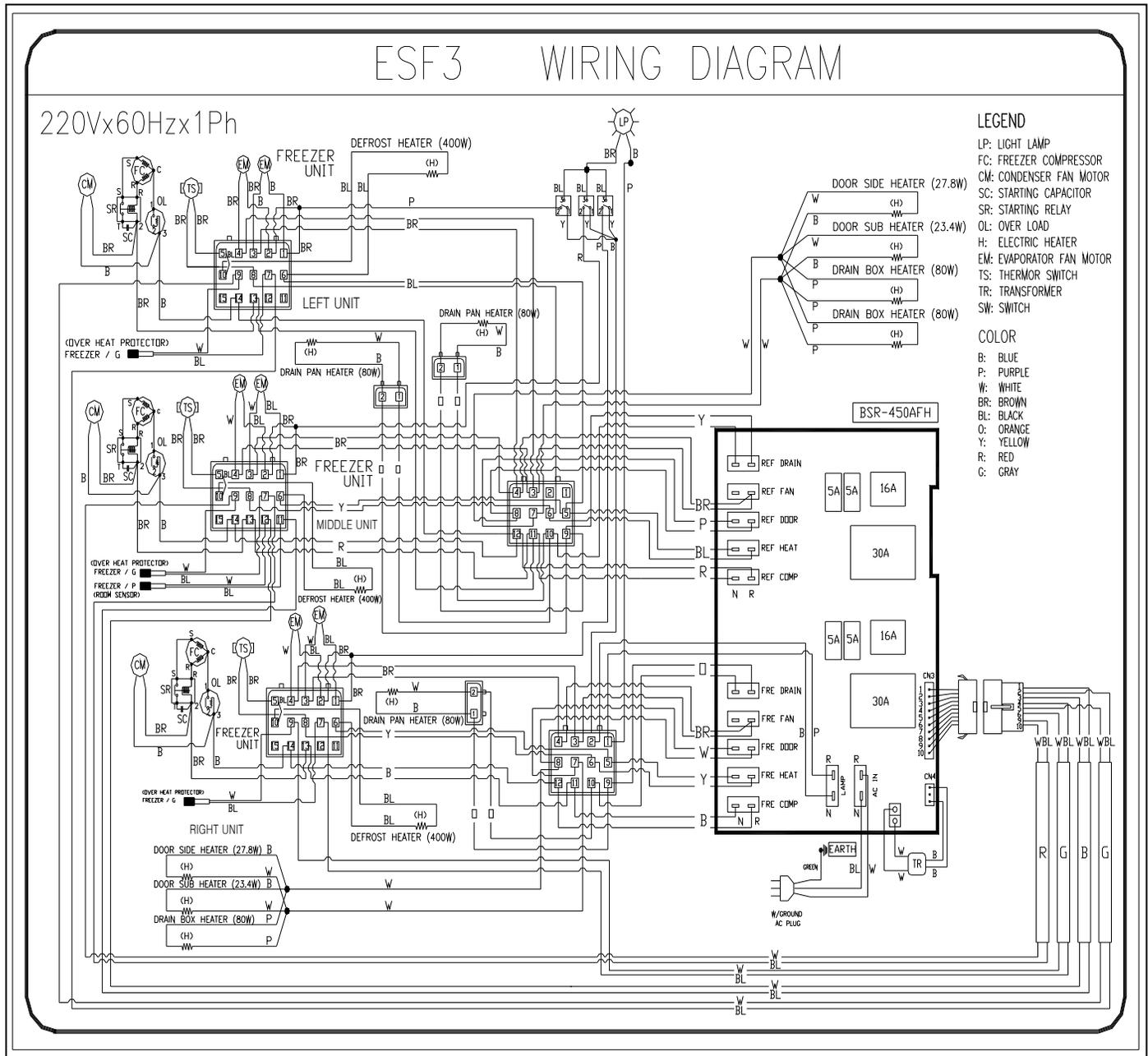
# SECTION 5

## CONTROL CIRCUIT BOARD WIRING DIAGRAM (New BSR-450 TYPE) - Continued



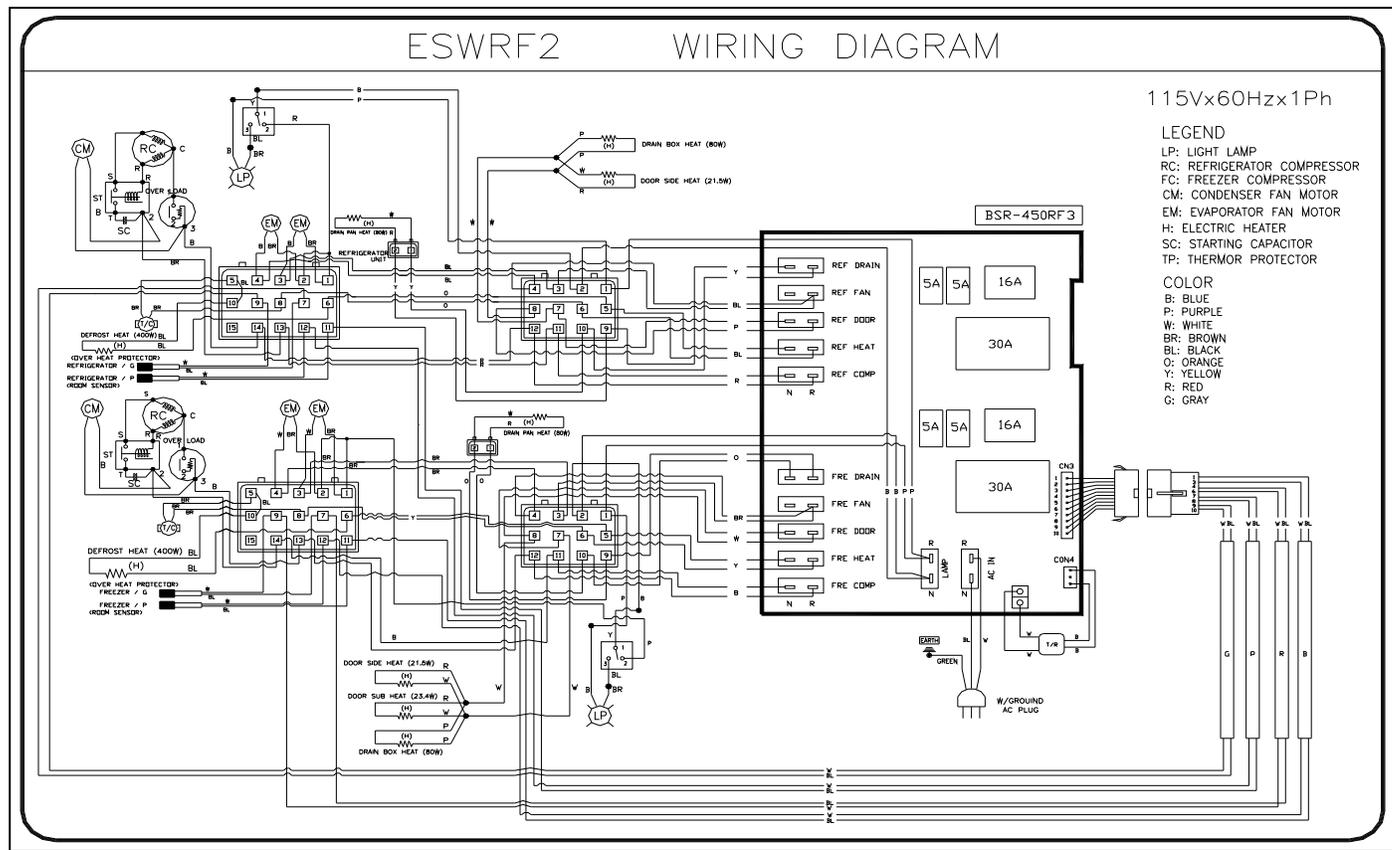
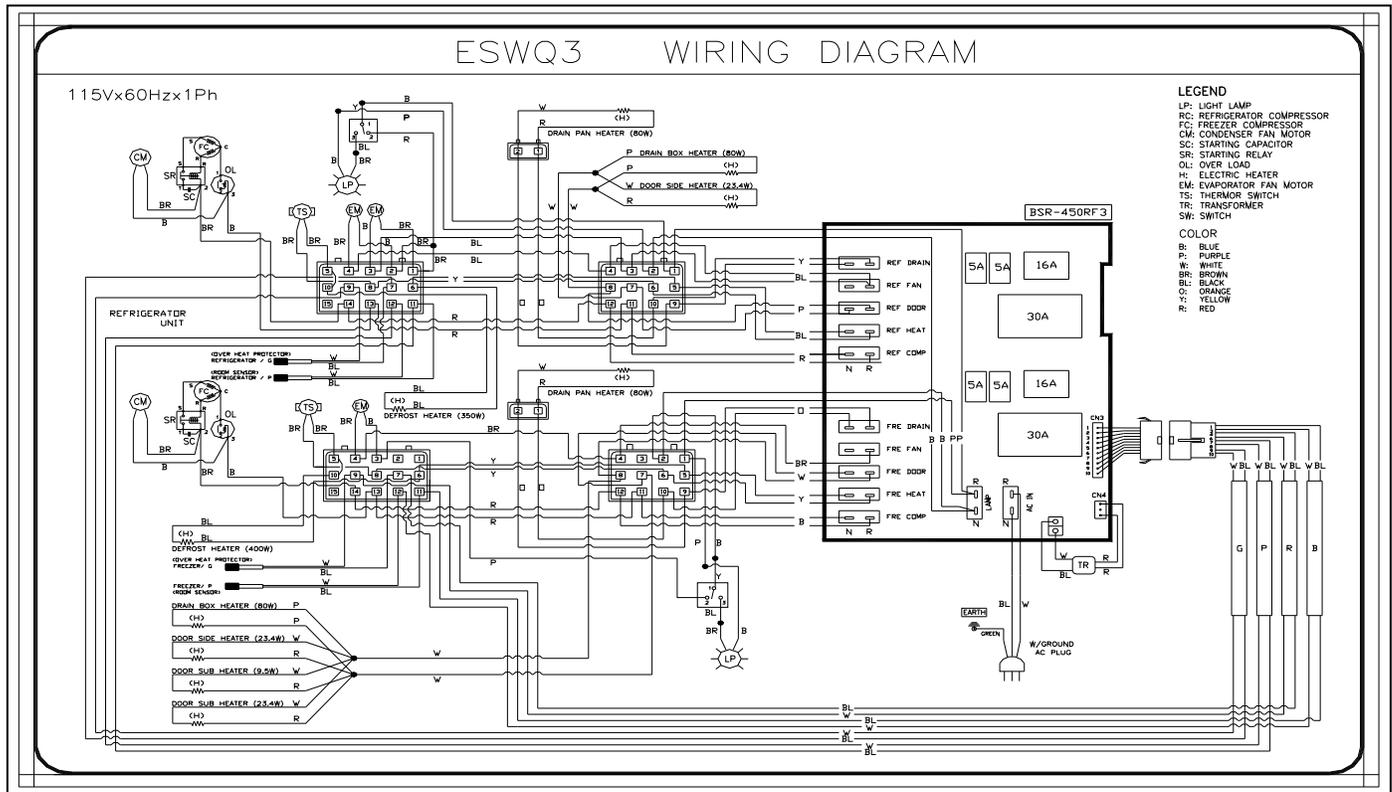
# SECTION 5

