

Installation
& Operation
Manual

REV. 0317

HUSSmann[®]/CHINO

ISLA

SELF CONTAINED



HUSSmann[®]

ISLA

SELF CONTAINED

INSTALLATION & OPERATION GUIDE

1. General Instructions

HUSSMANN®/CHINO

A publication of HUSSMANN® Chino
13770 Ramona Avenue • Chino, California 91710
(909) 628-8942 FAX
(909) 590-4910
(800) 395-9229

www.husmann.com

This Booklet Contains Information on:

General Information

Model Description

The ISLA-SC model series are multi-deck, spot merchandisers designed for medium temperature applications such as: deli/dairy/beverage/floral. They are available as either remote type models, which require separate condensing unit connections, or self-contained models. Each self-contained model will have it's own condensing unit, factory installed beneath the display area of the case ready for operation when electrical service is connected.

The following table lists the standard models with a brief description of each, including the electrical requirements of the self-contained model. Unless otherwise specified, the electrical requirements for the remote model will be 120 volt, 60hertz (Hz).

Model Electrical Description

Model	Description	Electrical Service
IM-04-T: 3', 4', 5'	Back to Back	230V
IM-04-I,C: 3', 4', E5', 6', 8'	Inline	230V
IM-05-I,C: 3', 4', E5', 6', 8'	Inline	230V

Shipping Damage

All equipment should be thoroughly examined for shipping damage before and during unloading.

This equipment has been carefully inspected at our factory and the carrier has assumed responsibility for safe arrival. If damaged, either apparent or concealed, claim must be made to the carrier.

Apparent Loss or Damage

If there is an *obvious loss or damage*, it must be noted on the freight bill or express receipt and signed by the carrier's agent; otherwise, carrier may refuse claim. The carrier will supply necessary claim forms.

Concealed Loss or Damage

When loss or damage *is not apparent until after all equipment is uncrated*, a claim for concealed damage is made. Make request in writing to carrier for inspection within 15 days, and retain all packaging. The carrier will supply inspection report and required claim forms.

Shortages

Check your shipment for any possible shortages of material. If a shortage should exist and is found to be the responsibility of Hussmann Chino, *notify Hussmann Chino*. If such a shortage involves the carrier, *notify the carrier immediately*, and request an inspection. Hussmann Chino will acknowledge shortages within ten days from receipt of equipment.

Hussmann Chino Product Control

The serial number and shipping date of all equipment has been recorded in Hussmann's files for warranty and replacement part purposes. All correspondence pertaining to warranty or parts ordering must include the serial number of each piece of equipment involved, in order to provide the customer with the correct parts.

Location

These refrigerators, like other open refrigerators, are sensitive to air disturbances. Air currents passing around them will seriously impair their operation. Do not allow air-conditioning, electric fans, open doors or windows, etc. to create air currents around these cases.

DO NOT INSTALL THE VENTED PANELS OF THE SELF-CONTAINED MODELS AGAINST A WALL OR OTHER STORE FIXTURE.

Located in the lower front and rear of the self-contained models are vented panels. These panels allow air circulation to the condensing unit. Blocking or restricting air circulation through these panels can cause poor performance and damage the refrigeration system.

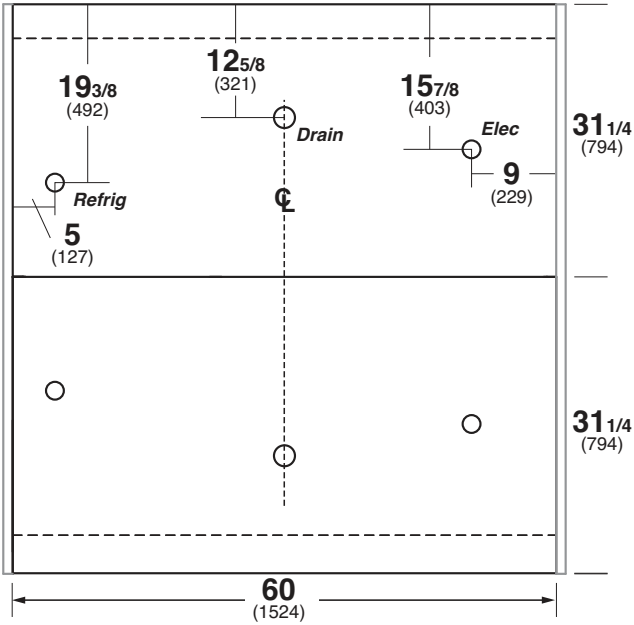
INSTALL THE REFRIGERATOR NO CLOSER THAN FOUR (4) INCHES FROM A WALL OR OTHER STORE FIXTURES.

Keep this booklet with the case at all times for future reference.

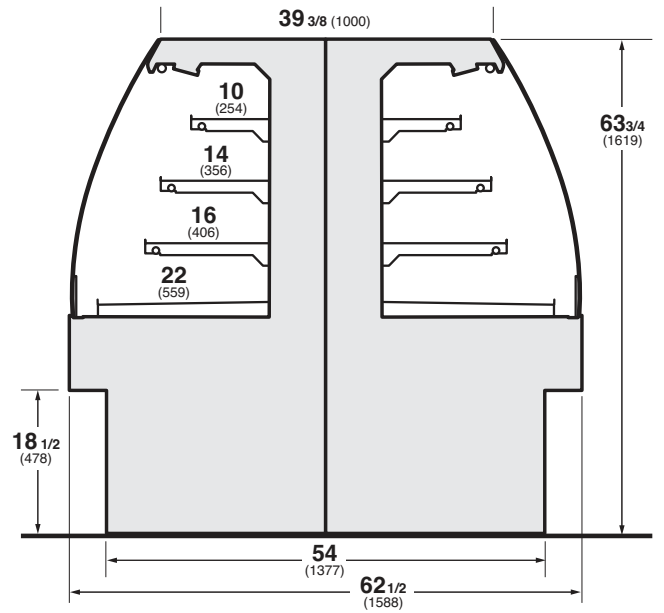
2. Table of Contents

1. General Instructions.....	2
2. Table of Contents	4
3. Cut and Plan Views.....	5
4. Installation.....	6
5. Start Up.....	6
6. Maintenance.....	7
7. Refrigeration	8
8. Replacement Parts List.....	9
9. Service Tips	10
10. Electrical.....	11
11. Safe-Net III Operation	12
12. General Maintenance	22
13. Preventive Maintenance.....	23
14. Electrical Wiring Diagrams Index.....	24
15. Wiring Diagrams	25
16. Troubleshooting Guide	43
17. Troubleshooting General Issues.....	45
18. Troubleshooting Condensing System.....	46
19. Troubleshooting Evaporator System.....	47
20. Cleaning Schedule	48
21. Appendices	49

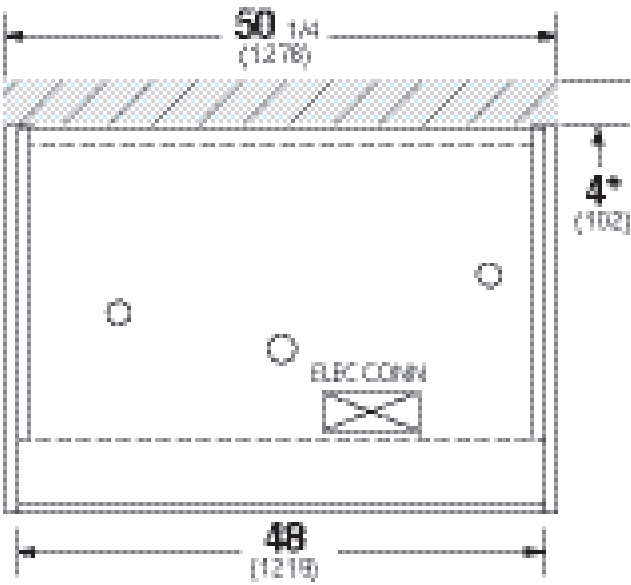
3. Cut and Plan Views



IM-04-Tx-S Back-to-Back Multi-Deck Self-Service Self-Contained

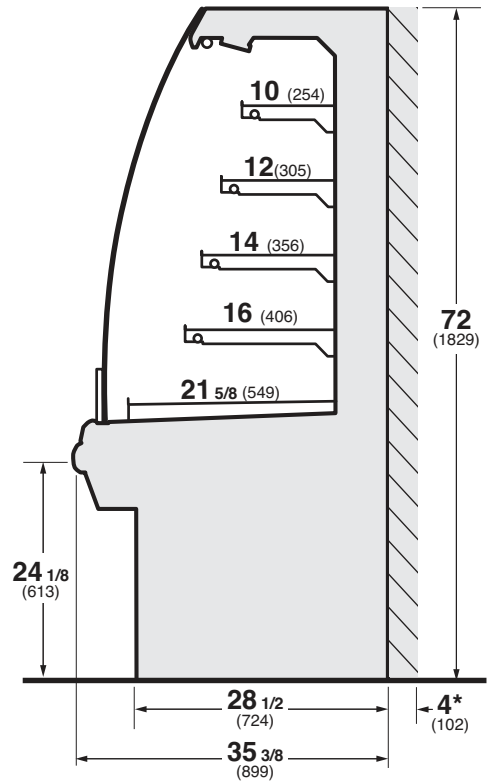


IM-05-14-S Refrigerated Multi-Deck Self-Service Self-Contained



*MIN required air space for condenser air discharge.

IM-05-1x-S End or Combo Center Case



*MIN required air space for condenser air discharge.

4. Installation

Store Conditions

- Case is designed to operate at temperatures at or below 80°F at 55% relative humidity. Case must be kept in that environment to ensure case performance and product safety.
- Do not position the case near an HVAC vent. A minimum of 15' clearance is required.
- Do not position the case near an entrance door. Outside ambient conditions may have an adverse affect on the refrigeration performance
- Do not position the case tight against a ceiling or soffit. A minimum clearance 8" above the unit is required for proper compressor discharge air flow.
- Do not block case front panel vent (supplies critical intake air flow to the compressor)

5. Start Up

1. Apply power to the merchandiser.
 2. Wait for the self check to complete.
 - During self check each LED flashes for one second, then all LEDs turn on for two seconds.
 - If the LEDs do not flash, make sure the adjustment knob is not in the "OFF" position.
 3. The compressor will start 30 seconds after the self check is complete.
 - The merchandiser temperature displays at startup.
 - An initial defrost occurs two hours after startup.
 - The compressor runs until it reaches its setpoint temperature or until defrost.
 4. Refrigeration: The compressor will continue to cycle on-and-off normally until scheduled- or demand-defrost occurs.
 5. Defrost. Defrost is scheduled to occur every 8 hours, or earlier if triggered by a demand defrost (for models equipped with demand defrost)
 - Defrost duration continues for a preset time period, or until defrost termination temperature is reached, whichever occurs first.
 - During defrost the display shows the initial defrost temperature (temperature at the start of defrost).
 - This initial defrost temperature is displayed for the full preset time period (even if refrigeration mode resumes before the end of this period).
 6. The refrigeration/defrost cycle repeats (steps 4, 5) until the power is interrupted.
 7. If power is interrupted, the process will start over at step 1
 - The time to subsequent scheduled defrost will reset.
 8. **NOTE: Do NOT load product until AFTER merchandiser reaches desired operating temperature (approximately 4 hours).**
2. Product must be at temperature when loading case. Case is not designed to cool food.
 3. Do not display more than 150 pounds of product per shelf. Additional weight will cause deflection in the display shelves.

Temperature Adjustment

1. Rotate the (SafeNet 3) controller adjustment dial clockwise for a colder setpoint, or counter-clockwise for a warmer setpoint.
 - For most food products the optimal dial setting is 5 (the factory setting).
 - For packaged meats and/or fish, change the controller dial setting to 7.
 - To save energy (for beverages and other non-critical food products) the controller dial may be set to 1.
 - Check internal product temperatures (IPTs) periodically with a pocket thermometer when adjusting case temperatures.
2. While adjusting the temperature, the display shows the setpoint. A few seconds after the temperature is set, the controller reverts to the sensed temperature in the merchandiser.

Alarms And Codes flashing temperature or (Beep) audible sensor alarm LED, E1 or E2]

- 1) If the Temperature or Sensor Alarm LED (red) on the controller and display is flashing, a temperature sensor has failed. The display shows E1 if the Discharge Air sensor has failed or E2 if the evaporator sensor has failed.
- 2) If the Discharge Air sensor fails, refrigeration will run continuously. Refrigeration will default to a Safe Mode Duty cycle 6 minutes ON 2 minutes OFF including normal defrost cycle.
- 3) If alarm continues to sound for 1 hour, Unload food product turn off, full counter clock wise turn or unplug case and contact Hussmann Service

OPERATION- Check shelf loading. Overstocking case will affect its proper operation. Do not block discharge and return air.

1. Do not display packages over the air inlet located at the front of the lowest deck - this restricts the airflow and results in warmer temperatures in the case.

6. Maintenance

Case Cleaning

To insure long life, proper sanitation and minimum maintenance costs, the refrigerator should be thoroughly cleaned frequently. **SHUT OFF FAN BEFORE CLEANING:** It can be unplugged within the case, or shut off entire case at the source. The interior bottom may be wiped with any domestic soap or detergent based cleaners. Sanitizing solutions will not harm the interior bottom,

WARNING! DO NOT USE WATER HOSES! A self contained case empties into an evaporator pan that **WILL OVERFLOW IF TOO MUCH WATER IS INTRODUCED** during cleaning

- USE WATER AND A MILD DETERGENT FOR THE EXTERIOR ONLY
- Wipe interior with damp non abrasive cloth. Soap and hot water are not enough to kill bacteria; a sanitizing solution must be included with each cleaning process to eliminate bacteria.
- Clean any visible debris surrounding or on top of the drain location. The drain is located under the deck pans.
- DO NOT USE A CHLORINATED CLEANER ON ANY SURFACE.
- DO NOT USE ABRASIVES OR STEEL WOOL SCOURING PADS (these will mar the finish)
- DO NOT USE A CLEANING OR SANITIZING SOLUTION THAT HAS AN OIL BASE (these will dissolve the butyl sealants) or an AMMONIA BASE (this will corrode the copper components of the case)

Service

- Replace Filter every 6 months or as needed to maintain efficient operation.
- To maintain good refrigeration performance, a refrigeration service person should be called periodically (at least twice a year) to clean the discharge honeycomb and remove any accumulated dirt from the condenser coil and condensate evaporator pan on self-contained models. **POOR CIRCULATION OF AIR THROUGH THE CONDENSER COIL WILL RESULT IN POOR REFRIGERATION PERFORMANCE.**
- Dirt accumulation inside the condensate evaporator pan will reduce the pan's capacity and affect the efficiency of the heater causing a burned out heater and an overflow of defrost water onto the store floor.

Tips and Troubleshooting

Before calling for service:

- Check power. Ensure reliable electrical power supply to the equipment
- Check shelf loading. Overstocking will adversely affect case performance.
- If frost is collecting on fixture or product, verify that store Humidity Control is working properly, and that no outside doors/windows allow moisture into store.

7. Refrigeration

Refrigeration

Each self-contained model is equipped with its own condensing unit located beneath the display area. The unit will be charged per nameplate refrigerant and shipped from the factory with all service valves open, completely ready for operation when electrical power has been connected.

CONTROLS and ADJUSTMENTS

CONTROLS and ADJUSTMENTS

Refrigeration Controls			Defrost Controls			
Model	Product Application	Discharge Air Temperature	Defrost Frequency	Type of Defrost	Termination Temperature	Failsafe Time (Minutes)
IM-04-I3-S IM-04-I4-S IM-04-I5-S IM-04-I6-S IM-04-I8-S	Medium Temp. (Dairy, Deli)	24° F to 32° F	25 minutes Every 5 hour	Off Time	45° F	40
IM-05-I3-S IM-05-I4-S IM-05-I5-S IM-05-I6-S IM-05-I8-S	Medium Temp. (Dairy, Deli)	24° F to 32° F	25 minutes Every 5 hour	Off Time	45° F	40
IM-04-T3-S IM-04-T4-S IM-04-T5-S	Medium Temp. (Dairy, Deli)	24° F to 32° F	25 minutes Every 5 hour	Off Time	45° F	40

1. The Safe-NET III Controller controls refrigeration temperature. This is factory installed in the control panel. Adjust this control knob to maintain the discharge air temperature shown. Measure discharge air temperatures at the center of the honeycomb.

The defrost setting is factory set as shown above.

8. Replacement Parts List

PART/DESCRIPTION	PART#
FAN MOTOR	0477655
BALLAST #LH3-120-L	125-01-3266
BALLAST #LH4-120-L	125-01-3267
BALLAST #LH5-120-L	1H57300550
L.E.D. DRIVER	0547639
RELAY-208/240	1804241
RELAY-120V	0459304001
MOTOR SWITCH SQUARE D #55447	125-01-0271
TERMINAL BLOCK MARATHON #141440	125-01-0295
SAFENET III CASE CONTROLLER	1H16704001
SAFENET III DISPLAY	1H16704002
SENSOR PROBE #SS TIP	0510533
DRIER FILTER #EK-163s	225-01-0656
TX VALVE R-404A	VALVE MODEL NUMBER
EVAP PAN 2000W/240V	1H95138550
EVAP PAN 1500W/240V	1H95137550
EVAP PAN 1000W/240V	1H95141550
CASE/COMPRESSOR	PART#
IM-04-C3-S #M4FF-0056-IAA-041	1H28153
IM-04-C4-S #M4FF-0075-CAV-212	1H28155
IM-04-C5-S (E5) #FJAF-0100-CAV-020	1H35476
IM-04-C6-S #FJAF-A100-CAV-021	1H28147
IM-04-C8-S #FFAP-0172-CFV-072	1H96225
IM-05-C3-S #M4FF-0075-CAV-212	1H28155
IM-05-C4-S #FJAF-0100-CAV-020	1H35476
IM-05-C5-S (E5) #FJAM-A126-CAV-020	225-03-6100
IM-05-C6-S #FFAP-0172-CFV-072	1H96225
IM-05-C8-S #FJAF-0100-CAV-020	1H35476
IM-04-T3-S #FJAF-A100-CAV-021	1H28147
IM-04-T4-S #FFAP-0172-CFV-072	1H96225
IM-04-T5-S #FFAP-0172-CFV-072	2H08763

9. Service Tips

WARNING

ALWAYS DISCONNECT THE ELECTRICAL POWER AT THE MAIN DISCONNECT WHEN SERVICING OR REPLACING ANY ELECTRICAL COMPONENT OF THIS REFRIGERATOR. THIS INCLUDES, BUT IS NOT LIMITED TO SUCH ITEMS AS FANS AND THERMOSTATS.

Fan Blade Replacement

The evaporator fan is located at the back of the case directly beneath the display pan. Should the fan blade ever need servicing. ALWAYS REPLACE THE FAN BLADE WITH THE RAISED EMBOSSING SIDE OF THE BLADE INSTALLED TOWARD THE MOTOR.

Honeycomb Removal & Cleaning

CAUTION: DO NOT TEAR THE HONEYCOMB

1) Remove the honeycomb assembly as follows:

Insert a small Phillips screwdriver behind the rear edge of the honeycomb on the right hand end and gently pull down. The bottom of the honeycomb will drop down. Continue down the length of the case, lifting the honeycomb out.

2) To clean honeycomb:

Mix powdered detergent, in warm water. (5 to 7 Tablespoons per gallon)

Immerse or spot clean the honeycomb. Use care not to damage the cell structure of the honeycomb.