## CONTROL CIRCUIT BOARD WIRING DIAGRAM (New BSR-450 TYPE) - Continued



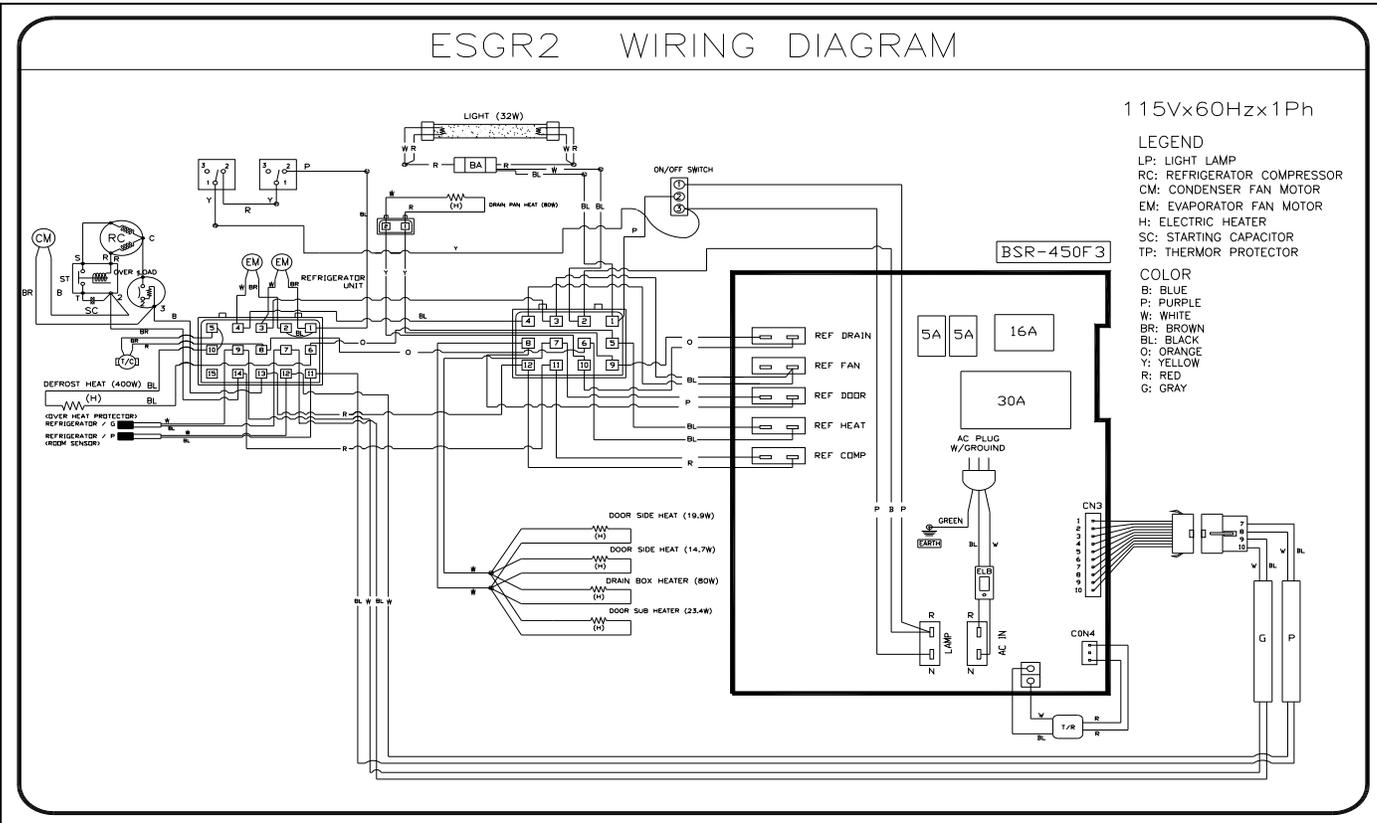
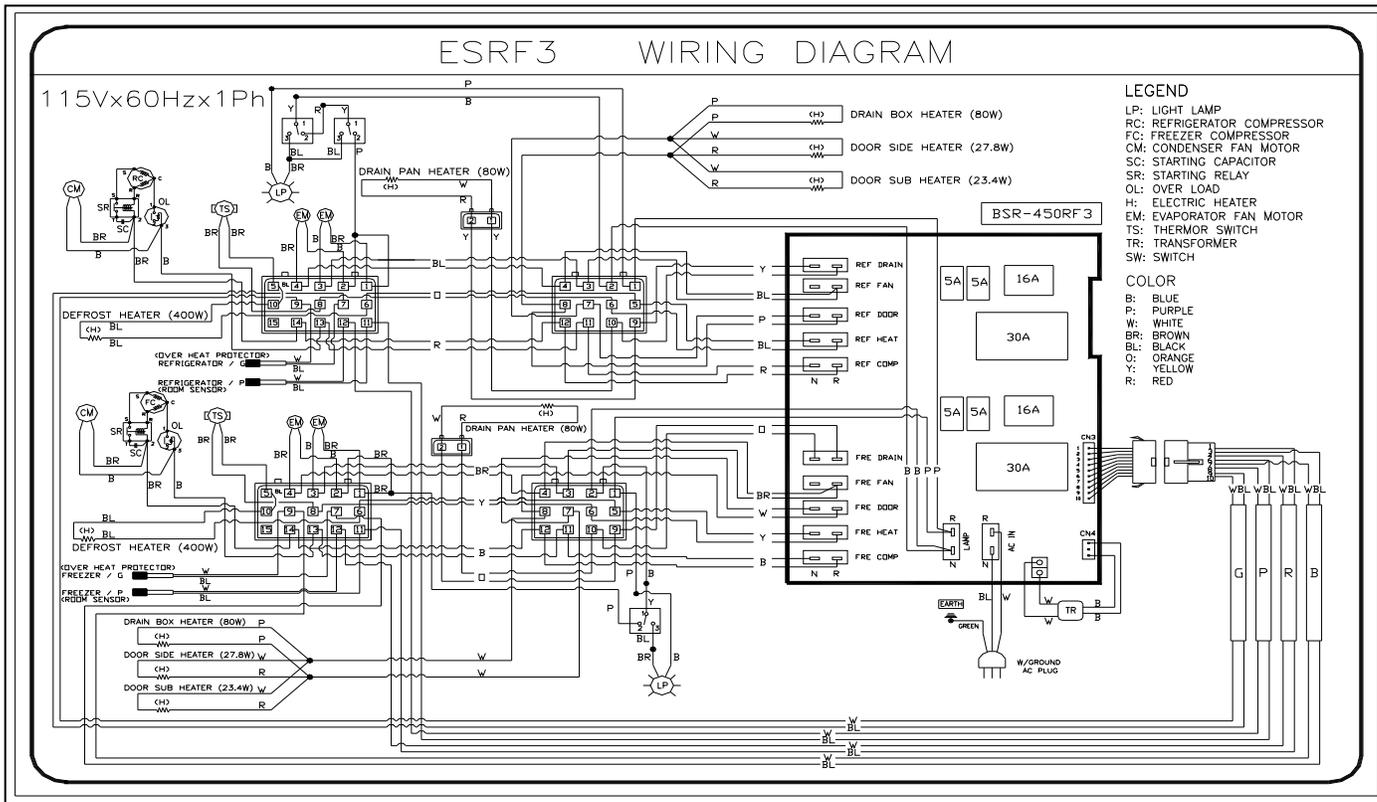
# SECTION 5