Rinse thoroughly in clean water. Shake excess water from the honeycomb and dry. (if heat is used, do not exceed 140 F dry heat)

3) **Install honeycomb** by inserting the notched side up against the deflector and press upwards inserting the bottom of the honeycomb into the back ledge. Slide along the honeycomb, pressing the front edge upward into the ledge. Be careful no to damage the cells or cut yourself on the edges of the honeycomb.

LED Driver Replacement

The Driver for the canopy LED lamps is located beneath the canopy panel at the left hand end of the case.

For access to the LED Driver:

- Remove the screws that fasten the canopy to the exterior top of the case
- Pull the top of the canopy forward and rotate it down to remove it from the case
- Replace or service the LED Driver as required and replace the canopy in reverse order of removal.

10. Electrical

Wiring Color Code

Standard Case Wire Color Code	
<u>Color Description</u>	<u>Color</u>
■ Ground	Green
■ Anti-Sweat	Purple
■ Lights	Orange
■ Receptacles	Yellow
■ T-Stat/Solenoid 230VAC	Red/Black
■ T-Stat/Solenoid 115VAC	White/Black
■ T-Stat/Solenoid 24VAC	Red/White
■ Fan Motors	Brown
Blue Condensing Unit	

Use Copper Conductors Only
430-01-0338 R101003

CASE MUST BE GROUNDED

NOTE: Refer to label affixed to case to determine the actual configuration as checked in the "TYPE INSTALLED" boxes.

Electrical Circuit Identification

Standard lighting for all refrigerated models will be full length LED lamps located within the case at the top.


The switch controlling the lights, the plug provided for digital scale, and the thermometer are located at the rear of the case mullion.

The receptacle that is provided on the exterior back of these models is intended for computerized scales with a five amp maximum load, not for large motors or other high wattage appliances. It should be wired to a dedicated circuit.

Field Wiring and Serial Plate

Amperage

Field Wiring must be sized for component amperes printed on the serial plate. Actual ampere draw may be less than specified. Field wiring from the refrigeration control panel to the merchandisers is required for refrigeration thermostats. Case amperes are listed on the wiring diagram, but always check the serial plate.



DANGER

**BEFORE SERVICING
ALWAYS DISCONNECT ELECTRICAL
POWER AT THE MAIN DISCONNECT
WHEN SERVICING OR REPLACING ANY
ELECTRICAL COMPONENT.
This includes (but not limited to) Fans, Heaters
Thermostats, and Lights.**

Spec Sheet

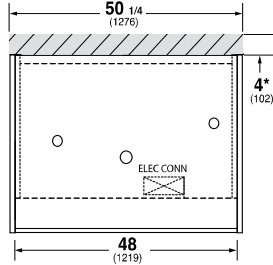


MEDIUM TEMP SELF SERVICE MULTI-DECK SELF-CONTAINED
 HUSSMANN Ista - IM-04-S CASE MODULES (ISLA) (CHINO)
IM-04-Ix-S End or Combo Center Case

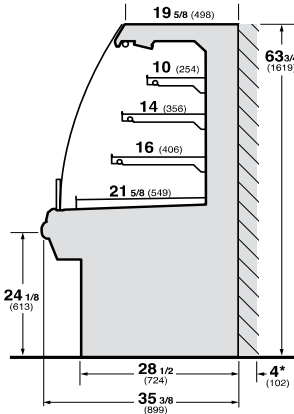
REVISION DATE 1/5/17



Hussmann refrigerated merchandisers configured for sale for use in the United States meet or surpass the requirements of the DOE 2017 energy efficiency standards.



*MIN required air space for condenser air discharge.



*MIN required air space for condenser air discharge.



REFRIGERATION DATA:

CASE LENGTHS	CASE USAGE	CONVENTIONAL CAPACITY ** (BTU/HR/FT)	DISCHARGE AIR * (°F)	VELOCITY (FT/MIN)
3',4',5',6',8'	DELI / DAIRY	955	30-32	250-270
3',4',5',6',8'	MEAT	1335	28-30	250-270

*FRONT DISCHARGE AIR MEASURED INSIDE AIR CURTAIN HONEYCOMB

**REFRIGERATION NOTES:

- 1) CAPACITY FOR REFERENCE ONLY
- 2) USE DEW POINT FOR HIGH GLIDE REFRIGERANTS. CARE SHOULD BE TAKEN TO USE THE DEW POINT IN P/T TABLES FOR MEASURING AND ADJUSTING SUPERHEAT.
- 3) NSF RATING CONDITION IS NSF TYPE II, 80°F / 55% RH

REFRIGERATION DATA CONTINUED:

CONTROLLER / AIR SENSOR SETTINGS			DEFROST TYPE	FAIL SAFE TIME (MIN)	DEFROST FREQUENCY (#/DAY)	TERM. TEMP (°F) AIR	DRIP TIME (MIN)	DEFROST WATER (LBS/DAY/FT)
T-STAT PARAMETERS	CUT IN (°F)	CUT OUT (°F)						
WARM	42	36	OFF TIME	25	4	52	NA	5.1
COLD	28	18						

END PANEL WIDTH KEY		
# OF END PNLS	END PNL WIDTH (IN.)	TOTAL ADDED LENGTH (IN.)
1	1.125	1.125
2	1.125	2.25

4) DEFROST IS BASED ON TERMINATION TEMP, WHICH UNDER NORMAL CIRCUMSTANCES, IS SHORTER THAN FAILSAFE TIME.

ELECTRICAL DATA:

STANDARD FANS, HEATERS, LED LIGHTS (115 VOLT)

CASE LENGTH	EVAPORATOR FANS					LED CANOPY LIGHTS		LED SHELF LIGHTS		MAX. LED LOAD (W/ ALL OPTIONS)		ANTI-SWEAT HEATERS (ON FAN CIRCUIT)		CONVENIENCE OUTLETS (OPTIONAL)		
	# OF EVAP FANS	BLADE DIA. (IN.)	BLADE PITCH (°)	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	# OUTLETS	VOLTS	AMPS
3'	1	8	20	0.3	8	0.17	19	0.20	23	0.37	42	N/A	N/A	N/A	N/A	N/A
4'	1	8	25	0.3	8	0.23	27	0.27	31	0.50	58	N/A	N/A	N/A	N/A	N/A
5'	1	8	25	0.3	8	0.30	34	0.34	39	0.63	73	N/A	N/A	N/A	N/A	N/A
6'	2	8	20	0.6	16	0.34	39	0.40	46	0.74	85	N/A	N/A	N/A	N/A	N/A
8'	2	8	25	0.6	16	0.47	54	0.54	62	1.01	116	N/A	N/A	N/A	N/A	N/A

CONDENSING UNIT AND EVAPORATIVE PANS (115 & 208V)

CASE LENGTH	CONDENSING UNIT					EVAPORATIVE PAN			EST REFG CHRGR 404A (LBS)		
	NOM. HP	REFRIG.	Hz/Ph	Volts	RLA	FUSE AMPS	NEMA PLUG	VOLTS		AMPS	WATTS
3'	1/2	404a	60/1	115	10.5	15	5-30P	115	8.3	1000	2.7
4'	3/4	404a	60/1	208	6.8	15	14-20P	240	6.3	1500	4.6
5'	1	404a	60/1	208	9.3	15	14-20P	240	6.3	1500	6.0
6'	1	404a	60/1	208	10.0	15	14-30P	240	6.3	1500	6.0
8'	1-3/4	404a	60/1	208	12.6	20	14-30P	240	6.3	1500	10.3

OPTIONAL HIGH OUTPUT LED LIGHTS (115 VOLT)

CASE LENGTH	CANOPY LIGHTS H.O. LED		SHELF LIGHTS H.O. LED		MAX. H.O. LED LOAD	
	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS
3'	0.21	24	0.34	39	0.54	63
4'	0.28	32	0.40	46	0.67	78
5'	N/A	N/A	N/A	N/A	N/A	N/A
6'	0.41	47	0.68	78	1.09	125
8'	0.56	64	0.79	91	1.35	155

Spec Sheet (Cont'd)



MEDIUM TEMP SELF-SERVICE MULTI-DECK SELF-CONTAINED TWIN
HUSSMANN Isla - IM-04(T)(XX)-S CASE MODULES (ISLA) (CHINO)

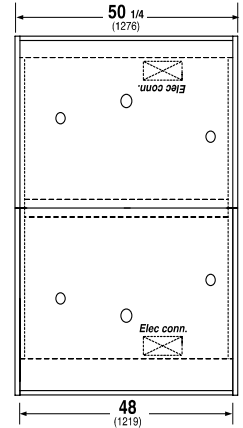
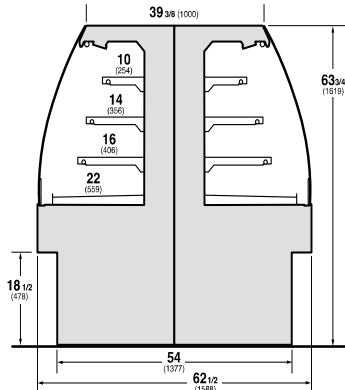
REVISION DATE 1/5/17



Hussmann refrigerated merchandisers configured for sale for use in the United States meet or surpass the requirements of the DOE 2017 energy efficiency standards.

IM-04-T4-S
 Refrigerated Multi-deck
 Self Service Self Contained

IM-04-T4-S Back-to-Back Multi-Deck Self-Service Self-Contained



REFRIGERATION DATA:

CASE LENGTHS	CASE USAGE	CONVENTIONAL CAPACITY ** (BTU/HR/FT)	DISCHARGE AIR * (°F)	VELOCITY (FT/MIN)
3'-4'-5'	DELI / DAIRY	1910	30-32	250-270
3'-4'-5'	MEAT	2670	28-30	250-270

*FRONT DISCHARGE AIR MEASURED INSIDE AIR CURTAIN HONEYCOMB

**REFRIGERATION NOTES:

- 1) CAPACITY FOR REFERENCE ONLY
- 2) USE DEW POINT FOR HIGH GLIDE REFRIGERANTS. CARE SHOULD BE TAKEN TO USE THE DEW POINT IN P/T TABLES FOR MEASURING AND ADJUSTING SUPERHEAT.
- 3) RATING CONDITION IS NSF TYPE I, 75°F/55% RH

REFRIGERATION DATA CONTINUED:

CONTROLLER / AIR SENSOR SETTINGS			DEFROST TYPE	FAIL SAFE TIME (MIN)	DEFROST FREQUENCY (#/DAY)	TERM. TEMP (°F) AIR	DRIP TIME (MIN)	DEFROST WATER (LBS/DAY/FT)
T-STAT PARAMETERS	CUT IN (°F)	CUT OUT (°F)						
WARM	42	36	OFF TIME	25	4	52	NA	5.1
COLD	28	18						

4) DEFROST IS BASED ON TERMINATION TEMP, WHICH UNDER NORMAL CIRCUMSTANCES, IS SHORTER THAN FAILSAFE TIME.

END PANEL WIDTH KEY		
# OF END PNLS	END PNL WIDTH (IN.)	TOTAL ADDED LENGTH (IN.)
1	1.125	1.125
2	1.125	2.25

ELECTRICAL DATA:

STANDARD FANS, HEATERS, LED LIGHTS (115 VOLT)

CASE LENGTH	EVAPORATOR FANS					LED CANOPY LIGHTS		LED SHELF LIGHTS		MAX. LED LOAD (W/ ALL OPTIONS)		ANTI-SWEAT HEATERS (ON FAN CIRCUIT)		CONVENIENCE OUTLETS (OPTIONAL)		
	# OF EVAP FANS	BLADE DIA. (IN.)	BLADE PITCH (°)	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	# OUTLETS	VOLTS	AMPS
3'	2	8	20	0.6	16	0.3	39	0.4	46	0.7	85	N/A	N/A	N/A	N/A	N/A
4'	2	8	25	0.6	16	0.5	54	0.5	62	1.0	116	N/A	N/A	N/A	N/A	N/A
5'	2	8	25	0.6	16	0.6	68	0.7	78	1.3	146	N/A	N/A	N/A	N/A	N/A

CONDENSING UNIT AND EVAPORATIVE PANS (208V & 240V)

CASE LENGTH	CONDENSING UNIT							EVAPORATIVE PAN			EST. REFG. CHR.G. 404A (LBS)
	NOM. HP	REFRIG.	Hz/Ph	Volts	RLA	FUSE AMPS	NEMA PLUG	VOLTS	AMPS	WATTS	
3'	1	404a	60/1	208	10.0	15	14-30P	240	6.3	1500	6.0
4'	1-3/4	404a	60/1	208	12.6	20	14-30P	240	6.3	1500	10.3
5'	2-1/4	404a	60/1	208	15.7	20	14-30P	240	8.3	2000	14.1

OPTIONAL HIGH OUTPUT LED LIGHTS (115 VOLT)

CASE LENGTH	CANOPY LIGHTS H.O. LED		SHELF LIGHTS H.O. LED		MAX. H.O. LED LOAD	
	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS
3'	0.4	47	0.7	78	1.1	125
4'	0.6	64	0.8	91	1.3	155
5'	N/A	N/A	N/A	N/A	N/A	N/A

Spec Sheet (Cont'd)



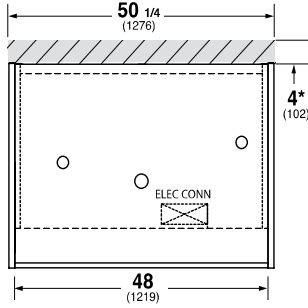
MEDIUM TEMP SELF SERVICE MULTI-DECK SELF-CONTAINED
 HUSSMANN Ista - IM-05-(E or C)(X)-S CASE MODULES (ISLA) (CHINO)

REVISION DATE 01/05/17

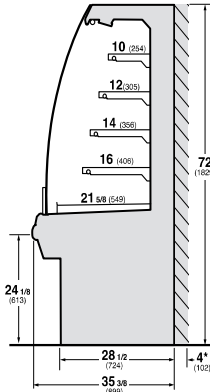


Hussmann refrigerated merchandisers configured for sale for use in the United States meet or surpass the requirements of the DOE 2017 energy efficiency standards. IM-05-Ix-S End or Combo Center Case

IM-05/04-S Refrigerated Multi-Deck Self-Service Self-Contained



*MIN required air space for condenser air discharge.



*MIN required air space for condenser air discharge.



REFRIGERATION DATA:

CASE LENGTHS	CASE USAGE	CONVENTIONAL CAPACITY ** (BTU/HR/FT)	DISCHARGE AIR * (°F)	VELOCITY (FT/MIN)
3',4',5',6',8'	DELI / DAIRY	1200	30~32	250~270
3',4',5',6',8'	MEAT	1380	28~30	250~270

*FRONT DISCHARGE AIR MEASURED INSIDE AIR CURTAIN HONEYCOMB

**REFRIGERATION NOTES:

- 1) CAPACITY FOR REFERENCE ONLY
- 2) USE DEW POINT FOR HIGH GLIDE REFRIGERANTS. CARE SHOULD BE TAKEN TO USE THE DEW POINT IN P/T TABLES FOR MEASURING AND ADJUSTING SUPERHEAT.
- 3) NSF RATING CONDITION IS NSF TYPE II, 80°F / 55% RH

REFRIGERATION DATA CONTINUED:

CONTROLLER / AIR SENSOR SETTINGS			DEFROST TYPE	FAIL SAFE TIME (MIN)	DEFROST FREQUENCY	TERM. TEMP (°F) AIR	DRIP TIME (MIN)	DEFROST WATER (LBS/DAY/FT)
T-STAT PARAMETERS	CUT IN (°F)	CUT OUT (°F)						
WARM	42	36	OFF TIME	25	4	52	NA	5.9
COLD	28	18						

END PANEL WIDTH KEY		
# OF END PNLS	END PNL WIDTH	TOTAL ADDED LENGTH (IN.)
1	1.125	1.125
2	1.125	2.25

4) DEFROST IS BASED ON TERMINATION TEMP, WHICH UNDER NORMAL CIRCUMSTANCES, IS SHORTER THAN FAILSAFE TIME.

ELECTRICAL DATA:

STANDARD FANS, HEATERS, LED LIGHTS (115 VOLT)

CASE LENGTH	EVAPORATOR FANS					LED CANOPY LIGHTS		LED SHELF LIGHTS		MAX. LED LOAD (W/ ALL OPTIONS)		ANTI-SWEAT HEATERS (ON FAN CIRCUIT)		CONVENIENCE OUTLETS (OPTIONAL)		
	# OF EVAP FANS	BLADE DIA. (IN.)	BLADE PITCH (°)	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS	# OUTLETS	VOLTS	AMPS
3'	1	8	25	0.3	8	0.17	19	0.20	23	0.37	42	N/A	N/A	N/A	N/A	N/A
4'	1	8	25	0.3	8	0.23	27	0.27	31	0.50	58	N/A	N/A	N/A	N/A	N/A
5'	1	8	30	0.3	8	0.30	34	0.34	39	0.63	73	N/A	N/A	N/A	N/A	N/A
6'	2	8	25	0.6	16	0.34	39	0.40	46	0.74	85	N/A	N/A	N/A	N/A	N/A
8'	2	8	25	0.6	16	0.47	54	0.54	62	1.01	116	N/A	N/A	N/A	N/A	N/A

CONDENSING UNIT AND EVAPORATIVE PANS (115 & 208V)

CASE LENGTH	CONDENSING UNIT							EVAPORATIVE PAN			EST. REFG. CHRGE. 404a (LBS) / CU
	NOM. HP	REFRIG.	Hz/Ph	Volts	RLA	FUSE AMPS	NEMA PLUG	VOLTS	AMPS	WATTS	
3'	3/4	404a	60/1	208	6.8	15	14-20P	240	4.8	1000	4.6
4'	1	404a	60/1	208	9.0	15	14-20P	240	6.3	1500	6.0
5'	1-1/4	404a	60/1	208	9.3	15	14-30P	240	6.3	1500	6.6
6'	1-3/4	404a	60/1	208	12.6	15	14-30P	240	6.3	1500	10.3
8'	2 X 1	404a	60/1	208	18.0	20	N/A	240	8.3	2000	6.0

OPTIONAL HIGH OUTPUT LED LIGHTS (115 VOLT)

CASE LENGTH	CANOPY LIGHTS H.O. LED		SHELF LIGHTS H.O. LED		MAX. H.O. LED LOAD	
	AMPS	WATTS	AMPS	WATTS	AMPS	WATTS
3'	0.21	24	0.34	39	0.54	63
4'	0.28	32	0.40	46	0.67	78
5'	N/A	N/A	N/A	N/A	N/A	N/A
6'	0.41	47	0.68	78	1.09	125
8'	0.56	64	0.79	91	1.35	155

Spec Sheet (Cont'd)

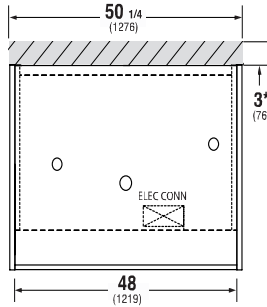
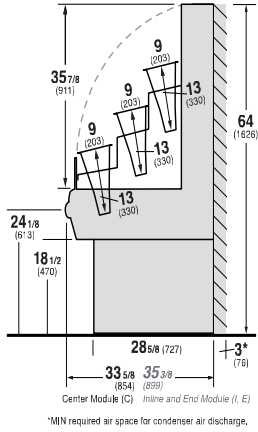
HUSSMANN Specialty Products
IM-04-14-FNC-S



NON-CRITICAL TEMP MULTI-DECK FLORAL NARROW CANOPY ISLAND
Isia - IM-04-(E or C)(XX)-R-FNC CASE MODULES [ISLA](CHINO)



DOE 2012 Energy Efficiency Compliance Hussmann refrigerated merchandisers configured for sale for use in the United States meet or surpass the requirements of the DOE 2012 energy efficiency standards.



REFRIGERATION DATA:

MODULE LENGTH	CASE USAGE	CAPACITY *** (BTU/HR/TOTAL)		TEMPERATURE (°F)				DISCHARGE AIR		EST. REFG. CHR.G. (LBS)	
				EVAPORATOR		UNIT SIZING*		TEMPERATURE (°F)			VELOCITY
				UNLIGHTED	L.E.D. LIGHTED	UNLIGHTED	L.E.D. LIGHTED	PAR	CONV		(FT/MIN)
4'	FLORAL	2400	2760	30	28	28	26	34	34	200-250	2.8

*2° F less than evaporator for pressure loss in refrigerant lines

***** REFRIGERATION NOTES:**

- 1) TEST CONDITIONS: 75°F/65% RH
- 2) SUBJECT TO CHANGE BASED ON DESIGN CHANGES
- 3) ADD 10 BTU'S PER FOOT/PER SHELF OR CANOPY FOR OPTIONAL LED LIGHTS

LEGEND

PAR-	PARALLEL
CONV-	CONVENTIONAL
N/A -	NOT AVAILABLE
TBD -	TO BE DETERMINED
MODULE NOMENCLATURE KEY:	
IM =	ISLA MODULE
04 =	50" HIGH
E or C =	END or CENTER CASE
(XX) =	(MODULE LENGTH IN FEET)
R =	REFRIGERATED SELF SERVICE MULTIDECK
FNC =	FLORAL NARROW CANOPY
EXAMPLE:	IM-04-FNC-S-1-ISLA MODULE, 48" HIGH, END 4' WIDE, REFRIGERATED SELF SERVICE FLORAL NARROW CANOPY MULTI-DECK

REFRIGERATION DATA CONTINUED:

ELEC. THERMOSTAT / AIR SENSOR SETTINGS		
USAGE	CUT IN (°F)	CUT OUT (°F)
FLORAL	32.0	30.0

ELECTRICAL DATA:

STANDARD FANS AND HEATERS (120 VOLT)

LIGHTING: 120V INPUT VOLTAGE

MODULE LENGTH	# EVAP. FANS	TOTAL EE FANS		L.E.D. CANOPY LIGHTS			L.E.D. SHELF LIGHTS		L.E.D. TOTAL LIGHTS WITH 4 ROWS		PLUG TYPE
		AMPS	WATTS	AMPS	WATTS	# ROWS	AMPS	WATTS	AMPS	WATTS	
4'	1	0.30	18.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	L5-30P

ELECTRICAL DATA CONTINUED:

MODULE LENGTH	CONDENSING UNIT 120V / 1 PHASE		EVAPORATOR PAN 120V / 1 PHASE		CONVENIENCE OUTLETS		
	AMPS	HP	AMPS	WATTS	#OUTLET	VOLTS	AMPS
4'	7.45	1/3	12.5	1500	N/A	N/A	N/A

DEFROST DATA:

MODULE LENGTH	DEFROST TYPE	TIME (MIN)	TERM. TEMP COIL ONLY (°F)	DEFROST WATER (LB / DAY)
4'	OFF TIME	25	52	NA

OPTIONS/NOTES:

- Single point mechanical connections
- TX valves
- Liquid Hand Valves
- Standard Shelves: Upper Shelf 12", Bottom Shelf 16"

- Standard 48" height
- Black bumper and black interior
- PTM

11. Safe-Net III Operation



**ATTENTION
INSTALLER**

It is the contractor's responsibility to install case(s) according to local construction and health codes.

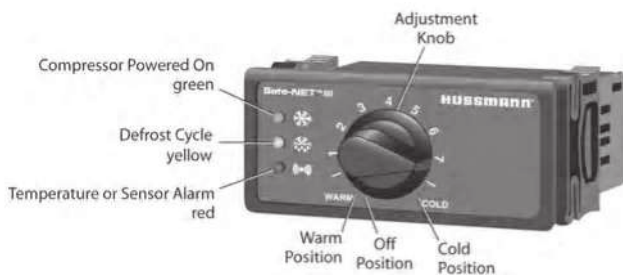
Safe-NET III™ TEMPERATURE AND DEFROST CONTROLLER

SAFE-NET III™ USER INSTRUCTIONS

Your refrigerated case uses a Hussmann Safe-NET III™ temperature and defrost controller to precisely maintain the temperature and prevent frost buildup on the cooling coil. LEDs indicate when the compressor or refrigeration is on, when the case is in a defrost cycle, if the temperature is outside the desired range, or if there is a sensor failure.

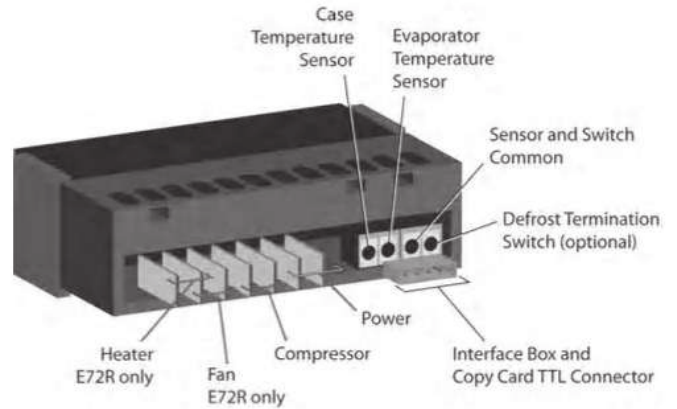
An adjustment knob allows the temperature to be set within the configured range and can power off the controller and compressor. Your controller has been custom-configured to provide the best temperature and defrost control for your chilled or frozen food.

The front of the controller has an adjustment knob and status LEDs. The back of the controller has connections for sensors and switched equipment.



The Safe-NET III controller includes the following features and connections.

- Adjustment knob:
Adjusts the temperature setpoint.
Turn adjustment knob to OFF to turn off refrigeration system. Unplug merchandiser from power before servicing the unit.



- Controller LEDs:

- ❄️ Compressor Powered On LED (green): Lights while the compressor is running or the refrigeration valve is open.
- ❄️ Defrost Cycle LED (yellow): Lights while the refrigeration coil is defrosting.
- 🔊 Temperature or Sensor Alarm (red): Lights if the temperature is too warm or too cold. Flashes if a sensor fails.

Safe-Net III Operation (Cont'd)

- Rear connections
- Case temperature sensor:
 - Typically senses the temperature of the air in the case.
 - Used by the controller to determine when to power on or power off the compressor or refrigeration.
- Evaporator temperature sensor:
 - Senses the temperature of the refrigeration coil.
 - Terminates a defrost cycle when refrigeration coil ice melts.
- Compressor or refrigeration relay:
 - Switches on the compressor or refrigeration valve for cooling.

WARNING

The optional evaporator fan remains ON when the adjustment knob is in the OFF position.

DISPLAY

The display includes three red LEDs and two digits for temperature, defrost status, and error codes.

The three display LEDs are red, and their behavior matches the LEDs on the controller.



START-UP

1. Plug in the merchandiser.

WARNING

The OFF Position does not disconnect line voltage to the case, refrigeration unit, fan, or heater.

2. Wait for the self check to complete. During the self check, each LED flashes for one second, then all LEDs turn on for two seconds. If the LEDs do not flash, make sure the adjustment knob is not in the Off position.
 - After the self check, all LEDs turn off until the compressor starts. **There may be a delay before the compressor starts.** If the red Temperature or Sensor Alarm LED stays on after the self check.
 - The green Compressor Powered On LED turns on when the compressor starts.

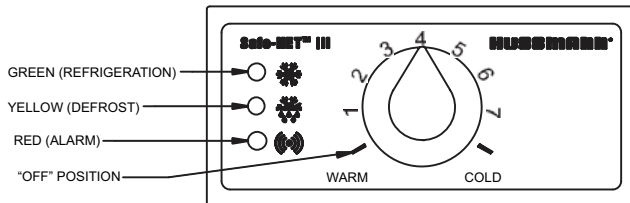
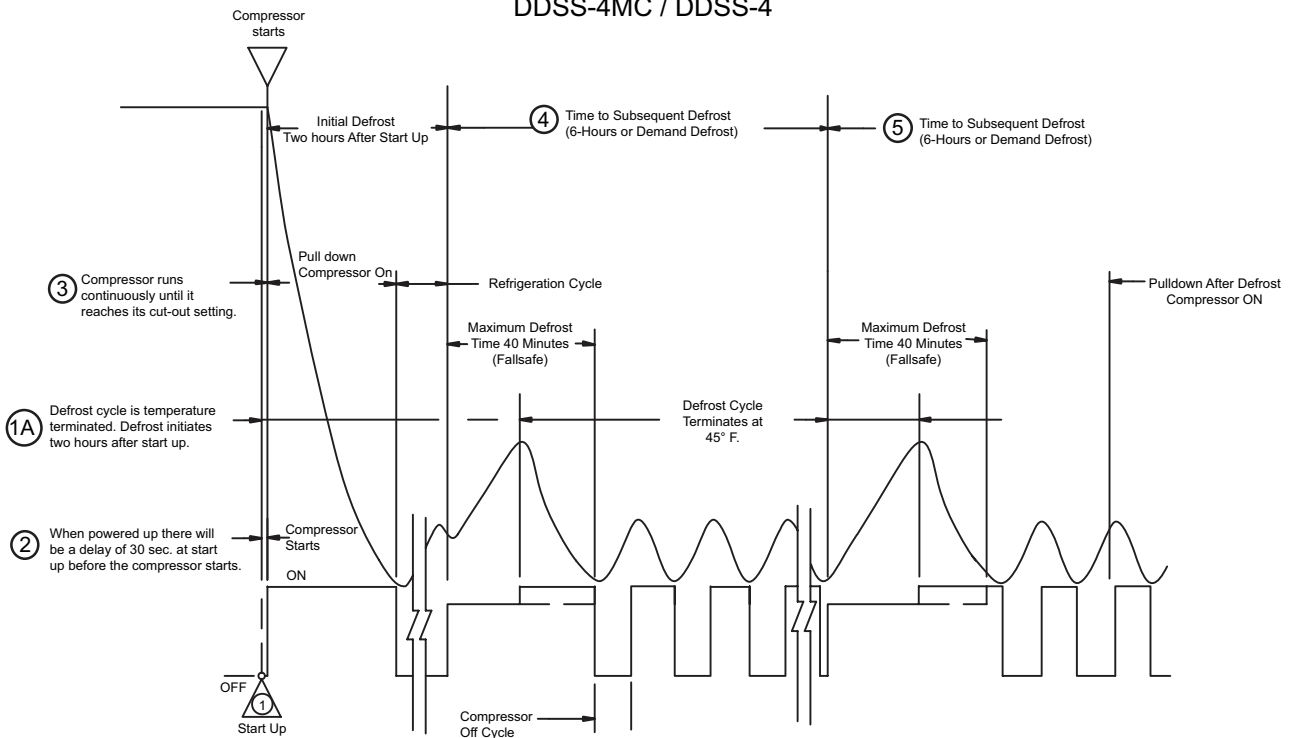
NOTE: Do NOT load product until AFTER merchandiser operates for 24 hours and reaches desired operating temperature.

WARNING

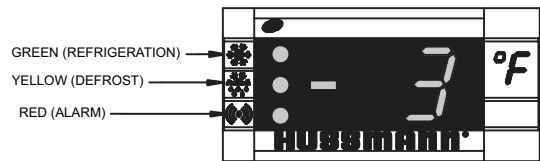
Product will be degraded and may spoil if allowed to sit in a non-refrigerated area.

Safe-Net III Operation (Cont'd)

SEQUENCE OF OPERATION DDSS-4MC / DDSS-4



Safe-Net III Controller



DISPLAY

1. Apply power to the merchandiser. Wait for the self check to complete. During the self check, each LED flashes for one second and then all LEDs turn on for two seconds. If the LEDs do not flash, make sure the adjustment knob is not in the "OFF" position.
- 1A. The merchandiser temperature displays at startup. The initial defrost starts two hours later. The display will show the temperature at the start of defrost. This reading will remain displayed during defrost and until it times out, even though the refrigeration mode has been initiated. (The green LED will be lit.)
2. The compressor will start after a 30 second delay once power is applied.
3. The compressor will continue to run until it reaches its cut-out temperature (Pulldown).
4. The refrigeration cycle will continue for the next subsequent scheduled (5-hours) or demand defrost.
5. The above process will repeat (steps 3 and 4) until the power is interrupted.
6. If power stops, the process will start over at step 1, and the time to subsequent defrost will reset.

Safe-Net III Operation (Cont'd)

TEMPERATURE ADJUSTMENT

Rotate the adjustment knob counter clockwise for a warmer setpoint or clockwise for a colder setpoint.

- While the temperature is being adjusted, the optional display shows the setpoint (cut out value). A few seconds after the temperature is set, the display reverts to showing the sensed temperature in the merchandiser.

ALARMS AND CODES

FLASHING TEMPERATURE OR SENSOR ALARM LED, E1 OR E2

If the Temperature or Sensor Alarm LED (red) on the controller and display is flashing, a temperature sensor has failed. The display shows E1 if the case sensor has failed or E2 if the evaporator sensor has failed.

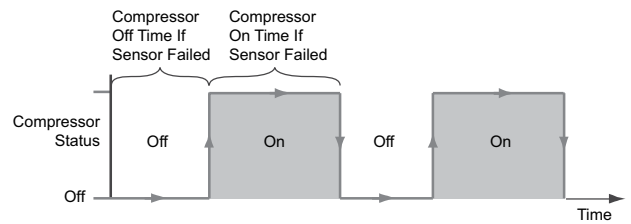


If the merchandiser sensor fails, refrigeration will run continuously. Turn off, or repeat a duty cycle of a few minutes on and a few minutes off.

DEFROST TERMINATION SWITCH

Merchandisers may use a defrost termination switch, instead of an evaporator sensor to terminate a defrost cycle. The defrost termination switch is temperature

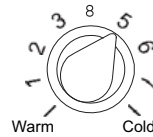
activated and senses the completion of defrost.



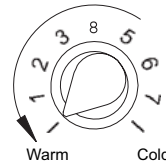
MANUAL DEFROST

Note:

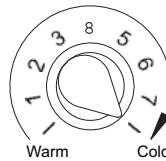
This procedure initiates a manual or forced defrost



1. Note location of knob setting



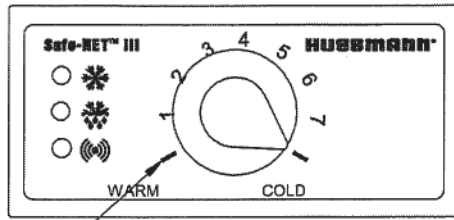
2. Rotate knob fully counterclockwise until it stops (full warm- "OFF" position)



3. After 10 seconds, but before 20 seconds, rotate knob fully clockwise until it stops (full cold position)

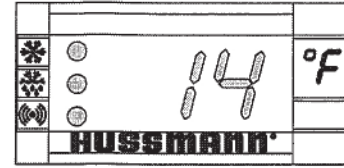
IMPORTANT: Return the control knob to its original setting (Step 1) once the manual defrost has been initiated.

Safe-Net III Operation (Cont'd)

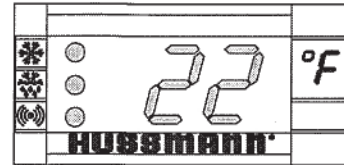


"OFF" Position

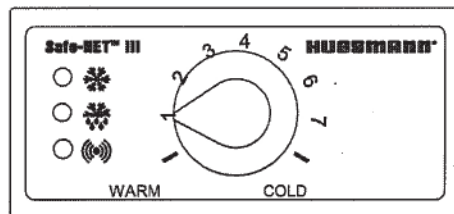
Safe-NET III Control
Set at Full Cold Position



Display - at Full Cold



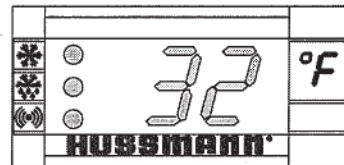
Display - at Full Cold



Safe-NET III Control
1 Position



Display - at #1 Position



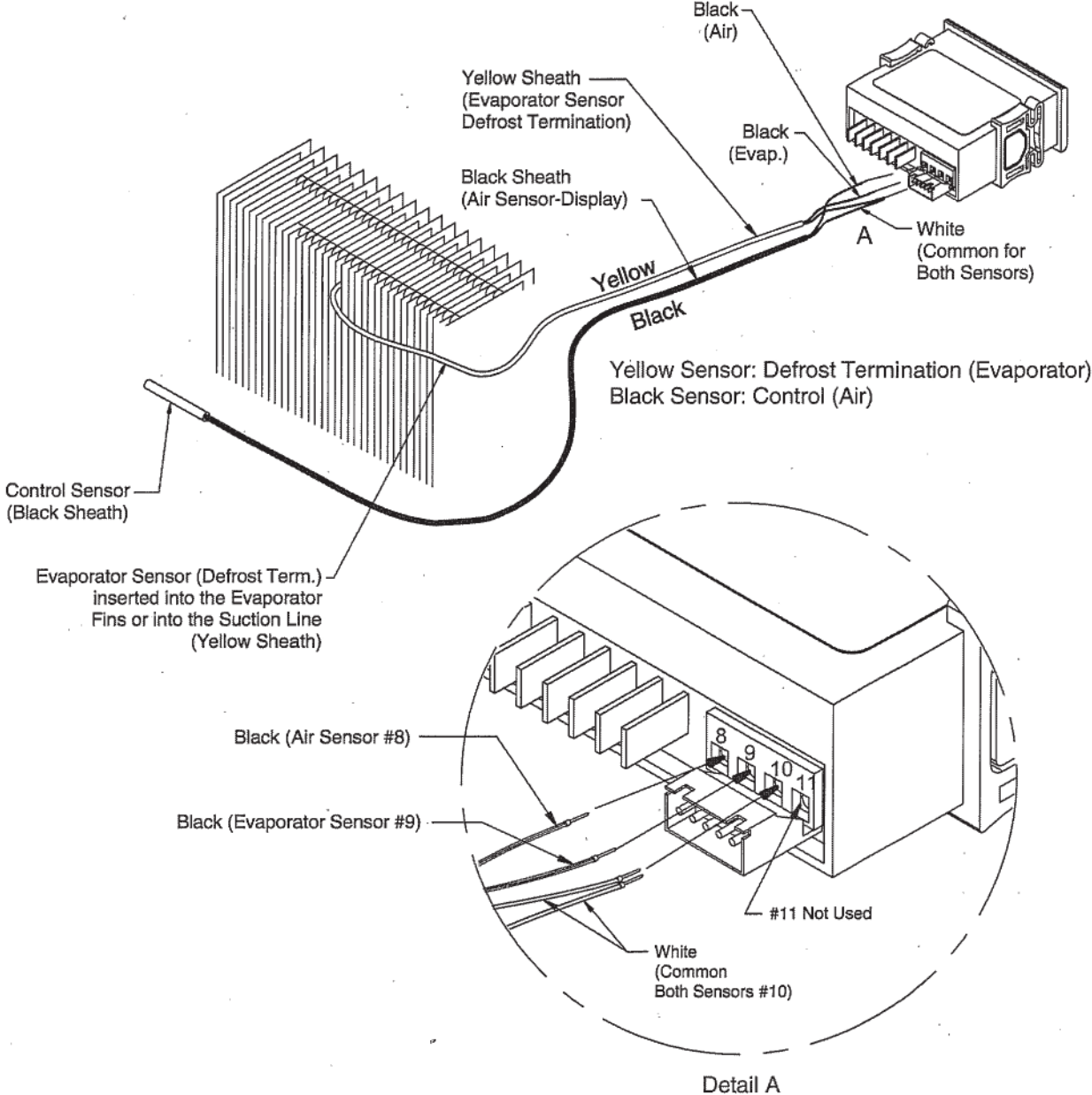
Display - at #1 Position

TEMPERATURE ADJUSTMENT

1. Rotate the adjustment knob counter clockwise for a warmer setpoint or clockwise for a colder setpoint.
2. While adjusting the temperature, the display shows the setpoint (cut out value). A few seconds after the temperature is set, the controller reverts to the sensed temperature in the merchandiser.
3. To verify merchandiser settings, turn the dial to warm and cold as shown above. Output readings should be within one degree of the temperatures shown above.