## CONTROL CIRCUIT BOARD WIRING DIAGRAM (New BSR-450 TYPE) - Continued



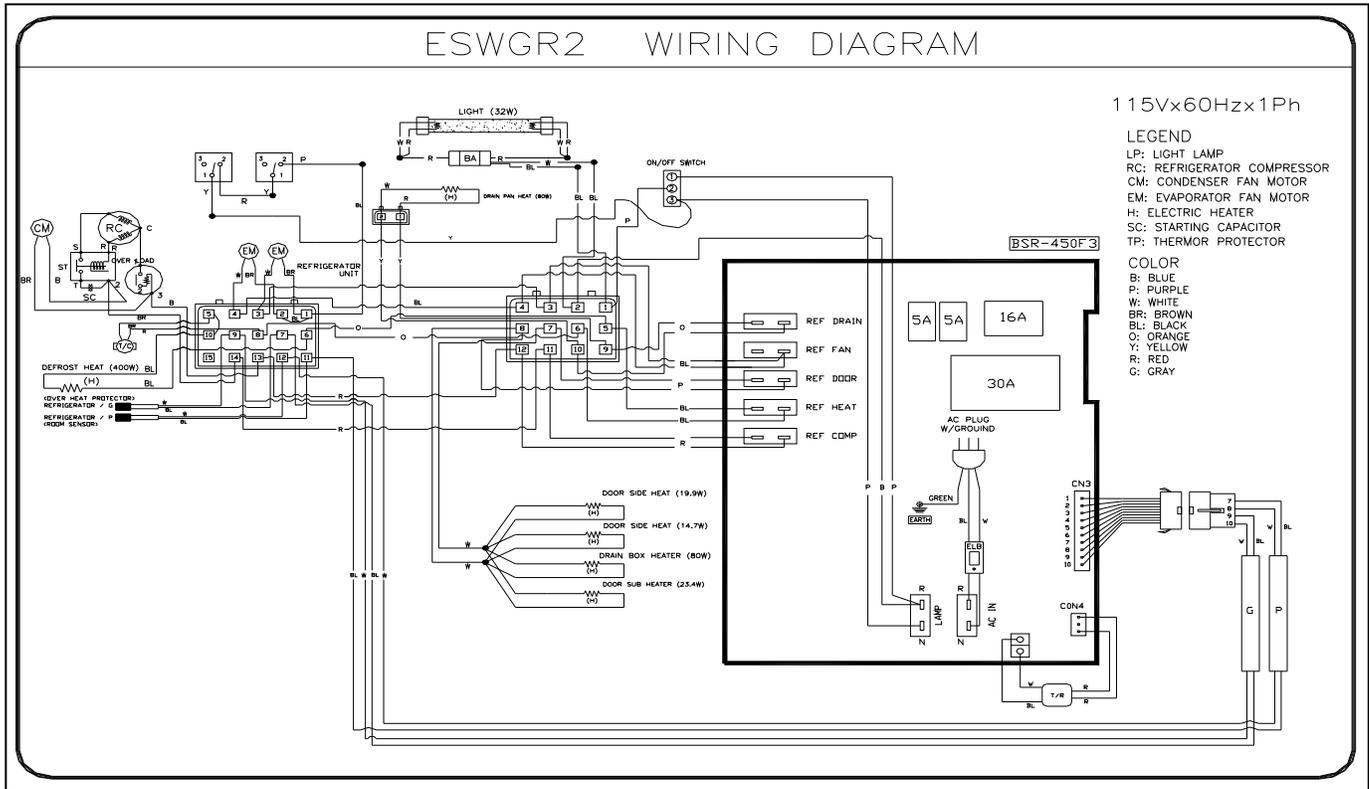
# SECTION 5

## CONTROL CIRCUIT BOARD WIRING DIAGRAM (New BSR-450 TYPE) - Continued



# SECTION 5

## CONTROL CIRCUIT BOARD WIRING DIAGRAM (New BSR-450 TYPE) - Continued



*CONTROL ERROR (AS-50 Type)*

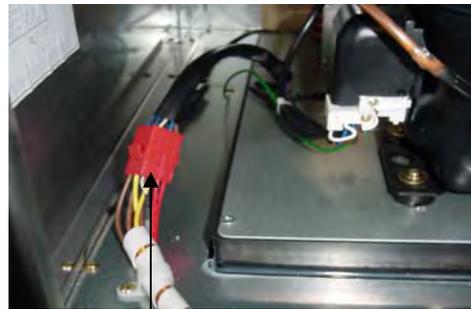
The following error will be displayed on the LED ONLY when the cabinet temperature and overheat protect sensor are defective or loose connection.

Error Signal on LED	Sensor Type	Description	Corrective Action
Er1	Cabinet (Room)	Defective Sensor	Replace the sensor
Er2	Cabinet (Room)	Loose at any connection See Pic. 5-3, 5-4, 5-5.	Check all possible loose wire connections. See Pic. 5-3, 5-4, 5-5.
Er3	OHP (Evap)	Defective Sensor	Replace the sensor
Er4	OHP (Evap)	Loose at any connection See Pic. 5-3, 5-4, 5-5.	Check all possible loose wire connections. See Pic. 5-3, 5-4, 5-5.

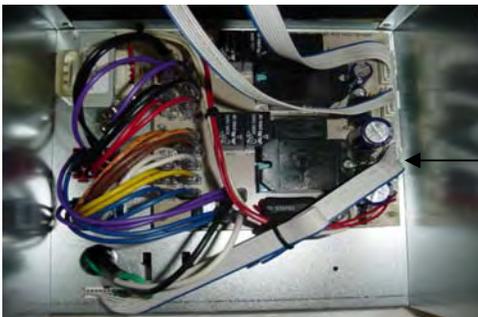
"OHP" = Overheat Protect = Evap



Sensor Connector Behind the Control Box  
Model: ESRF2  
[Pic. 5-3: Check Point 1]



Main Connector Between  
Control Box and Condensing Unit  
Model: ESRF2  
[Pic. 5-4: Check Point 2]



Inside View of Control Box (Power Circuit Board)  
Check Loose Connections

Model: ESRF2  
[Pic. 5-5: Check Point 3]

*ELECTRICAL SEQUENCE OF OPERATION*

SYSTEM	COOLING CYCLE	DEFROST CYCLE	OFF CYCLE
Compressor	ON	OFF	OFF
Condensing Fan Motor	ON	OFF	OFF
Evaporator Fan Motor	ON	OFF	OFF
Evaporator Drain Pan Heater	ON	OFF	OFF
Door Heater	ON	OFF	OFF
Defrost Heater	ON	OFF	OFF
Condensate Pan Heater	ON	OFF	OFF
Light Switch (Only when the door is open)	ON	OFF	OFF

[Table 6-1: Electrical Sequence of Operation]

**a. Cooling Cycle**

With the main ON/OFF switch in the "ON" position of the control box and red light is on, the current flows, energizing the compressor, condensing & evaporator fan motors.

**IMPORTANT**

There is a 5 seconds delay time on the compressor for reach-ins that have two or three condensing units. (Model ESF2, ESWF2, ESRF2, ESWRF2, ESR3, ESF3, ESRF3)

When the cabinet temperature sensor reads higher than the setting temperature.

**IMPORTANT**

After defrost ends, the refrigeration system begins to operate. But, the evaporator fan motor will have three (3) minutes of time delay.

**b. Defrost Cycle**

At both automatic & manual defrost time, the PCB control system de-energizes the evaporator fan motor, compressor, and condensing fan motor.