Safe-Net III Operation (Cont'd)

Typical Sensor to Control Configuration



12. General Maintenance

Electrical Precautions



DANGER

BEFORE SERVICING
ALWAYS DISCONNECT ELECTRICAL
POWER AT THE MAIN DISCONNECT
WHEN SERVICING OR REPLACING ANY
ELECTRICAL COMPONENT.

This includes (but not limited to) Fans, Heaters
Thermostats, and Lights.


Evaporator Fans

The evaporator fans are located at the center front of these merchandisers directly beneath the display pans. Should fans or blades need servicing, always replace fan blades with the raised embossed side of the blade TOWARD THE MOTOR.

Tips and Troubleshooting

Before calling for service, check the following:

1. Check electrical power supply to the equipment for connection.
2. Check fixture loading. Overstocking case will affect its proper operation.
3. If frost is collecting on fixture and/or product, check that Humidity Control is working properly, and that no outside doors or windows are open - allowing moisture to enter store.



IMPORTANT
INFORMATION

FOR PROMPT SERVICE
When contacting the factory regarding problems,
be sure to have the Case Model and Serial
Number handy. This information is on a plate
located on the case itself.

Stainless Steel Cleaning and Care

There are three basic things, which can break down your stainless steel's passivity layer and allow corrosion.

1. Mechanical Abrasion

Mechanical Abrasion means those things that will scratch the steels surface. Steel Pads, wire Brushes, and Scrapers are prime examples.

2. Water

Water comes out of our tap in varying degrees of hardness. Depending on what part of the country you live in, you may have hard or soft water. Hard water may leave spots. Also, when heated, hard water leaves deposits behind that if left to sit, will break down the passive layer and rust your stainless steel. Other deposits from food preparation and service must be properly removed.

3. Chlorides

Chlorides are found nearly everywhere. They are in water, food and table salt. One of the worst perpetrators of chlorides can come from household and industrial cleaners.

Don't Despair! Here are a few steps that can help prevent stainless steel rust.

1. Use the Proper Tools

When cleaning your stainless steel products, take care to use non-abrasive tools. Soft Clothes and plastic scouring pads will NOT harm the steel's passive layer. Stainless steel pads can also be used but the scrubbing motion must be in the same direction of the manufacturer's polishing marks.

2. Clean With the Polish Lines

Some stainless steels come with visible polishing lines or "grain". When visible lines are present, you should ALWAYS scrub in a motion that is parallel to them. When the grain cannot be seen, play it safe and use a soft cloth or plastic scouring pad.

3. Use Alkaline, Alkaline Chlorinated or Non-chloride Containing Cleaners

While many traditional cleaners are loaded with chlorides, the industry is providing an ever increasing choice of non-chloride cleaners. If you are not sure of your cleaner's chloride content contact your cleaner supplier. If they tell you that your present cleaner contains chlorides, ask for an alternative. Also, avoid cleaners containing quaternary salts as they also can attack stainless steel & cause pitting and rusting.

General Maintenance (Cont'd)

4. Treat your Water

Though this is not always practical, softening hard water can do much to reduce deposits. There are certain filters that can be installed to remove distasteful and corrosive elements. Salts in a properly maintained water softener are your friends. If you are not sure of the proper water treatment, call a treatment specialist.

5. Keep your Food Equipment Clean

Use alkaline, alkaline chlorinated or non-chlorinated cleaners at recommended strength. Clean frequently to avoid build-up of hard, stubborn stains. If you boil water in your stainless steel equipment, remember the single most likely cause of damage is chlorides in the water. Heating cleaners that contain chlorides has a similar effect.

6. RINSE, RINSE, RINSE

If chlorinated cleaners are used you must rinse, rinse, rinse and wipe dry immediately. The sooner you wipe off standing water, especially when sit contains cleaning agents, the better. After wiping the equipment down, allow it to air dry for the oxygen helps maintain the stainless steel's passivity film.

7. Never Use Hydrochloric Acid (Muriatic Acid) on Stainless Steel

8. Regularly Restore/Passivate Stainless Steel

13. Preventive Maintenance

(To be performed by trained service provider) Warning! Turn Off case before performing Preventive Maintenance!		
Preventive Maintenance	Frequency	Instructions
Case Exterior	Monthly	Condensing Coil: Note: The vacuum 'blow mode' is to be used when cleaning the condenser coil. Follow these steps: a. Remove panel; use vacuum and brush to dislodge and remove dust on and in coil. b. Place damp rags around condensing fan motor brackets to collect airborne dust. c. Using vacuum (in 'blowing' mode), blow air through condenser coils and into fans. Make certain to blow entire surface of condensing coils to assure that all entrenched dust is removed. Caution! Coil fins are sharp. Handle with care! d. Replace rear grille to case (4 screws).
	Quarterly	Evaporator Pan: Caution! Disconnect from receptacle box. Remove mounting screws from base. Use de-scaling solution (such as CLR®) that will prevent corrosion, lime and rust) to clean pan, Rinse thoroughly; do not submerge in water. Reattach pan to case with same mounting screws. Reconnect power cord to receptacle box.
	Quarterly	Compressor Area: Caution! be certain to disconnect power from case before cleaning compressor area! Slide/Roll compressor package out from under case. Use moist cloth to wipe off dust & debris that collects on various parts. Slide/Roll compressor package back under case.
	Quarterly	Under Case Cleaning: Once refrigeration package is clear of unit, vacuum under case to remove all dust and dirt that may collect under case.

Preventive Maintenance (Cont'd)

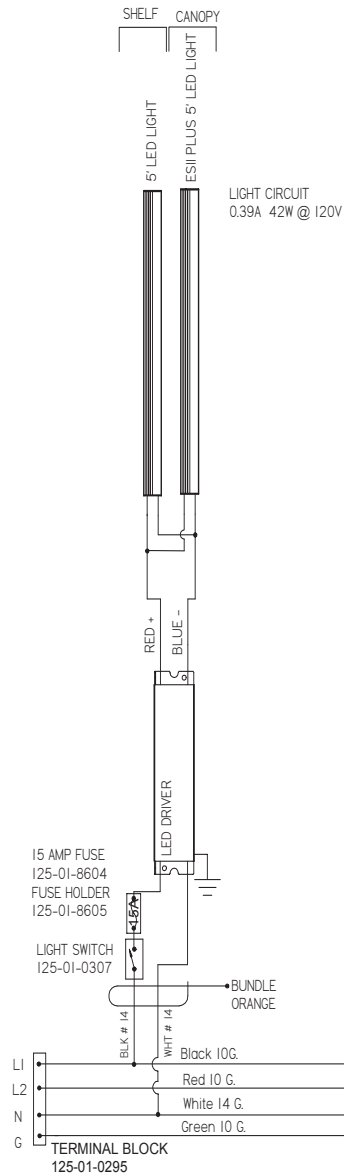
(To be performed by trained service provider)
Warning! Turn Off case before performing Preventive Maintenance!

Preventive Maintenance	Frequency	Instructions
Case Interior	Quarterly	Tub, Coil, Drain, Fan Blades, Motors, Brackets: Disconnect power from the case before cleaning the Tub, Coil, Fan, Motor and Drain Area! Remove Decking, Sub-Deck and Fan Shroud. Use vacuum to clean Evaporator Coils. Clean Tub, Coil and Drain with warm water, clean cloth, brush and mild soap solution. Remove any debris that may clog drain. Clean Fan Blades, Motors and Brackets by wiping down with moist cloth.

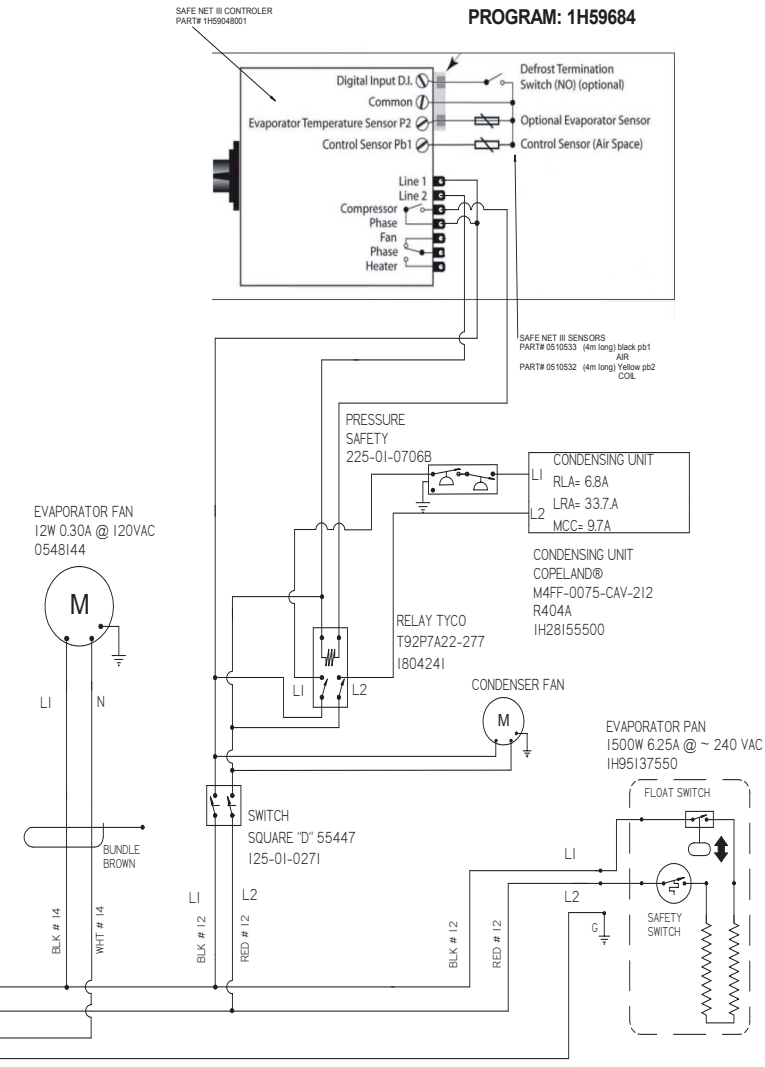
14. Electrical Wiring Diagrams Index

MODEL	DESCRIPTION	SIZE	DIAGRAM #
IM-03-S	IM-03-E5-S	5'	3011858
IM-04-S	IM-04-I3-S	3'	1H66325
	IM-04-I4-S	4'	1H66352
	IM-04-I5-S	5'	1H66328
	IM-04-I6-S W/DAN FOSS AK-CC-210	6'	3004408
	IM-04-I8-S W/DAN FOSS AK-CC-210	8'	3004410
IM-05-S	IM-05-I3-S	3'	1H66327
	IM-05-I4-S LED LIGHTS	4'	1H61306
	IM-05-I5-S	5'	1H66363
	IM-05-I5-S (With 30 Amp cord)	5'	1H76815
	IM-05-I6-S	6'	1H66365
	IM-05-I8-S	8'	1H66367
	IM-05-I8-S W/50 AMP PLUG	8'	1H80986
IM-04-H	IM-04-C6-FH 5-WELL W/HATCO 66"	6'	W6600201
	IM-05-E5-FS 2-SOUP W/LED	5'	W6600205
IM-04-S	IM-04-I4-FNC-S R-134A	4'	3008650
IM-03-H	IM-03-I3-H 208V/240V	3'	W6600037
	IM-03-4-H 208V	4'	W6600014

CIRCUIT #1	
LOADING	
208V	240V
L1 11.9	13.7
L2 11.3	13.1



REVISION HISTORY						
REV	ECN	DATE	REVISION DESCRIPTION	REV BY	CHKD BY	APPR BY
A	ECN-CAP-0003047	2016/07/25	RELEASED TO PRODUCTION	CB	CB	CB
B	ECN-CAP-0003963	2016/10/03	CHANGED COMPRESSOR	CB	CB	CB



NOTES:
 CASE MUST BE GROUNDED
 WHEN PASSING WIRES THROUGH METAL HOLES A GROMMET MUST BE USED

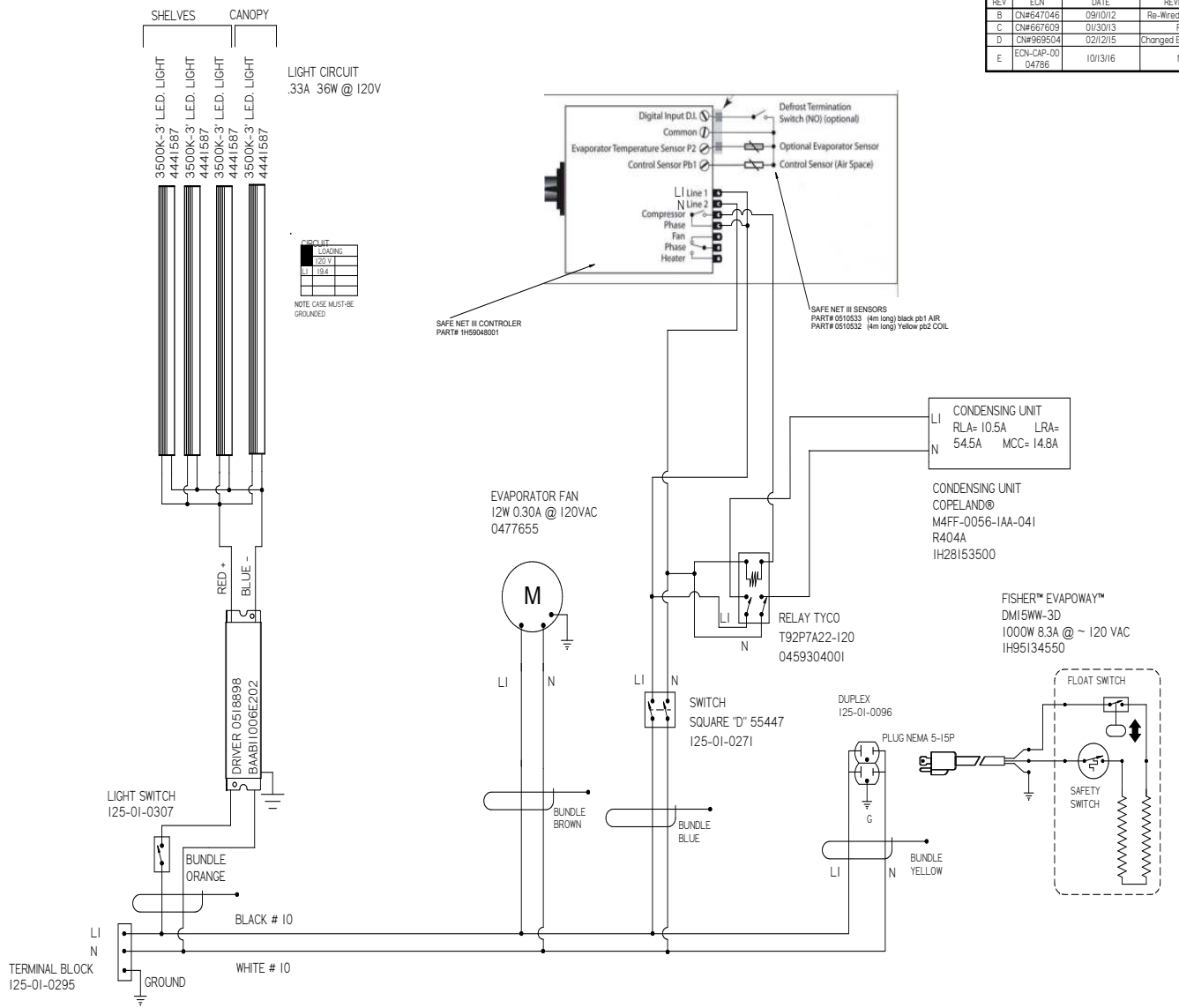
MATERIAL - N/A	
DATE DRAWN - 7-25-16	
DRAWN BY - CRAIG BOOREY	ECN-CAP-0003047
REVIEWED BY - CRAIG BOOREY	REF -
APPROVED BY - CRAIG BOOREY	SHEET 1 OF 1
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.	
TOLERANCES ARE: DECIMALS .XX ±.03, XXX ±.010	THIRD ANGLE PROJECTION

HUSSMANN	
DIAGRAM-IM-03-E5-	
S	
3011858	B

15. Wiring Diagrams

Wiring Diagrams (Cont'd)

REVISION HISTORY						
REV	ECN	DATE	REVISION DESCRIPTION	REV BY	CHKD BY	APPR BY
B	CN#647046	09/10/12	Re-Wired the Relay connection	SP	SP	SP
C	CN#667609	01/30/13	Re-Wired Relay	CB	CB	CB
D	CN#969504	02/12/15	Changed Evap Fan, Revised Loads	CB	CB	CB
E	ECN-CAP-00 04786	10/13/16	NEW TEMPLATE	NCL	NCL	NCL



CIRCUIT	
LOADING	WIRE

NOTE CASE MUST BE GROUNDED.

NOTES
CASE MUST BE GROUNDED

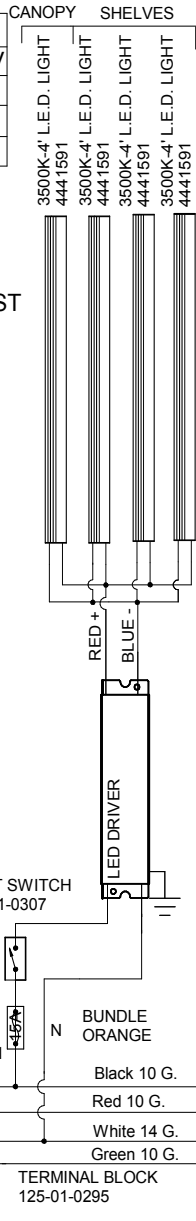
MATERIAL - N/A	HUSMANN
MODEL BY / DWG BY- SP	DIAGRAM-IM-04-13-S
CHECKED BY- SP	W/LD LIGHTS
APPROVED BY- SP	
DATE DRAWN - 09/10/12	
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.	
TOLERANCES ARE:	
DECIMALS .XX ±0.3, .XXX ±0.10	THIRD ANGLE PROJECTION
ANGLES ± 2°	
	IH66325
	E

HUSMANN_GDP...21 SHEET SIZE: D

CIRCUIT #1

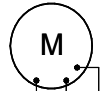
LOADING		
	208 V	240V
L1	12.0	13.8
L2	11.4	13.1

NOTE: CASE MUST BE GROUNDED



LIGHT CIRCUIT (INPUT)
48W 0.44A @ 120VAC

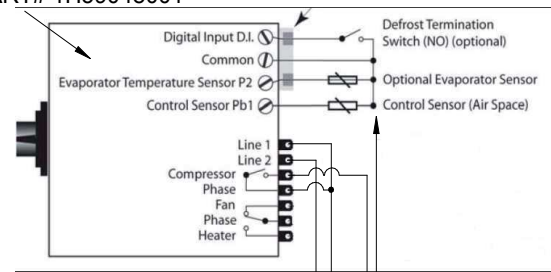
EVAPORATOR FAN
12W 0.30A @ 120VAC
0477655



BUNDLE BROWN

SAFE NET III CONTROLLER
PART# 1H59048001

PROGRAM: 1H59684



SAFE NET III SENSORS

PART# 0510533 (4m long) black pb1
AIR

PART# 0510532 (4m long) Yellow pb2
COIL

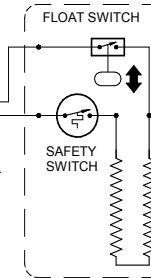
L1 CONDENSING UNIT
RLA= 6.8 A
LRA= 33.7A
MCC= 9.7A

CONDENSING UNIT
COPELAND®
M4FF-0075-CAV-212
R404A
1H21855

RELAY TYCO
T92P7A22-277
1804241

EVAPORATOR PAN
1500W 6.25A @ ~ 240 VAC
1H95137550

L1 L2 SWITCH
SQUARE "D" 55447
125-01-0271



HUSSMANN
Hussmann Corporation, Intl.
13770 Ramona Avenue
Chino, CA, 91710
(909)-590-4910 Lic.# 644406

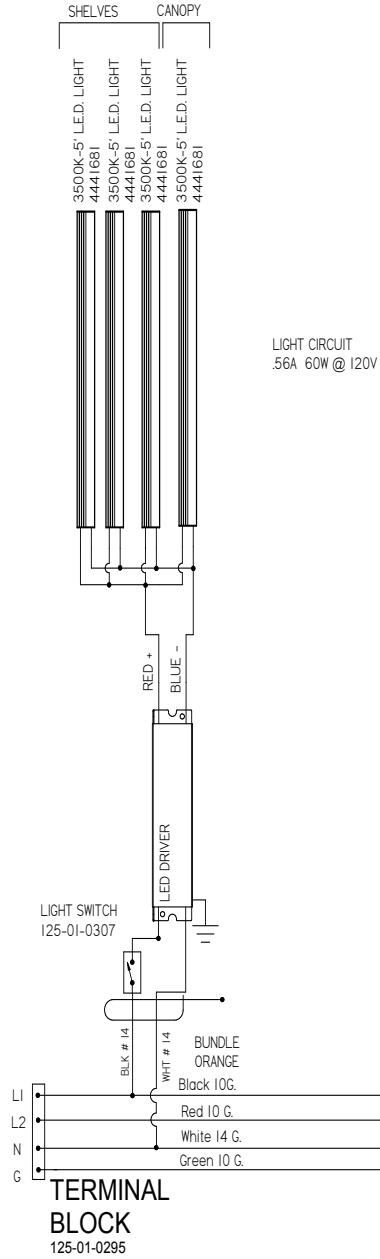
REVISIONS:				DRAWN BY: CRAIG BOOREY		PROJECT TITLE: ISLA CASES		DRAWING #: 1H66352	
#	DESCRIPTION:	DATE:	BY:	CHECKED BY:	DATE:	DRAWING TITLE:			
B	CN#647046, Re-Wired the Relay connection	9/10/12	SP	PRODUCTION ORDER #:		DIAGRAM-IM-04-14-S W/LED LIGHTS		PAGE 1 OF 1	
C	CN#987576 Changed Evaporator Pan	6/19/15	CB	FILE LOCATION:					
D	ECN-CAP-0004786 SYNC REVISION WITH TC	10/13/16	NCL						

DRAWN BY: CRAIG BOOREY		PROJECT TITLE: ISLA CASES		DRAWING #: 1H66352	
#	DESCRIPTION:	DATE:	BY:	CHECKED BY:	DATE:
B	CN#647046, Re-Wired the Relay connection	9/10/12	SP	PRODUCTION ORDER #:	
C	CN#987576 Changed Evaporator Pan	6/19/15	CB	FILE LOCATION:	
D	ECN-CAP-0004786 SYNC REVISION WITH TC	10/13/16	NCL		

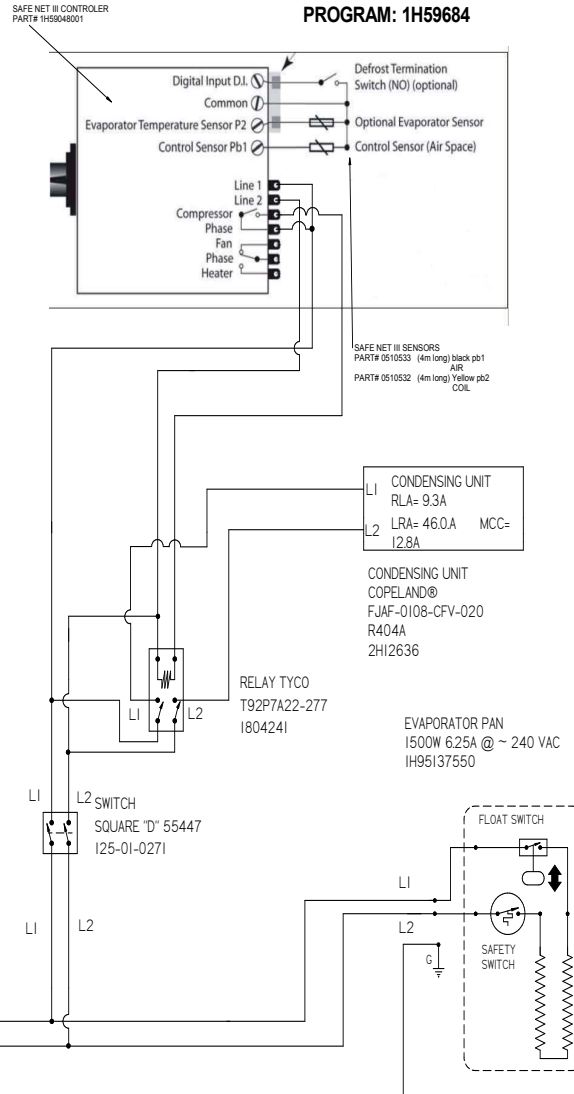
DRAWN BY: CRAIG BOOREY		PROJECT TITLE: ISLA CASES		DRAWING #: 1H66352	
#	DESCRIPTION:	DATE:	BY:	CHECKED BY:	DATE:
B	CN#647046, Re-Wired the Relay connection	9/10/12	SP	PRODUCTION ORDER #:	
C	CN#987576 Changed Evaporator Pan	6/19/15	CB	FILE LOCATION:	
D	ECN-CAP-0004786 SYNC REVISION WITH TC	10/13/16	NCL		

DRAWN BY: CRAIG BOOREY		PROJECT TITLE: ISLA CASES		DRAWING #: 1H66352	
#	DESCRIPTION:	DATE:	BY:	CHECKED BY:	DATE:
B	CN#647046, Re-Wired the Relay connection	9/10/12	SP	PRODUCTION ORDER #:	
C	CN#987576 Changed Evaporator Pan	6/19/15	CB	FILE LOCATION:	
D	ECN-CAP-0004786 SYNC REVISION WITH TC	10/13/16	NCL		

CIRCUIT #1	
LOADING	
208 V 240V	
L1 14.3	16.4
L2 13.6	15.6



NOTE:
CASE MUST BE GROUNDED



REVISION HISTORY						
REV	ECN	DATE	REVISION DESCRIPTION	REV BY	CHKD BY	APPR BY
B	647046	09/10/12	Re-wired the Relay connection	SP	SP	SP
C	781433	03/05/14	Changed Evaporator Pan	CB	CB	CB
D	996474	08/25/15	Changed Compressor	CB	CB	CB
E	ECN-CAP-0004786	10/13/16	NEW TEMPLATE	NCL	NCL	NCL

Wiring Diagrams (Cont'd)

MATERIAL - N/A	
MODEL BY / DWG BY - CB	
CHECKED BY - CB	ECN-647046
APPROVED BY - CB	REF - N/A
DATE DRAWN - 09/10/12	SHEET 1 OF 1
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	
TOLERANCES ARE: DECIMALS .XX ±.03, .XXX ±.010 ANGLES ± 2°	THIRD ANGLE PROJECTION

HUSSMANN	
DIAGRAM-IM-04-I5-S	
W/LED LIGHTS	
IH66328	E

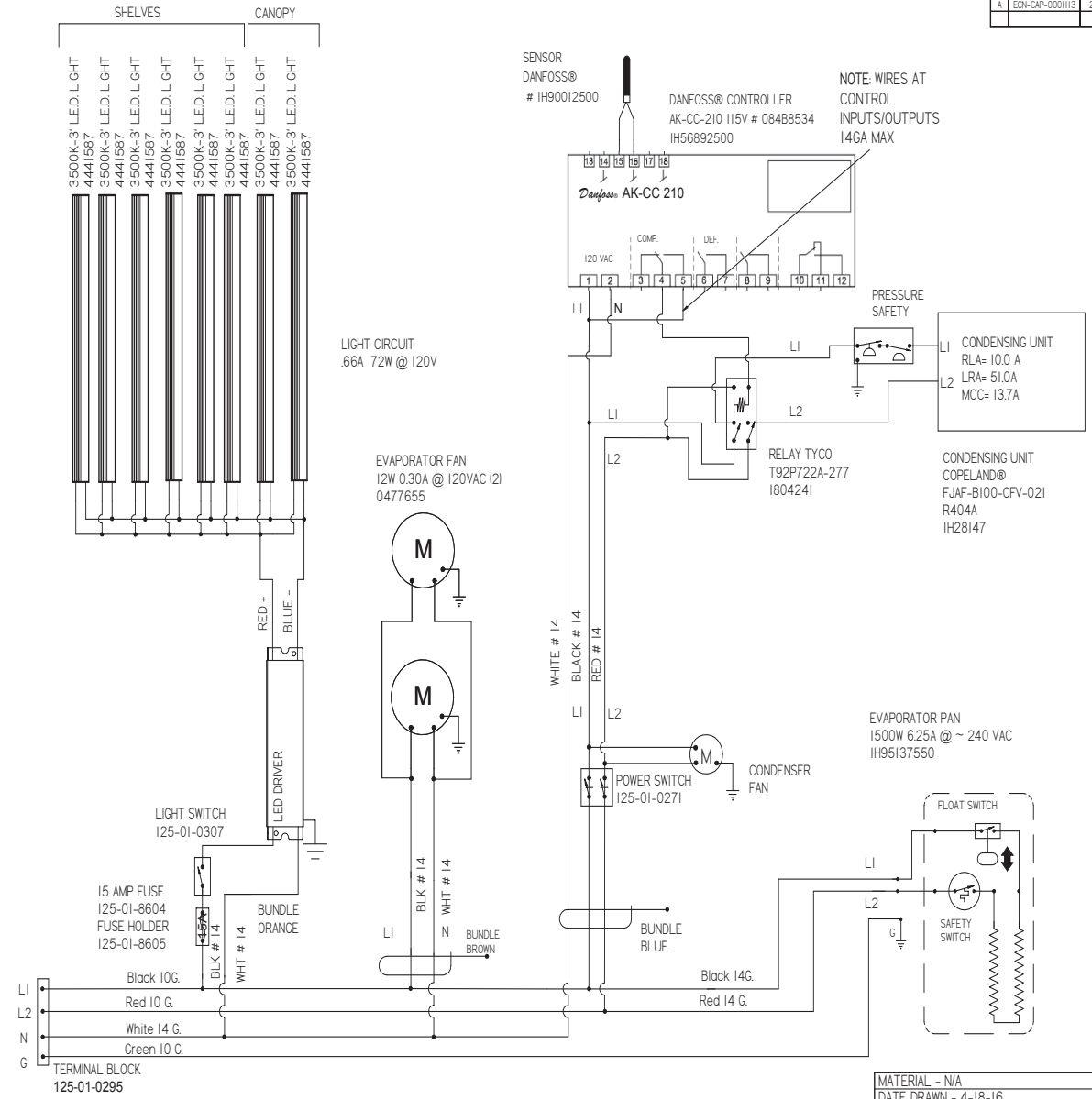
HUSSMANN_LOE_21 SHEET SIZE D

Wiring Diagrams (Cont'd)

CIRCUIT #1
LOADING

	208V	240V
L1	15.2	17.5
L2	14.1	16.3

REVISION HISTORY					
REV	ECN	DATE	REVISION DESCRIPTION	REV BY	CHKD BY
A	ECN-CAP-000113	2016/04/18	RELEASED TO PRODUCTION	CB	CB



SENSOR DANFOSS® # IH90012500

DANFOSS® CONTROLLER AK-CC-210 115V # 08468534 IH56892500

NOTE: WIRES AT CONTROL INPUTS/OUTPUTS 14GA MAX

LIGHT CIRCUIT .66A 72W @ 120V

EVAPORATOR FAN 12W 0.30A @ 120VAC 121 0477655

EVAPORATOR PAN 1500W 6.25A @ ~ 240 VAC IH95137550

NOTES:
CASE MUST BE GROUNDED
WHEN PASSING WIRES THROUGH METAL HOLES A GROMMET MUST BE USED

MATERIAL - N/A	
DATE DRAWN - 4-18-16	
DRAWN BY - CRAIG BOOREY	ECN-CAP-000113
REVIEWED BY - CRAIG BOOREY	REF -
APPROVED BY - CRAIG BOOREY	SHEET 1 OF 1
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.	
TOLERANCES ARE: DECIMALS .XX ±.03, .XXX ±.010 ANGLES ± 2°	THIRD ANGLE PROJECTION

HUSSMANN	
DIAGRAM-IM-04-16-S	
AK-CC-210 CTLR	
3004408	A

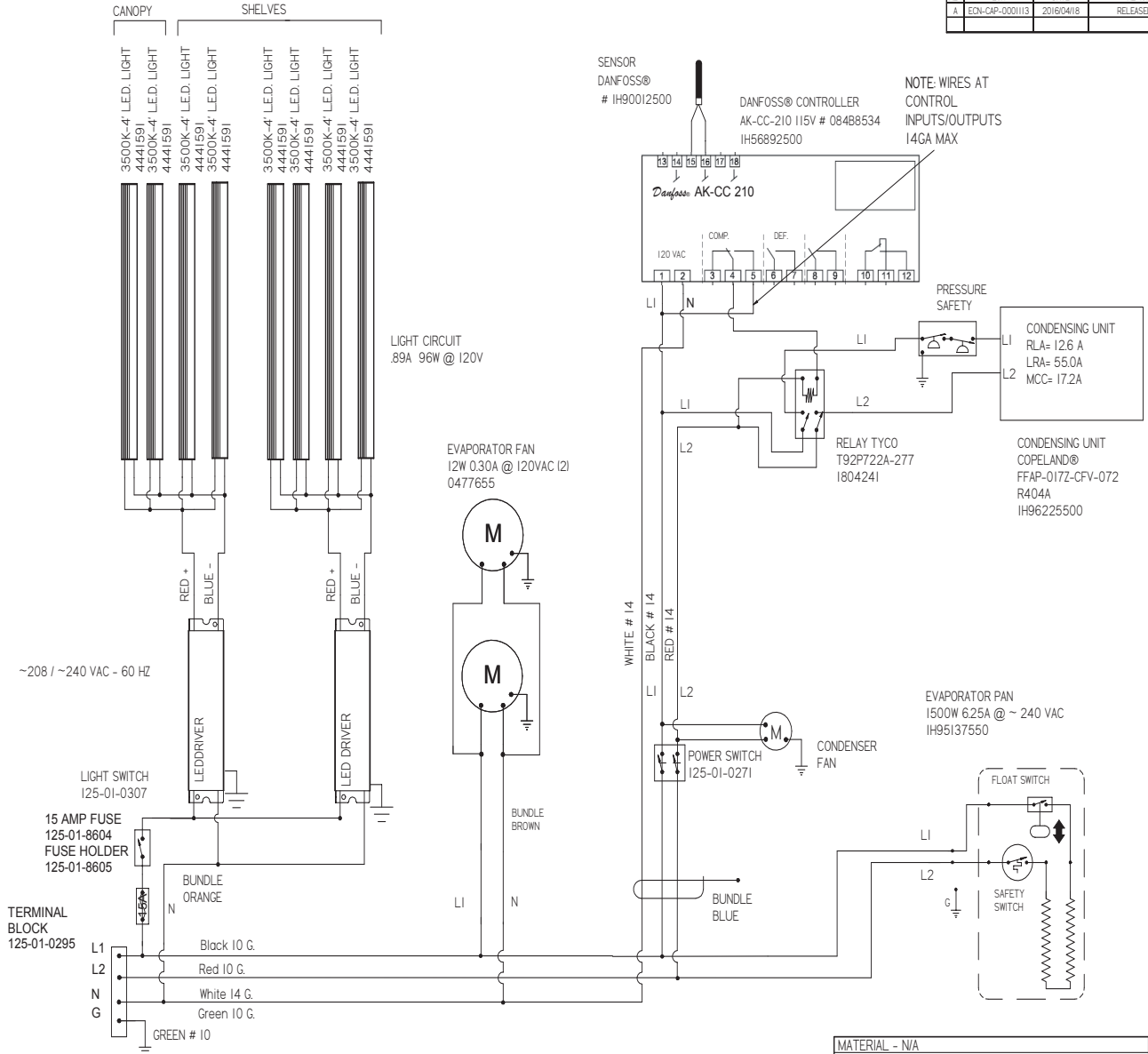
HUSMANLGE_11 SHEET SIZE

Wiring Diagrams (Cont'd)

REVISION HISTORY						
REV	ECN	DATE	REVISION DESCRIPTION	REV BY	CHKD BY	APPR BY
A	ECN-CAP-000113	2016/04/18	RELEASED TO PRODUCTION	CB	CB	CB

CIRCUIT #1
LOADING

	208V	240V
L1	17.6	20.3
L2	16.3	18.8



30

NOTES:
CASE MUST BE GROUNDED
WHEN PASSING WIRES THROUGH METAL HOLES A GROMMET MUST BE USED

MATERIAL - N/A		HUSSmann
DATE DRAWN - 4-18-16		
DRAWN BY - CRAIG BOOREY	ECN-CAP-000113	DIAGRAM-IM-04-18-S
REVIEWED BY - CRAIG BOOREY	REF -	
APPROVED BY - CRAIG BOOREY	SHEET 1 OF 1	AK-CC-210 CTLR
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.		
TOLERANCES ARE: DECIMALS .XX ±.03, .XXX ±.010 ANGLES ± 2°		THIRD ANGLE PROJECTION