The cycle terminates when the evaporator coil temperature reaches at 61F, and defrost time clock runs twenty (20) minutes.

**IMPORTANT**

The defrost cycle is terminated only when both the temperature and time clock meet the requirement.

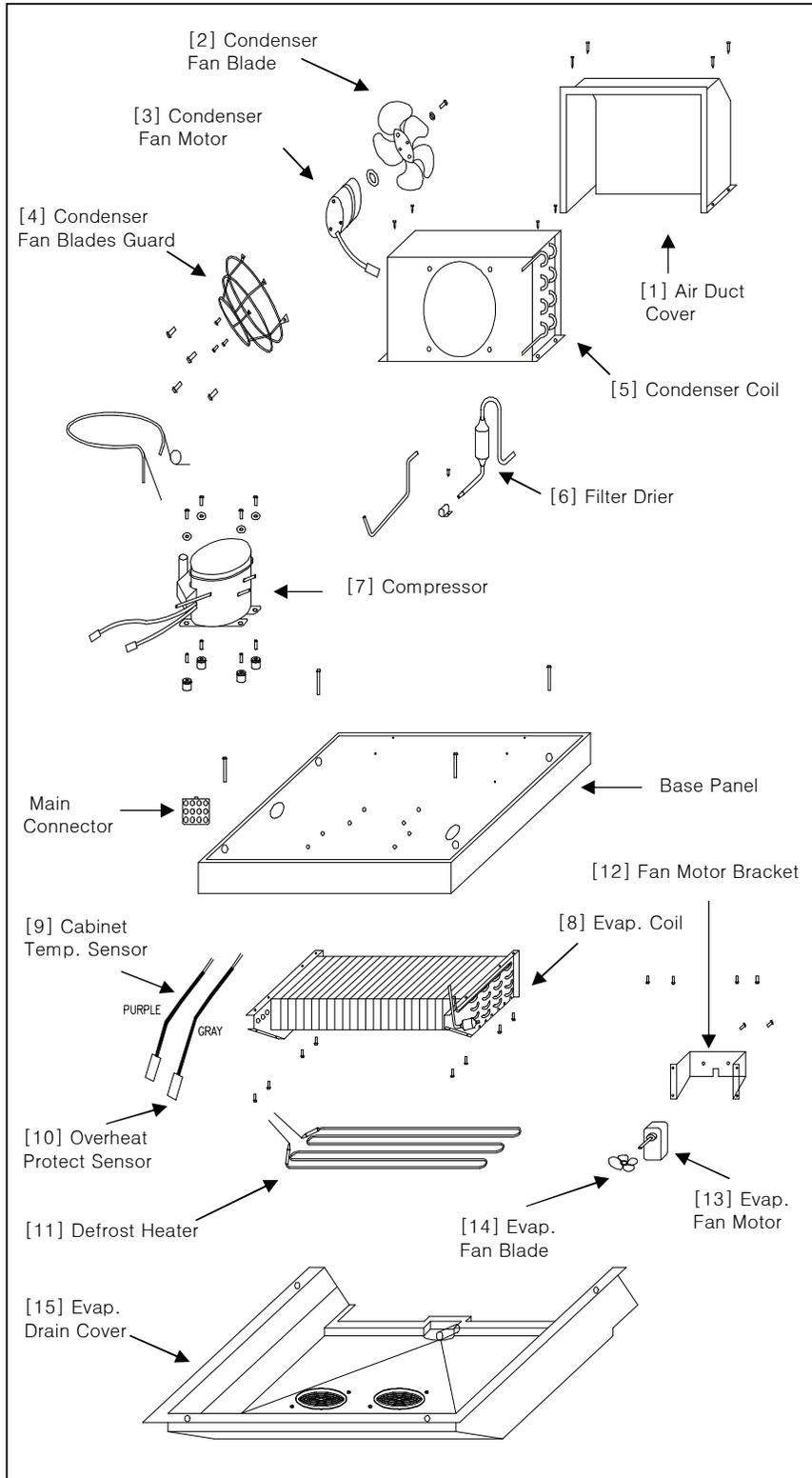
**c. OFF Cycle**

When the temperature sensing bulb reads the setting temperature; 35F for refrigerators and -4 for freezers, it automatically shuts off the refrigeration system.

**IMPORTANT**

Temperature differential is +- 3F for refrigerators and +-2F for freezers. When the temperature is set at 35F(Refrigerator), it turns off to the "OFF Cycle" at 32F, and turns on to the "Cooling Cycle" at 38F.

*SCHEMATIC OF CONDENSING UNIT OF UPRIGHT REACH-INS*



No	Part Code	
	1/3HP CDU	1/2HP CDU
1	AD01-00	AD01-00
2	CF02-00	CF02-00
3	CF01-00	CF01-00
4	CF03-00	CF03-00
5	CC02-00	CC03-00
6	FD01-00	FD01-00
7	CM03-01	CM04-00
8	EC02-00	EC02-00
9	RS01-00	RS01-00
10	RS02-00	RS02-00
11	DF01-00	DF01-00
12	EM06-00	EM06-00
13	EM01-00	EM01-00
14	EM03-00	EM03-00
15	ECA02-02	ECA02-02

(Note: CDU = Condensing Unit)

**IMPORTANT**

Above part codes are for latest part revisions at time of publication. Depending on unit's serial number, its part code may differ. Refer to Section 10.

## COMPRESSOR INFORMATION

Products	Model	Description	Compressor Model	Compressor HP	Refrigerant Type	Refrigerant (Oz)	Total Amps (Operation)	Pressure of Low(Suction) Side During Operational Cycle at Setting Temp
Solid Door Upright Reach-Ins	ESR1	1 Door Refrigerator	FFI-10HAKW	1/3HP	R134A	13.05	3.38	10 to 15 Pounds
	ESRH2	2 Half-Door Refrigerator	FFI-10HAKW	1/3HP	R134A	13.05	3.38	10 to 15 Pounds
	ESR2	2 Door Refrigerator	FFI-10HAKW	1/3HP	R134A	13.05	4.5	10 to 15 Pounds
	ESWR2	2 Wide Door Refrigerator	FFI-10HAKW	1/3HP	R134A	13.05	4.5	10 to 15 Pounds
	ESR3	3 Door Refrigerator	FFI-10HAKW	1/3HP X 2	R134A	13.05 X 2	9.49	10 to 15 Pounds
	ESF1	1 Door Freezer	NE2134GK	1/2HP	R404A	13.05	8.12	10 to 15 Pounds
	ESFH2	2 Half-Door Freezer	NE2134GK	1/2HP	R404A	13.05	8.12	10 to 15 Pounds
	ESF2	2 Door Freezer	NE2134GK	1/2HP X 2	R404A	13.05 X 2	15.89	10 to 15 Pounds
	ESWF2	2 Wide Door Freezer	NE2134GK	1/2HP X 2	R404A	13.05 X 2	15.89	10 to 15 Pounds
	ESF3	3 Door Freezer	NE2134GK (230V)	1/2HP X 3	R404A	13.05 X 2	12.36	10 to 15 Pounds
	ESRF2	2 Door Dual Temps	FFI-10HAKW(Ref), NE2134GK(Fzr)	1/3(Ref), 1/2(Fzr)	R134A(Ref), R404A(Fzr)	13.05(Ref), 13.05(Fzr)	12.08	10 to 15 Pounds
	ESWRF2	2 Wide Door Dual Temps	FFI-10HAKW(Ref), NE2134GK(Fzr)	1/3(Ref), 1/2(Fzr)	R134A(Ref), R404A(Fzr)	13.05(Ref), 13.05(Fzr)	12.08	10 to 15 Pounds
	ESWQ3	1 Full & 2 Half-Door Dual Temps (3/4 Ref & 1/4 Fzr)	FFI-10HAKW(Ref & Fzr)	1/3 X 2	R134A	13.05(Ref), 12.35(Fzr)	12.08	10 to 15 Pounds
	ESRF3	3 Door Dual Temps (2/3 Ref & 1/3 Fzr)	FFI-10HAKW(Ref), NE2134GK(Fzr)	1/3(Ref), 1/2(Fzr)	R134A(Ref), R404A(Fzr)	13.05(Ref), 13.05(Fzr)	12.62	10 to 15 Pounds
Glass Door Upright Reach-Ins	ESGR1	1 Door Refrigerator	FFI-10HAKW	1/3HP	R134A	13.05	4.44	10 to 15 Pounds
	ESGR2	2 Door Refrigerator	NE2134GK	1/2HP	R404A	13.05	7.45	10 to 15 Pounds
	ESWGR2	2 Wide Door Refrigerator	NE2134GK	1/2HP	R404A	13.05	7.45	10 to 15 Pounds
Glass Door Merchandisers	EMGR24	1 Door Refrigerator	FFI-10HAKW	1/3HP	R134A	10.23	5.5	10 to 15 Pounds
	EMGR48	2 Door Refrigerator (Sliding)	T6217Z	1/2HP	R134A	17.64	10.4	10 to 15 Pounds
Undercounters	ETR1	1 Door Refrigerator	FFI-7.5HAKW	1/5HP	R134A	8.11	3.04	10 to 15 Pounds
	ETR2	2 Door Refrigerator	FGS-70HAW	1/5HP	R134A	8.11	3.52	10 to 15 Pounds
	ETF1	1 Door Freezer	FFI-10HAKW	1/3HP	R134A	8.46	4.24	10 to 15 Pounds
	ETF2	2 Door Freezer	NE2134GK	1/2HP	R404A	12.34	7.96	10 to 15 Pounds
	ETRF2	2 Door Dual Temps	NE2134GK	1/2HP	R404A	12.34	7.96	30 to 35 Pounds
	ETRF3	3 Door Dual Temps (2/3 Ref & 1/3 Fzr)	NE2134GK	1/2HP	R404A	12.34	8.12	30 to 35 Pounds
Sandwich Prep Tables	EPR1	1 Door Refrigerator	FFI-7.5HAKW	1/5HP	R134A	7.05	3.52	10 to 15 Pounds
	EPR2	2 Door Refrigerator	FFI-8.5HAKW	1/4HP	R134A	10.93	3.59	10 to 15 Pounds
	EPR3	3 Door Refrigerator	FFI-10HAKW	1/3HP	R134A	9.88	4.06	10 to 15 Pounds