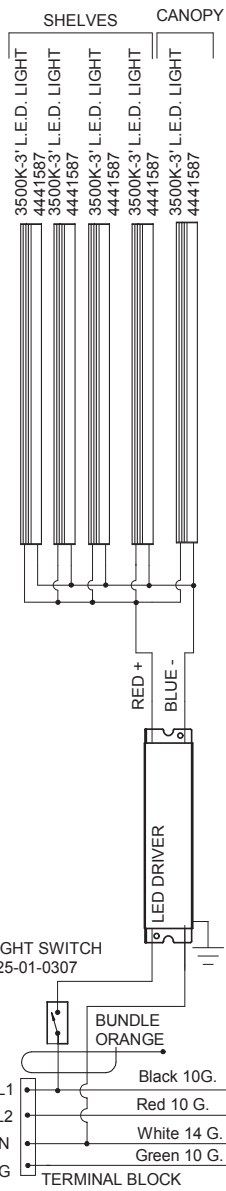
3004410 A

HUSSMANN-COF-111 SHEET SIZE D

CIRCUIT #1

LOADING	
	208 V 240V
L1	12.0 13.8
L2	11.4 13.1

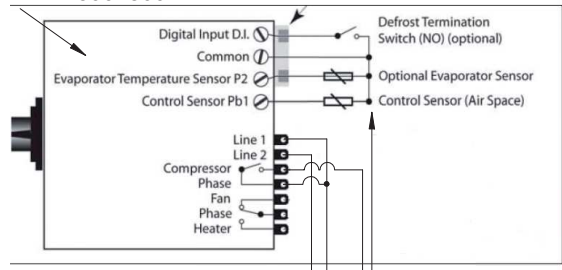
NOTE: CASE MUST BE GROUNDED



LIGHT CIRCUIT
.42A 45W @ 120V

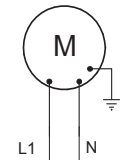
SAFE NET III CONTROLLER
PART# 1H59048001

PROGRAM: 1H59684



SAFE NET III SENSORS
PART# 0510533 (4m long) black AIR
PART# 0510532 (4m long) Yellow COIL

EVAPORATOR FAN
12W 0.30A @ 120VAC
0477655



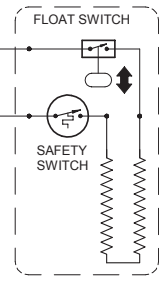
L1 CONDENSING UNIT
RLA= 6.8A
L2 LRA= 33.7.0A
MCC= 9.7A

CONDENSING UNIT
COPELAND®
M4FF-0075-CAV-212
R404A
1H28155

RELAY TYCO
T92P7A22-277
1804241

EVAPORATOR PAN
1500W 6.25A @ ~ 240 VAC
1H95137550

L1 L2 SWITCH
SQUARE "D" 55447
125-01-0271



HUSSMANN
Hussmann Corporation, Int'l.
13770 Ramona Avenue
Chino, CA. 91710
(909)-590-4910 Lic.#: 644406

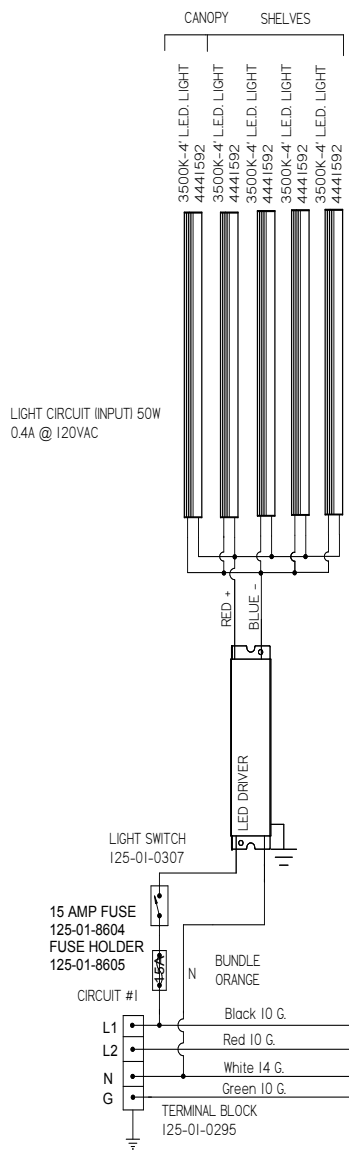
REVISIONS:			
#:	DESCRIPTION:	DATE:	BY:
B	CN#647046, Re-Wired the Relay connection	9/10/12	SP
C	CN#989596, Changed Evaporator Pan	6/19/15	CB

DRAWN BY: CRAIG BOOREY	PROJECT TITLE: ISLA CASES
CHECKED BY: DATE: 11/18/11	DRAWING #: 1H66327
PRODUCTION ORDER #:	DRAWING TITLE:
FILE LOCATION:	DIAGRAM-IM-05-I3-S W/LED LIGHTS

Wiring Diagrams (Cont'd)

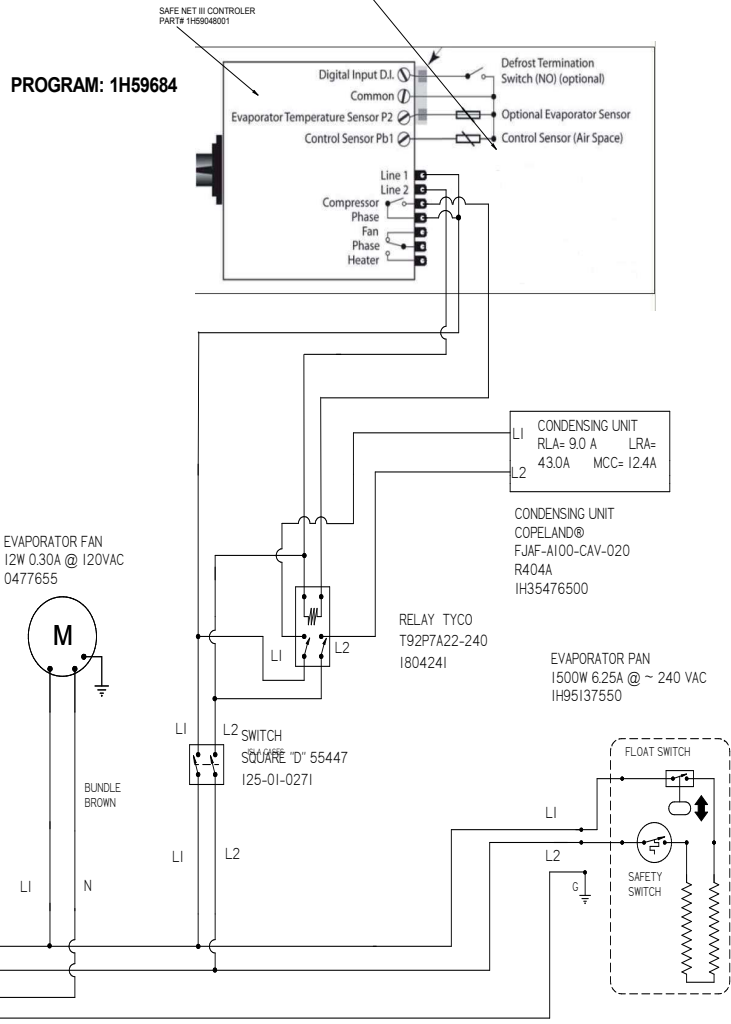
REVISION HISTORY						
REV	ECN	DATE	REVISION DESCRIPTION	REV BY	CHKD BY	APPR BY
C		05/11/12	Changed Safenet III Controller & Sensor Part Numbers	CB	CB	CB
D	647046	09/10/12	Re-Wired the Relay connection	SP	SP	SP
E	989596	06/19/15	Changed Evaporator Pan	CB	CB	CB
F	ECN-CAP-0004786	10/17/16	NEW TEMPLATE	NCL	NCL	NCL

CIRCUIT #1	
LOADING	
L1	208 V1 240V
L2	



LIGHT CIRCUIT (INPUT) 50W
0.4A @ 120VAC

1391 1601
33 53
NOTE CASE MUST BE GROUNDED



PROGRAM: 1H59684

SAFE NET III SENSORS
(1) PART# 0510553 (4m long) BLACK pb1 AIR
(1) PART# 0510552 (4M Long) YELLOW pb2 COIL

L1 CONDENSING UNIT
RLA= 9.0 A LRA=
L2 43.0A MCC= 12.4A

CONDENSING UNIT
COPELAND@
FJAF-A100-CAV-020
R404A
IH35476500

RELAY TYCO
T92P7A22-240
1804241

EVAPORATOR PAN
1500W 6.25A @ ~ 240 VAC
IH95137550

EVAPORATOR FAN
12W 0.30A @ 120VAC
0477655

L2 SWITCH
SQUARE 'D' 55447
125-01-0271

SAFETY SWITCH

MATERIAL- N/A	
MODEL BY / DWG BY- CB	
CHECKED BY- CB	ECN-647046
APPROVED BY- CB	REF- N/A
DATE DRAWN - 05/11/12	SHEET 1 OF 1
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.	
TOLERANCES ARE: DECIMALS .XX ±0.3, .XXX ±0.10 ANGLES ± 2°	THIRD ANGLE PROJECTION

HUSSMANN®	
DIAGRAM-IM-05-14-S	
W/LED LIGHTS	
IH61306	F

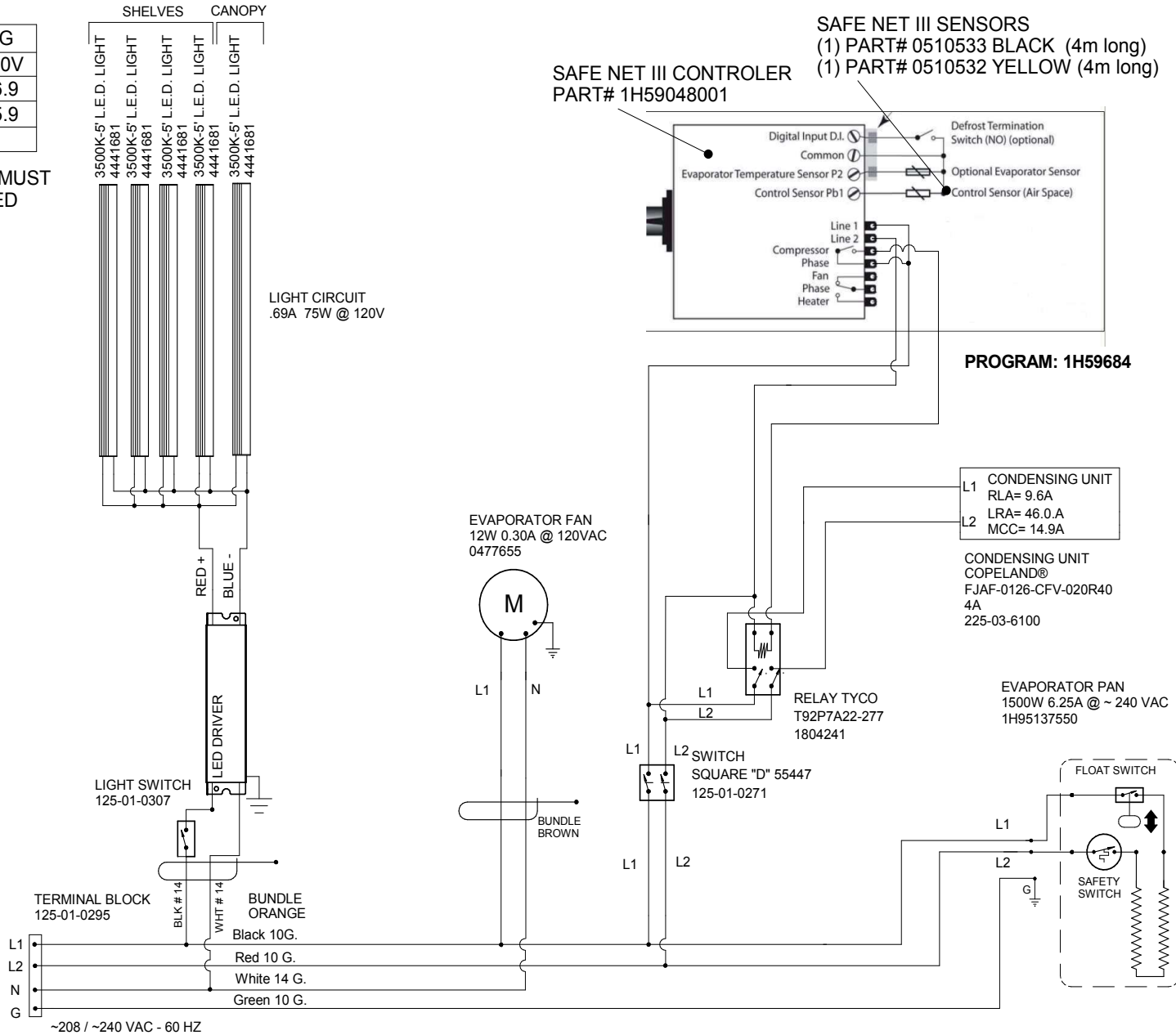
NOTES
CASE MUST BE GROUNDED

HUSSMANN_GDR_21 SHEET SIZE D

CIRCUIT #1

LOADING	
208 V	240V
L1	14.6 16.9
	13.8 15.9

NOTE: CASE MUST BE GROUNDED



33

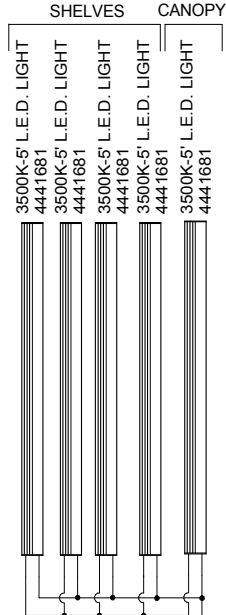
HUSMANN
 Hussmann Corporation, Int'l.
 13770 Ramona Avenue
 Chino, CA. 91710
 (909)-590-4910 Lic.#: 644406

REVISIONS:		DATE:	BY:	DRAWN BY:	CHECKED BY:	DATE:
#:	DESCRIPTION:			CRAIG BOOREY		11/21/11
A	CN#591361, New Release	11/21/11	CB	PRODUCTION ORDER #:		
D	CN#634531, Chd Driver, Changed Relay Wiring	07/03/12	CB	FILE LOCATION:		
E	CN#989596, Changed Evaporator Pan	6/19/15	CB			

PROJECT TITLE:	ISLA CASES	DRAWING #:	1H66363
DRAWING TITLE:	DIAGRAM-IM-05-I5-S		

CIRCUIT #1		
	LOADING	
	208 V	240V
L1	14.6	16.9
	13.8	15.9

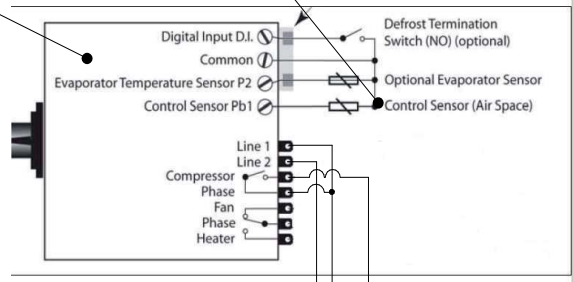
NOTE: CASE MUST BE GROUNDED



LIGHT CIRCUIT
.69A 75W @ 120V

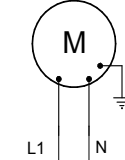
SAFE NET III SENSORS
(1) PART# 0510533 BLACK (4m long)
(1) PART# 0510532 YELLOW (4m long)

SAFE NET III CONTROLLER
PART# 1H59048001



PROGRAM: 1H59684

EVAPORATOR FAN
12W 0.30A @ 120VAC
0477655



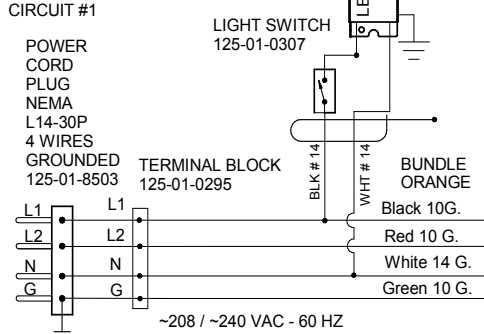
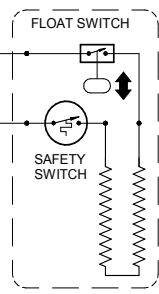
L1 CONDENSING UNIT
RLA= 9.6A
LRA= 46.0.A
MCC= 14.9A

CONDENSING UNIT
COPELAND®
FJAF-0126-CFV-020R40
4A
225-03-6100

EVAPORATOR PAN
1500W 6.25A @ ~ 240 VAC
1H95137550

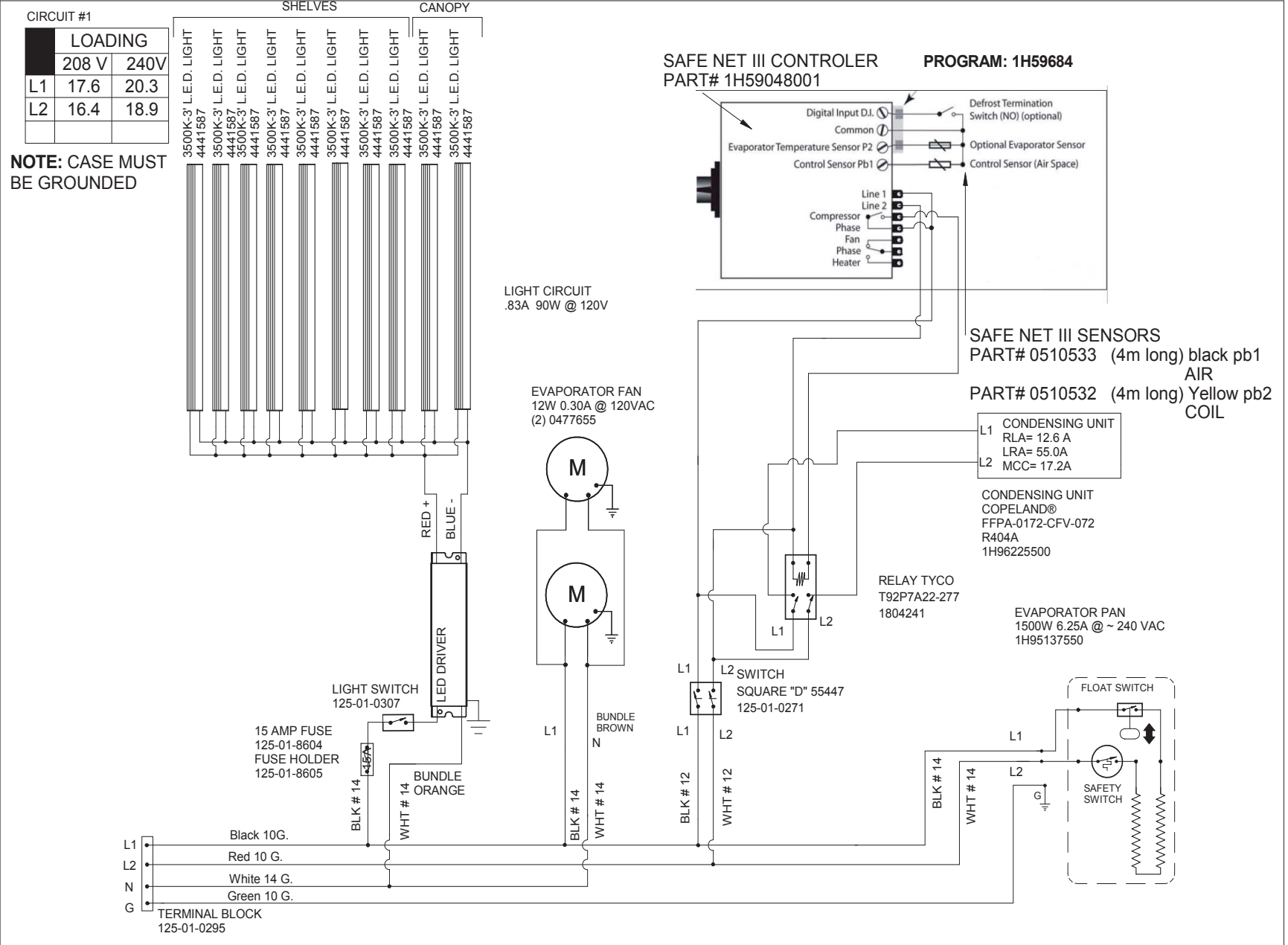
RELAY TYCO
T92P7A22-240
1804241

L2 SWITCH
SQUARE "D" 55447
125-01-0271



34

HUSMANN Hussmann Corporation, Int'l. 13770 Ramona Avenue Chino, CA. 91710 (909)-590-4910 Lic.#: 644406	REVISIONS:		DRAWN BY: CRAIG BOOREY	PROJECT TITLE: ISLA CASES	DRAWING #: 1H76815
	#:	DESCRIPTION:	DATE:	CHECKED BY:	DATE: 7/3/12
	D	CN#634531, NEW RELEASE	07/03/12	CB	PRODUCTION ORDER #:
	E	CN#989596, CHANGED EVAPORATOR PAN	6/19/15	CB	FILE LOCATION:
				DIAGRAM-IM-05-I5-S W/PLUG	PAGE 1 OF 1