Power of all products above except for model ESF3

115V-60Hz-1Ph

Power of model ESF3

230V-60Hz-1Ph

**Note:**

The suction pressure of both model ETRF2 & ETRF3 is about 20 pounds higher than other models' pressure during an operation cycle at setting temperature because these models were designed to be operated with one compressor with two capillary tubes & one solenoid valve.

*EVAPORATOR DRAIN COVER*

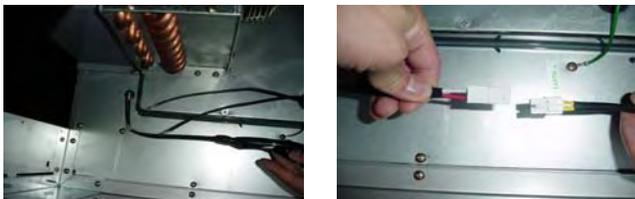
1. Disconnect electrical power to the reach-in.
2. Remove five (5) screws to loosen the drain cover from ceiling.
3. Loosen the drain cover and pull forward carefully, Pic. 8-2.
4. Unplug the drain pan wires located next to condenser coil, Pic. 8-3.
5. Pull the cover, then the wires will come out through the hole as shown Pic. 8-4.



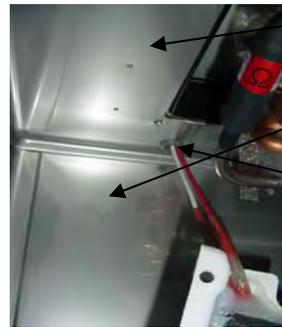
[Pic. 8-1: Evaporator Drain Cover]



Drain Pan                  Drain Hole  
[Pic. 8-2: After losing the Cover]



[Pic. 8-3: Drain Pan Wire Connector]



- Ceiling of Cabinet
- Back Wall of Cabinet
- Dran Pan Heater Wire Hole

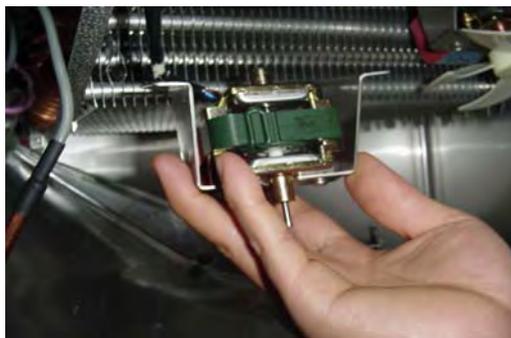
[Pic. 8-4: Drain Pan Heater Wires]

*EVAPORATOR MOTOR & FAN BLADES*

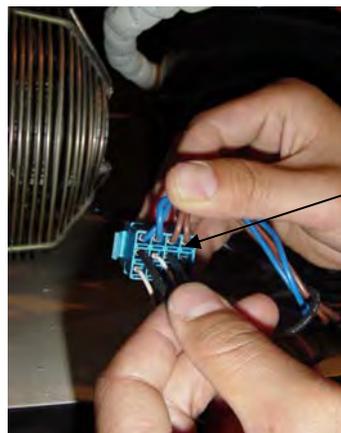
1. Loosen the evaporator drain cover following steps 1 to 3 on page 8-1.
2. Remove the fan blades from the motor, Pic. 8-5.
3. Remove the motor mounting screws and motor, Pic. 8-6.
4. Pull out the terminal pins from the main PCB connector shown Pic. 8-7.



[Pic. 8-5: Fan Blades]



[Pic. 8-6 : Motor and Mounting]

Main PCB  
Connector

[Pic.: 8-7: Motor Terminal Pins]

*DEFROST HEATER*

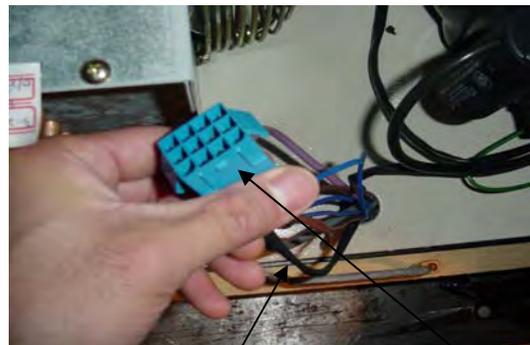
1. Loosen the evaporator drain cover following steps 1 to 3 on page 8-1.
2. Remove the heater holding clips, Pic. 8-8 from the defrost heater, Pic. 8-9.
3. Pull out the terminal pins from the main PCB connector shown Pic. 8-10.
4. Remove the defrost heater, Pic. 8-11.



[Pic. 8-8: Defrost Heater Holding Clip]



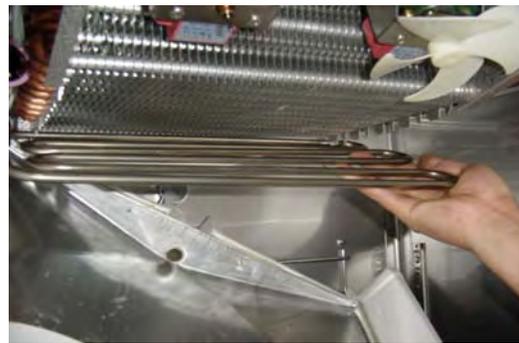
[Pic. 8-9: Removing Clips from Heater]



Two Black Wires

Main PCB Connector

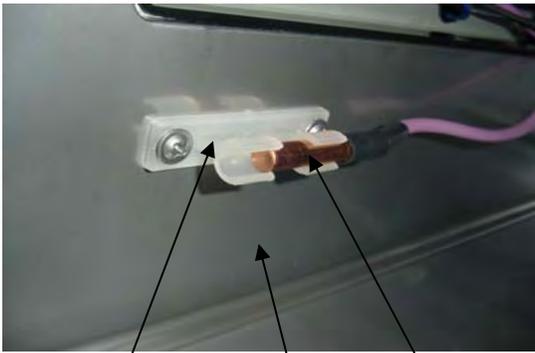
[Pic.: 8-10: Defrost Heater Wires]



[Pic. 8-11: Removing Defrost Heater]

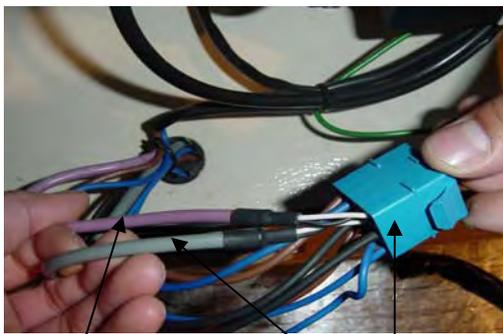
**CABINET TEMPERATURE SENSING BULB**

1. Loosen the evaporator drain cover following steps 1 to 3 on page 8-1.
2. Carefully pull out the temperature sensing bulb (purple) from the sensor holder located on the ceiling of the cabinet, Pic. 8-12.
3. Pull out the terminal pins from the main PCB connector shown Pic. 8-13.



Bulb Holder  
Temp. Sensing Bulb  
Ceiling of the Cabinet

[Pic. 8-12: Temp. Sensing Bulb]



Temp. Sensor (Purple)  
Overheat Protect sensor (Gray)  
Main PCB Connector

[Pic. 8-13: Sensor Terminals]

**OVERHEAT PROTECT SENSING BULB**

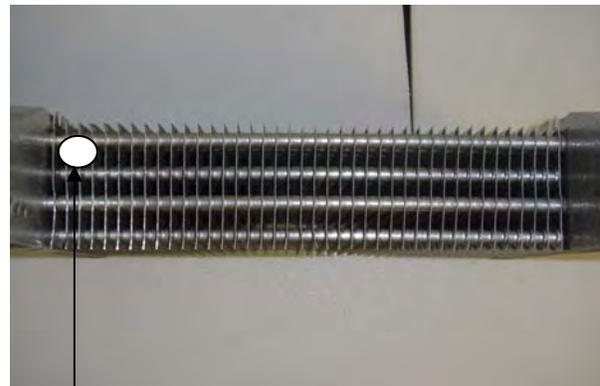
All reach-in refrigerators and freezers must have the overheat protect sensing bulb in the evaporator coil. It reads the evaporator coil temperature, and controls defrost cycle. Failure to do so will cause the evaporator coil to frost up.

1. Loosen the evaporator drain cover following steps 1 to 3 on page 8-1.
2. Carefully pull out the overheat protect sensing bulb (gray) from evaporator coil fins shown Pic. 8-14.
3. Pull out the terminal pins from the main PCB connector shown Pic. 8-13.

Overheat Protect Sensing Bulb (Gray)



[Pic. 8-14: Overheat Protector Sensor]



"A"

[Pic. 8-14-1: Location of Overheat Protect Sensing Bulb]

TEMP	Ω	TEMP	Ω	TEMP	Ω	TEMP	Ω
-5	71,021	20	37,069	45	20,311	70	11,636
0	61,520	25	32,457	50	17,961	75	10,383
5	53,416	30	28,481	55	15,914	80	9,282
10	46,489	35	25,046	60	14,129	85	8,622
15	40,552	40	23,016	65	13,065	90	7,730

[Table 8-1: Sensor Ω]

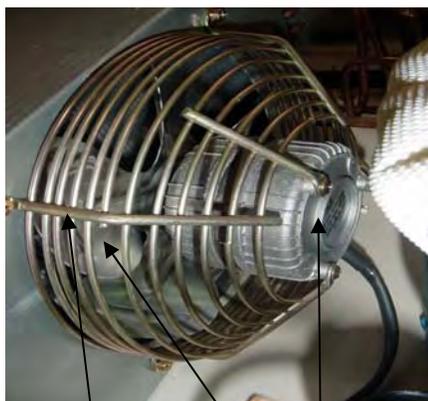
*CONDENSER FAN MOTOR AND BLADES*

1. Disconnect electrical power to the reach-in.
2. Open and remove the top grill to reach the condenser.
3. Unscrew and remove motor mount from condenser. Then, detach the motor from the mount, Pic. 8-15.

**NOTE**

Unscrew and move the condenser to the side to split motor mount easily. Be careful not to damage the copper tube when moving the condenser.

4. Open the relay box and unplug two wires, Pic. 8-16.



Motor Mount

Motor

Fan Blades

[Pic. 8-15: Condensing Motor]



[Pic. 8-16: Relay Assembly]

**DOOR GASKET**

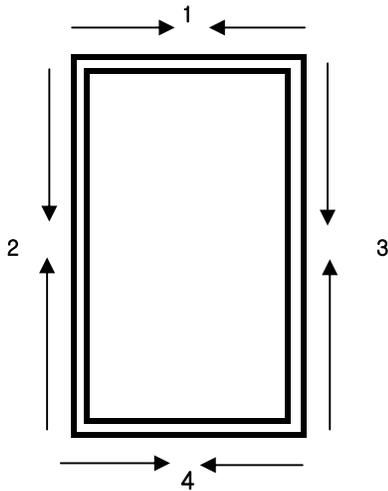
1. Keep the door open.
2. Firmly grasp the door gasket on the top corners with both hands.
3. Slowly pull the gasket out of the slotted groove. Continue until the gasket is removed, Pic. 8-17.
4. To install the replacement door gasket, start snapping it into the groove at the top of the door. Begin with two corners. Go evenly from each side to the middle as shown below Fig 8-1.
5. Work the gasket evenly down both sides and then across the bottom, Fig. 8-1.

**CAUTION**

**Do not stretch or bend the door gasket.**



[Pic. 8-17: Door Gasket]



Reinstall Gasket Starting from  
1 to 5

[Fig 8-1: Inside View of Door]

**NOTE**

Gasket color has been changed from white to black from the production of November 2005 for all models. And the surface of the gasket has several lines to prevent vacuum pressure when opening door.

**NOTE**

A special job is required if there is a big gap between the surface of door frame and the gasket after installation. Please warm the portion of the gasket from a distance with using heatgun. Then foam the gasket by pulling gently to remove the gap and hold a few seconds till it foams. A caution is needed, the gasket may melt if you heat the gasket too much.

*DOOR*

1. Release the door spring tension first, Pic. 8-18
  - a. Insert a small stick into the spring housing; or use the proper tool that fits in the hole.
  - b. Remove the tension pin and unload the spring by backing off on the small stick.

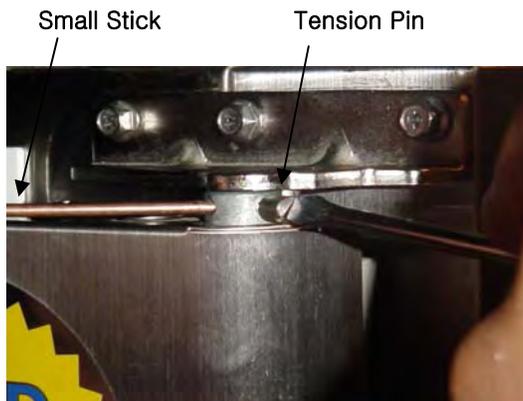
**IMPORTANT**

**Do not release or remove the small stick after removing the tension pin.**

**CAUTION**

**Be careful not to damage the threads in the tension pin adjustment holes.**

- c. Move the tension pin in the hinge one space at a time to release the spring tension.
2. Remove three top hinge bracket screws. Bottom hinge bracket does not need to be removed, Pic. 8-19.
3. Remove the door, Pic. 8-20.
4. Please make sure that the door is leveled and balanced after replacement.



[Pic. 8-18: Release Door Spring Tension]



[Pic. 8-19: Remove screws from hinge bracket]



[Pic. 8-20: Remove Door]

*DOOR TENSION ADJUSTMENT*

**IMPORTANT**  
The reach-in cabinet must be level before beginning the adjustment.

**IMPORTANT**  
Use only hand tools for this procedure.

1. Tighten the spring tension by turning the tension pin toward to door handle one hole at a time with proper tools that fit in the hole, Pic. 8-21 & 8-21-1.
2. After you begin feeling tension, stop tightening. Do not overtighten the spring.

**IMPORTANT**  
Do not release or remove the small stick after removing the tension pin.

3. Screw the tension pin into a threaded hole.
4. Verify that the door swings freely and closes by itself.

**CAUTION**  
Be careful not to damage the threads in the tension pin adjustment holes.



Stick

Tension Pin

[Pic. 8-21: Door Tension Adjustment]

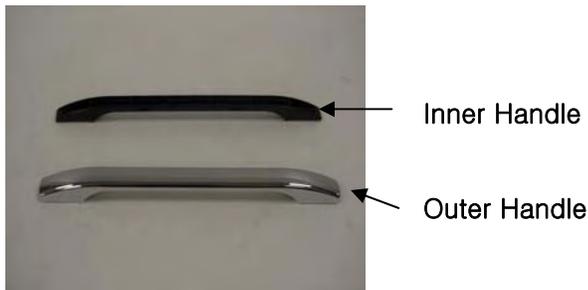


[Pic. 8-21-1: Direction of Tightening]

*DOOR HANDLE*

1. Pop out the outer handle.
2. Remove four (4) screws from the inner handle (Two (2) screws from each top and bottom)

<b>CAUTION</b>
Be sure to put door handle washer (Pic. 8-23)



[Pic. 8-22: Door Handle for Upright]



[Pic. 8-23: Door Handle Washer]

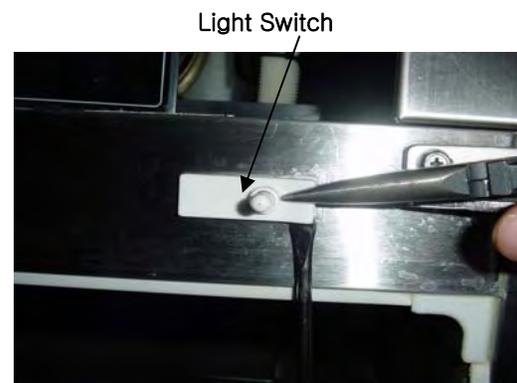
**Note**

New recessed door handles applied to all models from the production of December 2004, serial number BXXX(X)-0412-0001, except for glass door models.