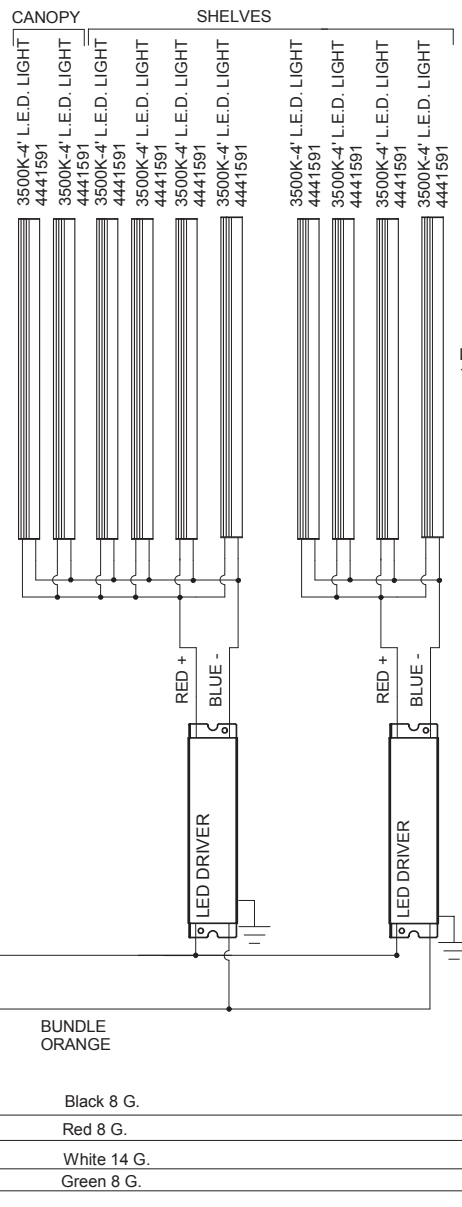
35

HUSSMANN Hussmann Corporation, Int'l. 13770 Ramona Avenue Chino, CA. 91710 (909)-590-4910 Lic.#: 644406	REVISIONS:		DRAWN BY: CRAIG BOOREY	PROJECT TITLE: ISLA CASES	DRAWING #: 1H66365	
	#:	DESCRIPTION:	DATE:	CHECKED BY:	DATE: 11/21/11	
	B	CN#647046, Re-Wired the Relay connection	9/10/12	SP	PRODUCTION ORDER #:	DRAWING TITLE:
	C	CN#781433 Changed Condensing Unit , Evap Pan	2/26/14	CB	FILE LOCATION:	DIAGRAM-IM-05-I6-S W/LED LIGHTS
	D	ECN-CAP-0000235 Added Fuses To All Circuits	3/7/16	CB		PAGE 1 OF 1

CIRCUIT #1

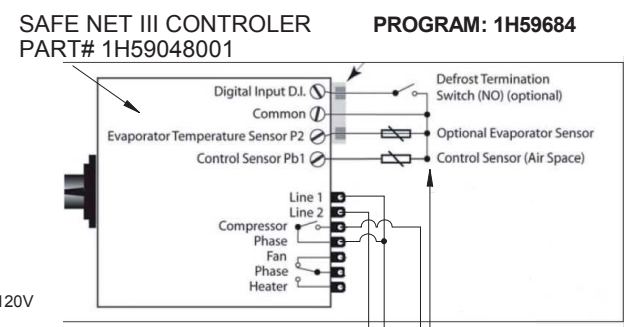
LOADING	
	208 V 240V
L1	24.3 28.0
L2	22.8 26.3

NOTE: CASE MUST BE GROUNDED

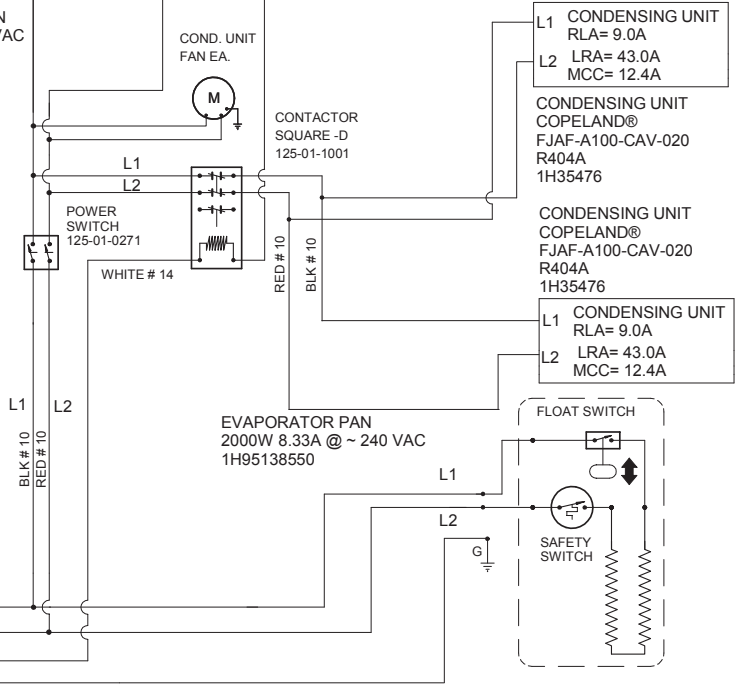


LIGHT CIRCUIT
1.11A 120W @ 120V

EVAPORATOR FAN
12W 0.30A @ 120VAC
(2) 0477655



SAFE NET III SENSORS
PART# 0510533 (4m long) black pb1 AIR
PART# 0510532 (4m long) Yellow pb2 COIL



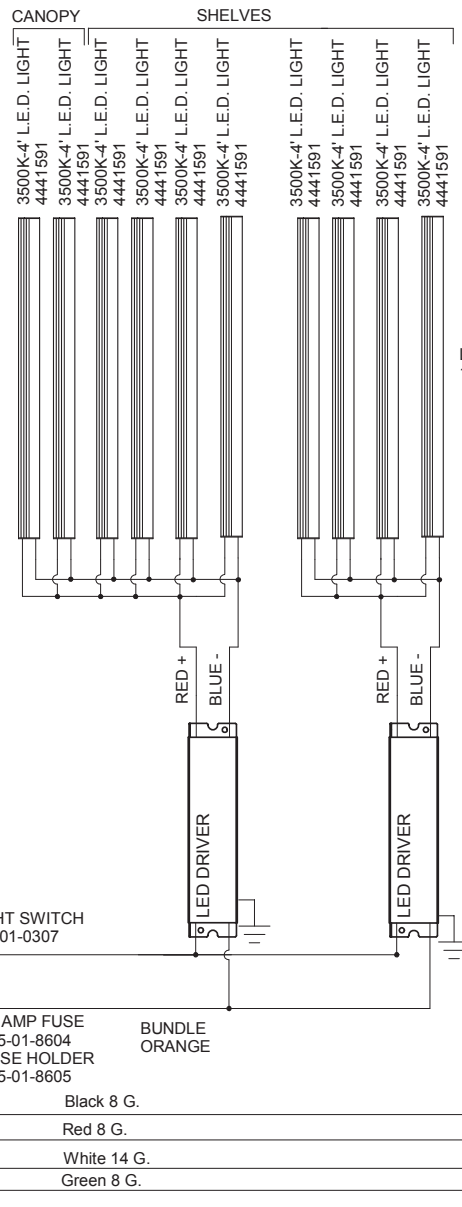
36

HUSSMANN Hussmann Corporation, Intl. 13770 Ramona Avenue Chino, CA. 91710 (909)-590-4910 Lic.#: 644406	REVISIONS:		DRAWN BY: CRAIG BOOREY		PROJECT TITLE: ISLA CASES		DRAWING #: 1H66367		
	#:	DESCRIPTION:	DATE:	BY:	CHECKED BY:	DATE: 11/21/11			
	C	CN#647046, Re-Wired the Relay connection	9/10/12	SP	PRODUCTION ORDER #:				
	D	CN#667609 Revised Wiring	12/11/12	CB	FILE LOCATION:	DRAWING TITLE: DIAGRAM-IM-05-I8-S W/LED LIGHTS			
	E	CN#989596 Changed Evaporator Pan	6/19/15	CB					

CIRCUIT #1

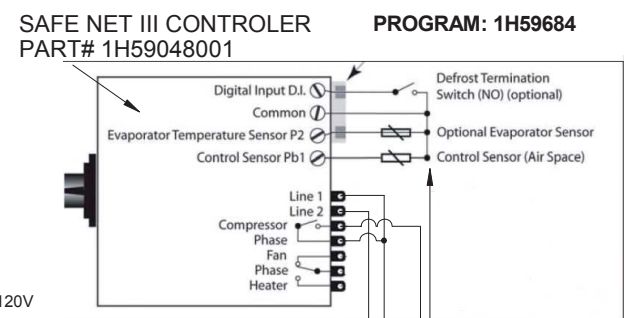
	LOADING	
	208 V	240V
L1	24.3	28.0
L2	22.8	26.3

NOTE: CASE MUST BE GROUNDED



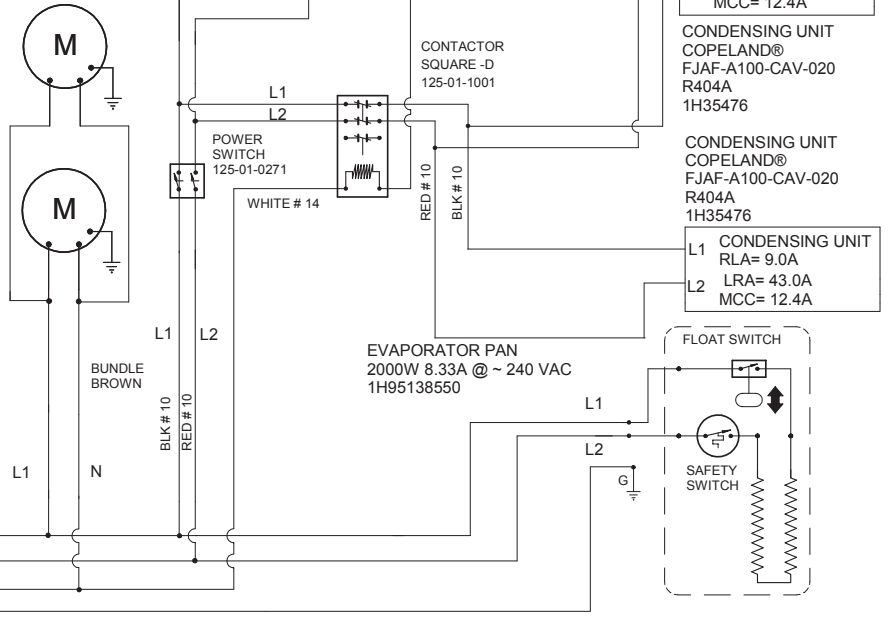
LIGHT CIRCUIT
1.11A 120W @ 120V

EVAPORATOR FAN
12W 0.30A @ 120VAC
(2) 0477655



PROGRAM: 1H59684

SAFE NET III SENSORS
PART# 0510533 (4m long) black pb1 AIR
PART# 0510532 (4m long) Yellow pb2 COIL



37

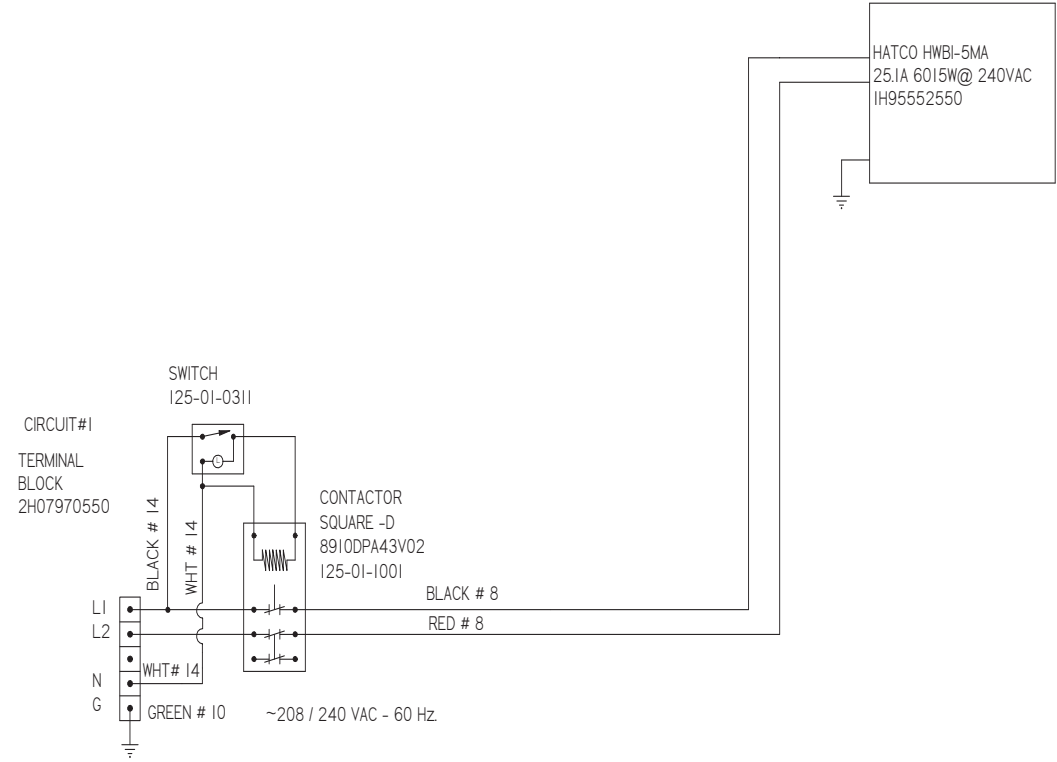
HUSSMANN Hussmann Corporation, Intl. 13770 Ramona Avenue Chino, CA. 91710 (909)-590-4910 Lic.#: 644406	REVISIONS:	DRAWN BY: CRAIG BOOREY	PROJECT TITLE: ISLA CASES	DRAWING #: 1H80986
	#: DESCRIPTION:	DATE:	BY:	CHECKED BY:
	A CN#649548	11/13/12	CB	DATE: 11/13/12
B CN#667609 Revised Wiring	12/11/12	CB	FILE LOCATION:	DRAWING TITLE: DIAGRAM-IM-05-18-S W/LEDS W/50 AMP CORD
C CN#989596 Changed Evaporator Pan	6/19/15	CB		

REVISION HISTORY						
REV	ECN	DATE	REVISION DESCRIPTION	REV BY	CHKD BY	APPR BY
A	ECN-CAP-0001581	2016/05/04	RELEASED TO PRODUCTION	CB	CB	CB
B	ECN-CAP-0000255	2016/05/01	ADDED LIGHTS	CB	CB	CB

CIRCUIT #1
LOADING

	208V	240V
L1	21.8	25.1
L2	21.8	25.1

4534W @ 208VAC
6015W @ 240VAC



38

NOTES:
CASE MUST BE GROUNDED
WHEN PASSING WIRES THROUGH METAL HOLES A GROMMET MUST BE USED

MATERIAL - N/A		HUSSMANN	
DATE DRAWN - 5-4-16		DIAGRAM-IM-04-I6-F	
DRAWN BY - CRAIG BOOREY	ECN-CAP-0001581	H 66" TOP HEAT	
REVIEWED BY - CRAIG BOOREY	REF -		
APPROVED BY - CRAIG BOOREY	SHEET 1 OF 2		
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.			
TOLERANCES ARE: DECIMALS .XX ±0.3, .XXX ±0.10 ANGLES ± 2°		THIRD ANGLE PROJECTION	
		W6600201	B

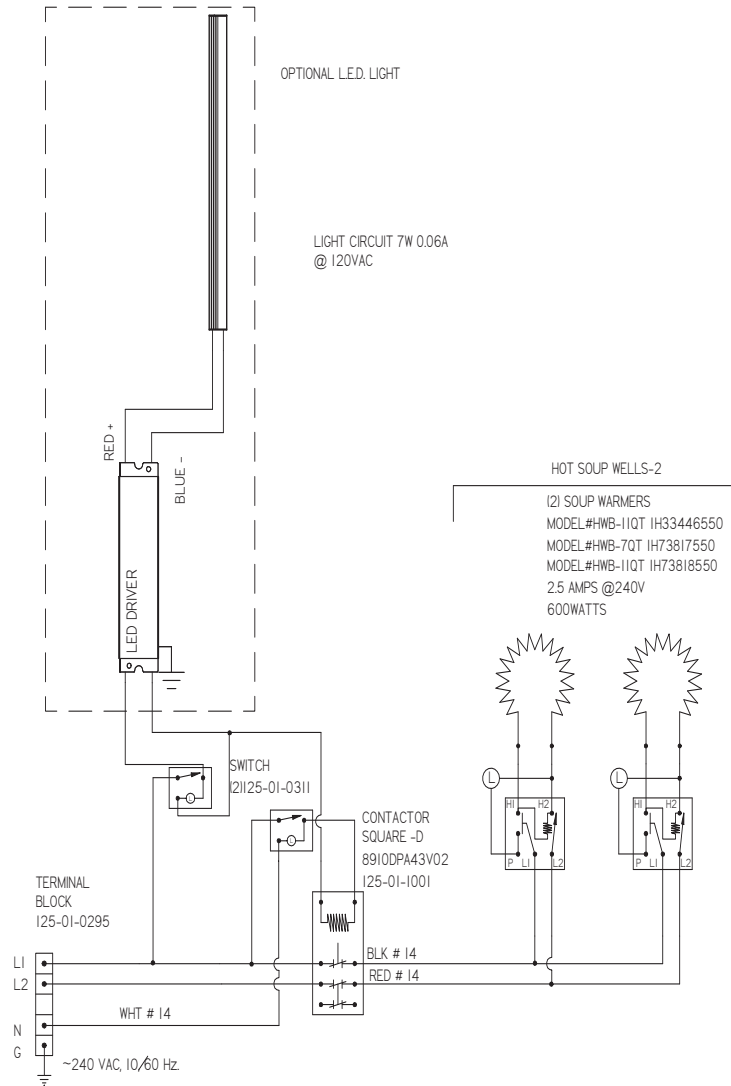
HUSSMANN_LOE_11 SHEET SIZE D

CIRCUIT #1
LOADING

	208V	240V
L1	4.4	5.1
L2	4.3	5.0
L3		

894W @ 208VAC
1224W @ 240VAC

REVISION HISTORY						
REV	ECN	DATE	REVISION DESCRIPTION	REV BY	CHKD BY	APPR BY
A	ECN-CAP-0001707	2016/05/31	RELEASED TO PRODUCTION	CB	CB	CB