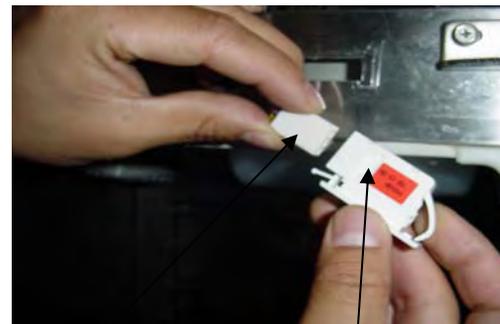
*LIGHT SWITCH*

The interior light is on and evaporator fan motor(s) turns off when the light switch releases (when door is open)

1. Disconnect electrical power to the reach-in.
2. Keep the door open.
3. Carefully pull out the door switch with proper tool, Pic. 8-21.
4. Unplug the connector, Pic. 8-22



[Pic. 8-25: Remove the Light Switch]



[Pic. 8-26: Unplug the Connector]

*LIGHT BULB*

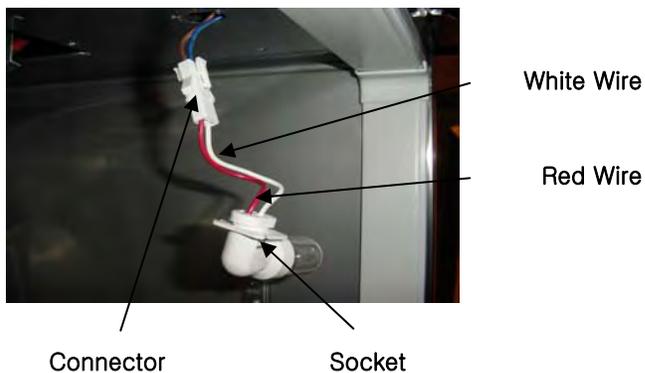
1. Disconnect electrical power to the reach-in.
2. Keep the door open.
3. Unscrew and remove the light bulb cover.
4. Replace with a new bulb.



[Pic. 8-27: Light Bulb Cover]

*LIGHT BULB SOCKET*

1. Disconnect electrical power to the reach-in.
2. Keep the door open.
3. Unscrew and remove the light bulb cover.
4. Turn and pull down the socket carefully until you see the connector, Pic. 8-28.
5. Unplug the connector and install the new part.

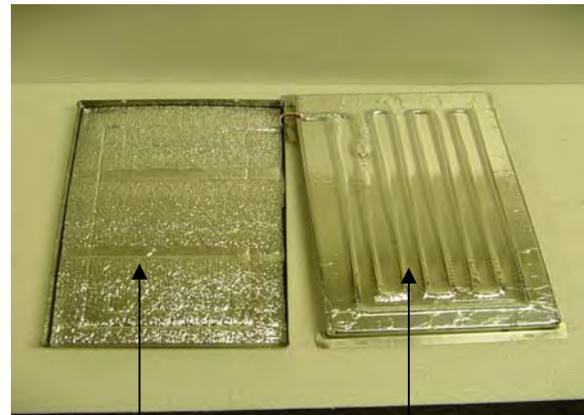


[Pic. 8-28: Light Bulb Socket]

***ELECTRIC CONDENSATE PAN HEATER***

Condensate pan contains water from evaporator and evaporate it after defrost cycle. The 80 watt heater operates 24hrs a day.

1. Disconnect electrical power to the reach-in.
2. Reach the connector located at the bottom and rear of the cabinet, Pic. 8-29.
3. Remove two thumb screws and pull out the pan from the cabinet, Pic.8-30.
4. Remove four screws from the pan to disassemble it, Pic. 8-31.
5. Carefully pull out the two terminals from the conector and remove the defect adhesive condensate pan heater, Pic. 8-32 & 8-33.



Insulation

Electric Condensate Heater

[Pic. 8-31: After Disassembly of Pan]

Connector



[Pic. 8-29: Location of Electric Condensate Pan]



Terminals (Red & White)

Connector

[Pic. 8-32: Unplug Terminals]



[Pic. 8-30: Loosen Thumb Screw]

Thumb Screw



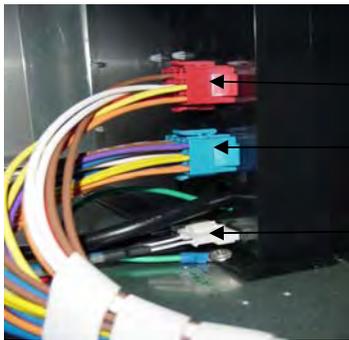
[Pic. 8-33: Remove Adhesive Heater]

**CONTROL BOX ASSEMBLY**

1. Disconnect electrical power to the reach-in.
2. Open the top grill to reach the control box,
3. Unplug all connectors on the back of the of the control box, Pic. 8-34.

**IMPORTANT**

When you plug in the connectors, make sure to plug them all the way in. Failure to do so will cause displaying "Error" on LED. Please see page 5-7.



- ← Connector of Condensing Unit
- ← Connector of Condensing Unit
- ← Connector of Sensor

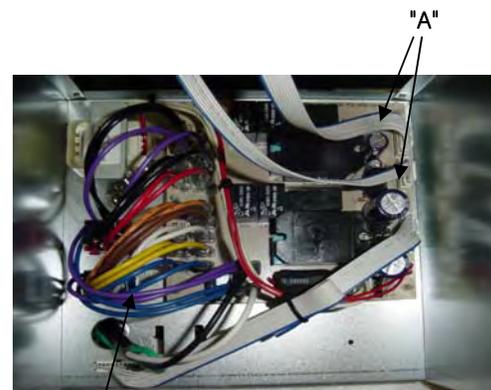
[Pic. 8-34: Back View of Control Box]  
Model ESF2

**CIRCUIT BOARD(S)**

1. Disconnect electrical power to the reach-in.
2. Open the top grill to reach the control box,
3. Unplug all connectors at the back of the control box, Pic. 8-34.
4. Separate the control box assembly from the cabinet.
5. Remove screws to open the box.
6. The control box includes two boards: "Power Ciucuit Board"(all relays) and "Main Circuit Board"(LED & Microchip). Both boards should be replaced when PCB is Defective.
7. Separate the power circuit board from the main board by unplugging circuit connectors, "A" in Pic 8-35.
8. Place a new power circuit board right next to the old one before the replacement. Pull out one wire at a time and plug it into the new power circuit board.

**CAUTION**

Please pull out one wire at a time when replacing the power circuit board.



Wires

[Pic. 8-35: Power Circuit Board]

9. Then replace the main circuit borad.

**Note**

Depending on a serial number, different control boards will be provided by the manufacturer due to an upgrade of the part.

## DIAGNOSTICS

## SERVICE DIAGNOSTIC CHART

Symptom	Possible Cause	Corrective Action	References
Unit Does not run	Main power button on control box is OFF.	Ppress and hold "POWER ON/OFF" button on the control box.	Page 5-1
	Voltage is too low.	Correct the electrical service so it does not vary more than +/- 10%.	
	PCB Control is defective.	Replace the PCB board(s)	Page 8-12
	Compressor is defective.	Replace the compressor.	Page 7-2
	Relay and/or capacitor is defective.	Replace the relay and/or capacitor.	
	Delay time.	It takes about one (1) minute to run the unit after plug-in.	Page 3-2
Cabinet dose not maintain proper temperature	High pressure in refrigeration system		
	- Condenser coil is too dirty.	Clean the condenser coil.	Page 4
	- Refrigerant was overcharged.	Evacuate and recharge the system with proper amount of refrigerant.	Page 7
	- Condenser fan motor does not run.	Check motor electrically, replace if defective.	Page 8-5
	- Evaporator fan motor does not run.	Check motor electrically, replace if defective.	Page 8-2
	- Capillary tube is clogged.	Evacuate and recharge the system.	
	- Clearance around the unit is insufficient.	Reinstall the unit.	Page 3-1
	- Condenser air is recirculating or ambient temperature is above specification.	Reinstall the unit.	Page 3-1
	System is on "Defrost Cycle".	During the defrost cycle, compressor and fan motor of the evaporator & condensing do not run. The cycle is terminated by both temp. (61F) and time(within 20 minutes). Factory defrost setting is 4 times a day for both freezers and refrigerators.	Page 5-2

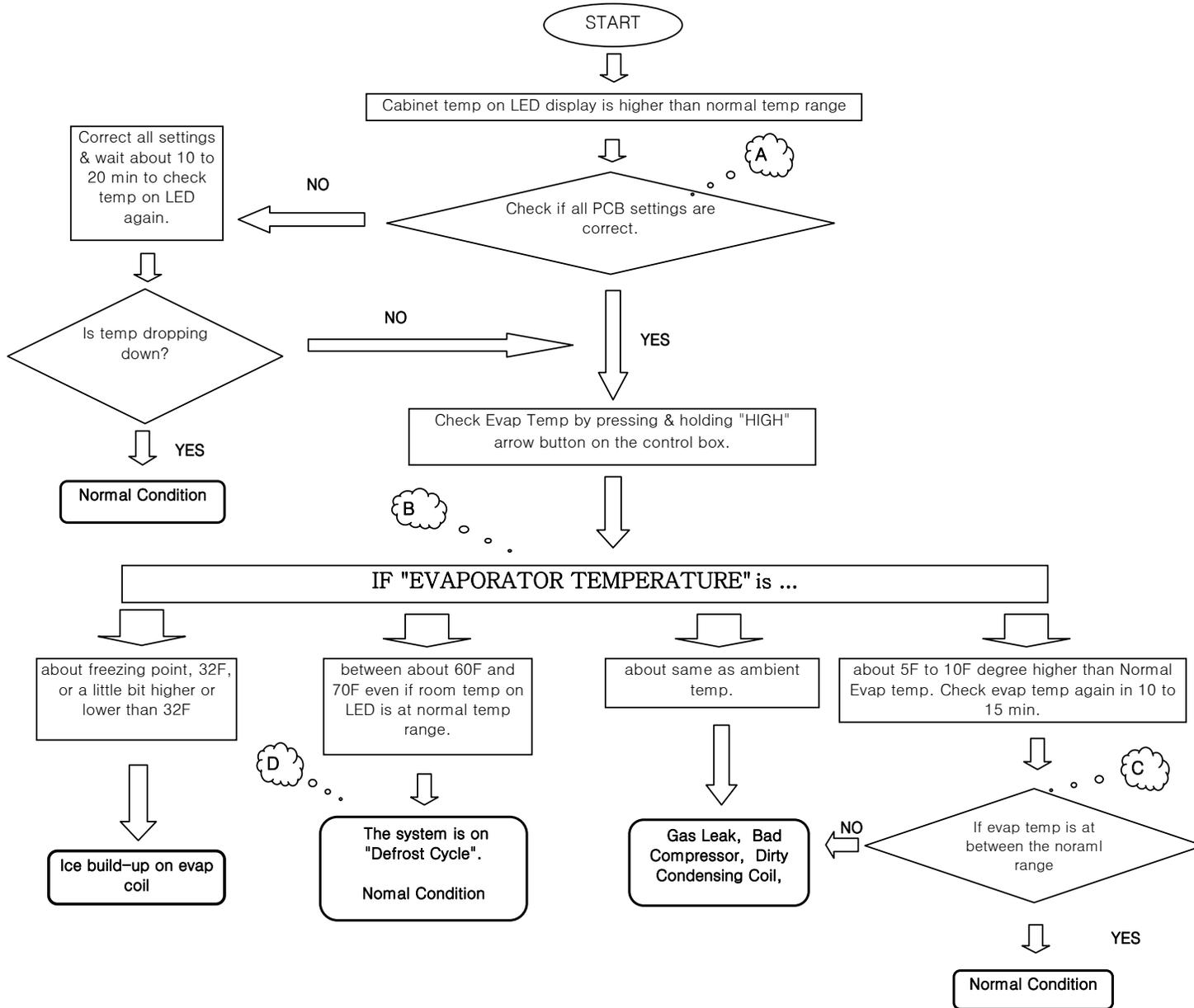


*DIAGNOSTICS CONTINUED***SERVICE DIAGNOSTIC CHART**

Symptom	Possible Cause	Corrective Action	
Door(s) difficult to open	Pressure(vacuum) relief control is not functioning.	Check the component, replace if defective.	
	Wrong installation.	Check casters and floor to see if the unit is properly leveled.	Page 3-1
Water is leaking	<b>In the Cabinet.</b>		
	- Drainage tube is not inserted into drain hole properly.	Open the evaporator drain cover and check the drainage tube.	Page 8-1
	- Evaporator drain cover is broken.	Check if there is any crack, replace if damaged.	Page 8-1
	<b>Out of the Cabinet.</b>		
	- Condensate pan heater located at bottom of unit is defective.	Check electrically first, and replace the wire type condensate pan heater if defective.	Page 8-11
Noise	<b>In the cabinet.</b>		
	- Evaporator motor fan damaged due to ice built on evaporator coil.	Check the defrost heater or control box to see if they are energizing. Replace defrost heater or PC board if defective.	Page 8-2, 8-3
	<b>Out of Cabinet.</b>		
	- Condensing motor fan blades are broken.	Replace the fan blades.	Page 8-5
	- Condensing motor is defective.	Check motor, replace if necessary.	Page 8-5

**FLOWCHART - POSSIBLE CAUSES**

	<b>Refrigerator</b>	<b>Freezer</b>	
Room temp setting :	35F	-4F	(Factory Setting)
Normal room temp range :	32F to 38F	-2F to -6F	(When door keeps closed)
Normal evap temp range :	22F to 28F	-12F to -16F	
Temp differential :	3F(6 deg. swing)	2F (4 deg. swing)	



**A. PCB Settings**

Please see PCB settings "SECTION 5", different groups of serial numbers have different settings & modes due to the upgrades of PCB.

**B. Evaporator Temperature**

All Everest products has a sensor that reads evaporator temperature, which is installed between evaporator fins front part of the coil with grey color wire. It is called "Overheat Protect Sensor" since it terminates defrost cycle when it reads over 61F of evaporator coil temp. And it is also called "Evap Sensor".

**C. Recovery Time**

It takes a certain time to recover the setting temperature when doors keep being opened and closed frequentl in a short period of time.

**D. Defrost Cycle**

Factory setting for defrost cycle is every 6 hrs from the time when product is plugged in. And the cycle is terminated by the evap sensor (at 61F) & length of defrost time (20min). The length of defrost time & the interval of defrost cycle can be modified in the setting modes. PCB memorizes the room temp right before the defrost cycle begins. Actual room temp displays again when the system meets two requirements, first is completion of defrost cycle, and second is reaching to the temp right before the cycle.

**SUMMARY OF DIAGNOSTIC TIPS**

Symptom	Possible Causes	Corrective Action
Temperature is high	Gas leak	Find place of gas leak and repair it
	Ice build-up by	
	a. wrong defrost cycle or defrost time setting	Reset the defrost cycle every 6HR w/ 20min. However, this 6HR interval defrost cycle does not apply to products with air defrost system.
	b. bad defrost heater	Check if the defrost heater is defective.
	c. bad drain pan heater	Check if drain pan heater is defective.
	e. bad fan motor	Check if the evap motor is defective.
	f. bad door (light) switch	Check if the door switch is defective. Evap fan motor stops and cabinet light is on when the door is open.
	d. bad PCB	Check if the PCB sends power to above parts. Any failure will cause this ice build-up problem.
	b. wrong preservation of foods in cabinet	Recommend to cover all foods to prevent moisture. If not, then reduce the interval time of defrost cycle to 5HR or 4HR from 6HR.
	c. over charge of refrigerant	Adjust the amount of the refrigerant.
Bad compressor by	a. compressor itself	Replace the compressor
	b. bad start components	replace the start components (relay, overload, capacitor)
	c. over charge of refrigerant	Adjust amount of refrigerant. High pressure in the system causes high temperature of compressor, which leads the overload to stops the operation of compressor often.
Bad major electrical parts	a. Start capacitor	Check if the start capacitor is defective.
	b. PCB	Check if the PCB is defective.
	c. Transformer	Check if the transformer is defective. If it is, then nothing in the system is working (no display on LED) but light in the cabinet is on.
Dirty condensing coil		Dirty condensing coil will reduce the efficiency of refrigeration operation. It is required to clean every other month.
Error on LED	a. Er1 or Er2	It is an error by loose connection of cabinet sensor. Check loose wire connections of the cabinet sensor at all harnesses. This problem also could be caused by either bad PCB because of no power transmitting to the sensor or bad cabinet sensor itself.
	b. Er3 or Er4	It is an error by loose connection of evap sensor. Check loose wire connections of the evap sensor at all harnesses. This problem also could be caused by either bad PCB because of no power transmitting to the sensor or bad evap sensor itself.
Electric Shock		Electric shortage could be possible caused by shortage at condensate pan heater harness the most of time. This heater wire is combined with door heater. Both are working 24Hrs.
Leaking water	a. In the cabinet	Check if the cabinet is leveled or if there is any crack on plastic cover.
	b. Out of the cabinet	Check if the drain pan heater is defective. Check if there is any crack on the U-trap. Check if any object restricts water flow in the pipe or hose to the drain pan.