NOTES
CASE MUST BE GROUNDED
WHEN PASSING WIRES THROUGH METAL HOLES A GROMMET MUST BE USED

MATERIAL - N/A	
DATE DRAWN - 5-31-16	
DRAWN BY - CRAIG BOOREY	ECN-CAP-0001707
REVIEWED BY - CRAIG BOOREY	REF -
APPROVED BY - CRAIG BOOREY	SHEET 1 OF 1
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.	
TOLERANCES ARE: DECIMALS .XX ±0.3, .XXX ±0.10	THIRD ANGLE PROJECTION

HUSSMANN	
DIAGRAM-IM-05-E5-	
FS	
W6600205	A

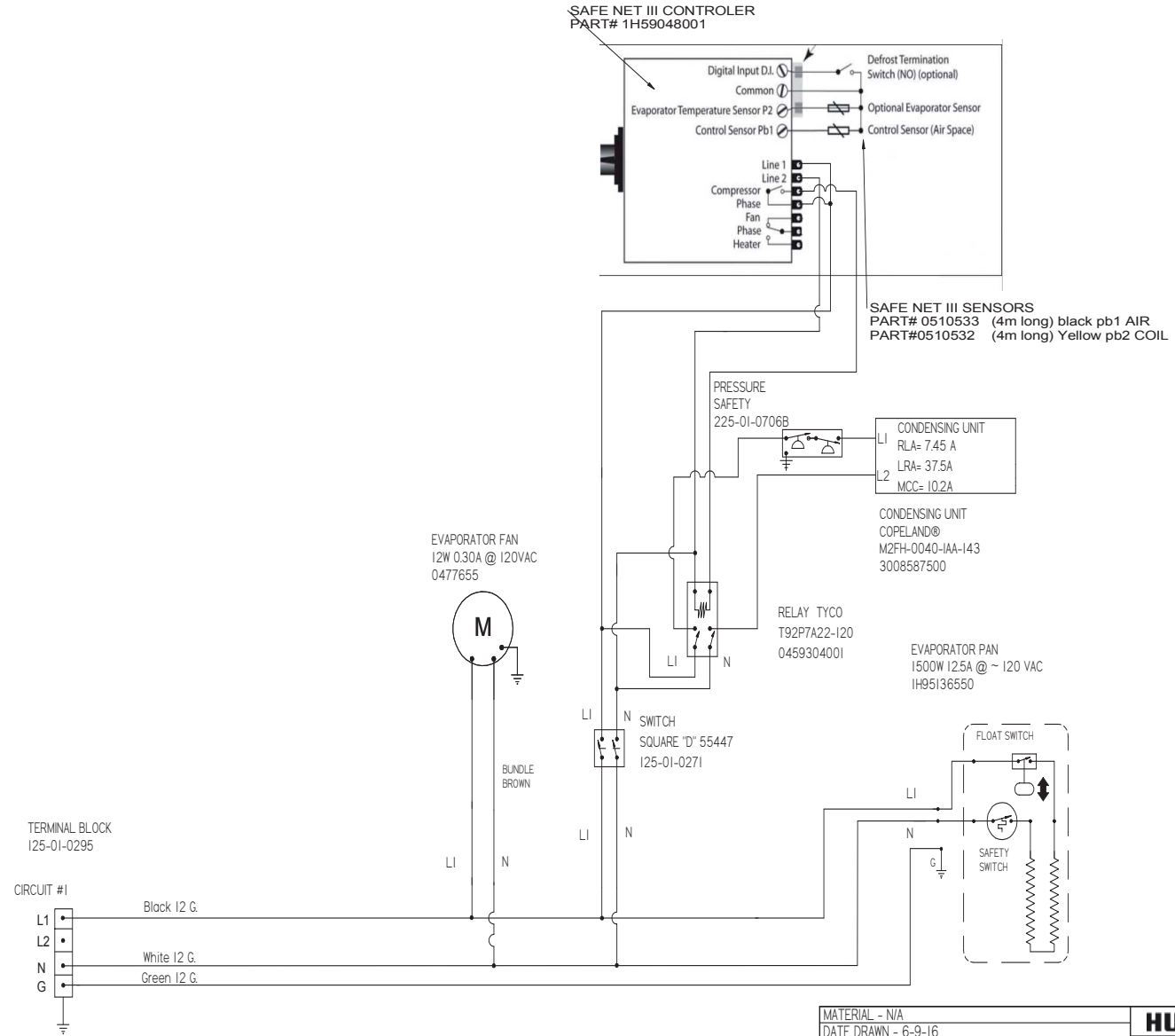
Wiring Diagrams (Cont'd)

Wiring Diagrams (Cont'd)

REVISION HISTORY						
REV	EDN	DATE	REVISION DESCRIPTION	REV BY	CHKD BY	APPR BY
A	ECN-CAP-0002200	2016/08/09	RELEASED TO PRODUCTION	CB	CB	CB

CIRCUIT #1
LOADING

	120V
L1	20.3



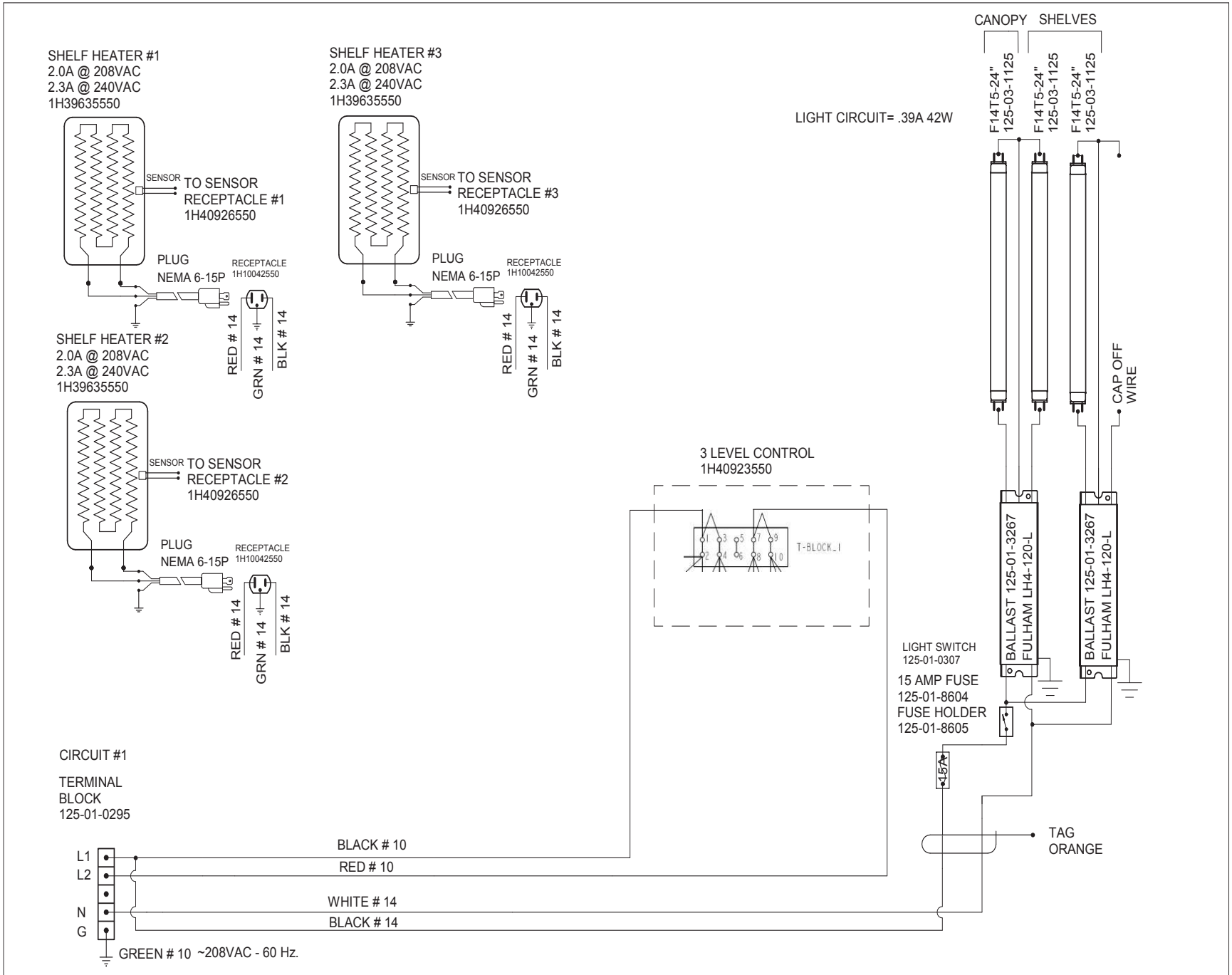
NOTES:
CASE MUST BE GROUNDED
WHEN PASSING WIRES THROUGH METAL HOLES A GROMMET MUST BE USED

MATERIAL - N/A	
DATE DRAWN - 6-9-16	
DRAWN BY - CRAIG BOOREY	ECN-CAP-0002200
REVIEWED BY - CRAIG BOOREY	REF -
APPROVED BY - CRAIG BOOREY	SHEET 1 OF 1
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.	
TOLERANCES ARE:	
DECIMALS XX ±.03, XXX ±.010	THIRD ANGLE PROJECTION
ANGLES ± 2°	

HUSSMANN
DIAGRAM-IM-04-14-F
NC-S
3008650 A

HUSSMANN-GDF-L1 SHEET SIZE D

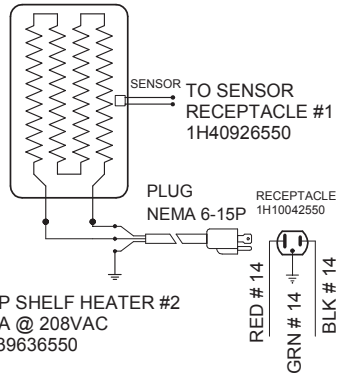
Wiring Diagrams (Cont'd)



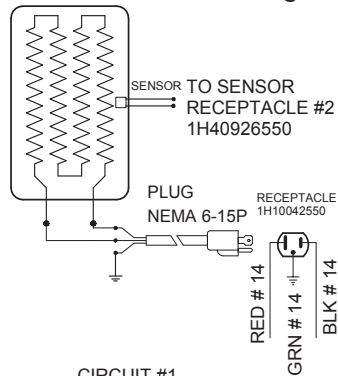
41

HUSSMANN Hussmann Corporation, Intl. 13770 Ramona Avenue Chino, CA. 91710 (909)-590-4910 Lic.# 644406	REVISIONS: #. DESCRIPTION: DATE: BY:			DRAWN BY: CRAIG BOOREY CHECKED BY: DATE: 6/28/12		PROJECT TITLE: ISLA HOT DRAWING #: W6600037	
	A	CN#634531	6/28/12	CB	PRODUCTION ORDER #:	DRAWING TITLE: IM-03-I3-H 240V	
	B	RESET TO REV-B	8/15/12	CB	FILE LOCATION:		
						PAGE 1 OF 3	

TOP SHELF HEATER #1
3.8A @ 208VAC
1H39636550

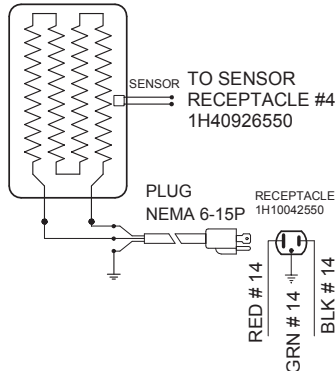


TOP SHELF HEATER #2
3.8A @ 208VAC
1H39636550

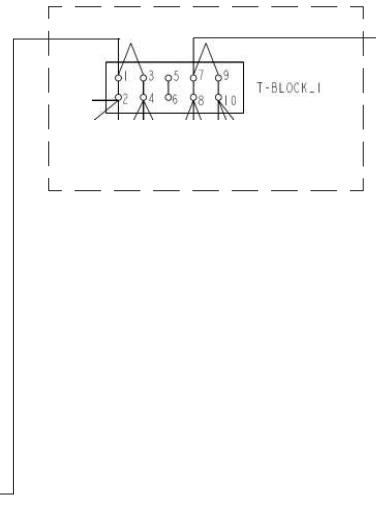


CIRCUIT #1

TOP SHELF HEATER #3
3.8A @ 208VAC
1H39636550



3 LEVEL CONTROL
1H40923550



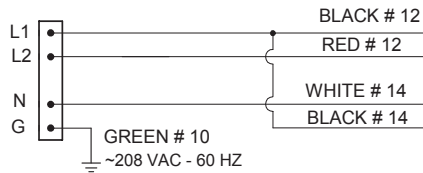
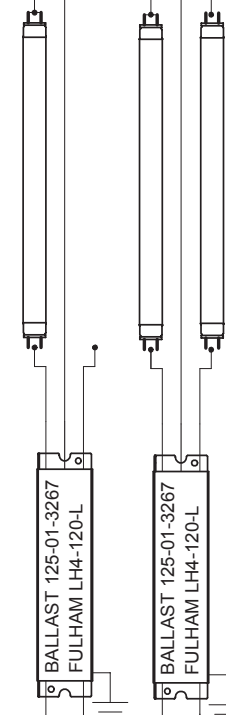
LIGHT CIRCUIT= 0.65A 70W

CANOPY SHELVES

FP28/83 T5-48"
125-03-1131

FP21/830 T5-36"
125-03-1128

FP21/830 T5-36"
125-03-1128



HUSSMANN
Hussmann Corporation, Int'l.
13770 Ramona Avenue
Chino, CA. 91710
(909)-590-4910 Lic.#: 644406

REVISIONS:			
#:	DESCRIPTION:	DATE:	BY:

DRAWN BY: MATT GRAMTA	PROJECT TITLE: ISLA HOT
CHECKED BY: DATE: 11/30/11	DRAWING #: W6600014
PRODUCTION ORDER #:	DRAWING TITLE:
FILE LOCATION:	IM-03-4-H 208V

16. Troubleshooting Guide

Problem	Possible Cause	Possible Solution
Case temperature is too warm.	Ambient conditions may be affecting the case operation.	Check case position in store. Is the case located near an open door, window, electric fan or air conditioning vent that may cause air currents? Case must be located minimum 15 Ft away from doors or windows. Cases are designed to operate at 55% Relative humidity and a temperature of 75°F.
	Discharge air temp is out of spec.	Check evaporator fan operation. Check electrical connections and input voltage.
		Fans are installed backwards. Check airflow direction.
		Fan blades are installed incorrectly. Make sure fan blades have correct pitch and are per specification.
		Check to see that fan plenum is installed correctly. It should not have any gaps.
		Check suction pressure and insure that it meets factory specifications.
	Case is in defrost.	Check defrost settings. See Technical Specifications section.
	Product load may be over its limits blocking airflow.	Redistribute product so it does not exceed load level. There is a sticker on the inside of the case indicating what the maximum load line is.
Coil is freezing over.	Return air is blocked, make sure debris is not blocking the intake section.	
	Coil close-offs are not installed. Inspect coil to make sure these parts are on the case.	
Condensing coil or evaporator coil is clogged or dirty.	Clean coil.	
Case temperature is too cold.	The t-stat temp is set too low.	Check settings. See Technical Specifications section.
	Ambient conditions may be affecting the case operation.	Check case position in store. Is the case located near an open door, window, electric fan or air conditioning vent that may cause air currents? Case must be located minimum 15 Ft away from doors or windows. Cases are designed to operate at 55% Relative humidity and a temperature of 75°F.
Condensation on glass.	Ambient conditions may be affecting the case operation.	Check case position in store. Is the case located near an open door, window, electric fan or air conditioning vent that may cause air currents? Case must be located minimum 15 Ft away from doors or windows. Cases are designed to operate at 55% Relative humidity and a temperature of 75°F.
	Inadequate air circulation.	Check if air sweep fans are functioning, check electrical connections.
	There is not enough heat provided in the airflow.	Check if air sweep heater is functioning, check electrical connections.
	Glass is not completely shut.	Close glass correctly.

Troubleshooting Guide (Cont'd)

Problem	Possible Cause	Possible Solution
Water has pooled under case.	Case drain is clogged.	Clear drain.
	PVC drains under case may have a leak.	Repair as needed.
	Case tub has unsealed opening.	Seal as needed.
	If the case is in a line-up, case to case joint is missing or unsealed.	Install case to case joint and seal as needed.
	Evaporator pan is overflowing (if applicable).	Check electrical connection to evaporator pan.
Case is not draining properly.	Case is not level.	Level the case.
	Drain screen is plugged.	Clean drain screen and remove any debris.
	Drain or P-trap is clogged.	Clear any debris.
Frost or ice on evaporator coil.	Evaporator fans are not functioning.	Check electrical connections.
	Defrost clock is not functioning.	Case should be serviced by a qualified service technician.
	Coil is freezing over.	Return air is blocked, make sure debris is not blocking the intake section.
Large gap is visible on bottom of front glass or glass can't be opened because it is too low.	Glass Height adjusters need to be adjusted.	See Glass Adjustment section.
Large gaps are visible in between glass panels or glass rubs against end panel.	Glass/glass clamp assembly needs to be adjusted.	See Glass Adjustment section.
Front glass does not stay open and falls closed.	Glass shock/piston may need to be replaced.	Case should be serviced by a qualified service technician.
Lights do not come on.	LED Driver/light socket wiring.	Check electrical connections. See Electrical Section and check wiring diagram.
	LED Driver needs to be replaced.	Case should be serviced by a qualified service technician. See Electrical Section.
	Lamp socket needs to be replaced.	Case should be serviced by a qualified service technician.
	Lamp needs to be replaced.	See Maintenance Section.
	Light Switch needs to be replaced.	Case should be serviced by a qualified service technician.

17. Troubleshooting General Issues

Condition	Troubleshooting
Water is on the Floor	Caution! Water on flooring can cause much damage! Until cause is determined (and repaired), following these procedures:
	Use wet-dry vacuum (or mop & bucket) to remove standing water.
	Use 'catch pans' for water to drain into. Swap out regularly until case has completely drained.
	Check that the drain trap is free of debris.
	Check that the PVC drain pipes are correctly positioned over evaporator pan.
	Check store conditions. To prevent condensation in NSF® Type 1 environments, maximum conditions are to be 55% humidity / 75° Fahrenheit. For NSF® Type 2, maximum conditions are to be 60% humidity / 80° Fahrenheit. See serial label (at case rear near main power switch) for NSF® Type of your case.
	Check that evaporator pan is plugged in.
	Caution! Evaporator pan may be malfunctioning. If so, water will overflow pan and seep onto flooring causing damage! Until evaporator pan is functioning (or is replaced).
	Caution! Disruption of power can cause water to overflow pan and seep onto flooring causing damage! Check that power to case is constant. Until power is restored, following these procedures:
	When power to case is restored, evaporator pan should function properly and water will no longer overflow onto flooring.
Fan Emits Excessive Noise	Check that the case is aligned, level and plumb.
	Check evaporator fan for cleanliness.
	Unplug fan motors; check motor shaft for excessive bearing wear.
	Check the fan motors are securely mounted in brackets.
	Verify that fan blades are securely mounted to fan motor.
	Check that nothing is preventing blade rotation.
Fans are not Working	Check that the MAIN power switch (if present) is ON.
	Check that fans are plugged into fan shroud.
	Check for foreign material obstructing fan performance.
	Check that fan blades freely rotate within fan shrouds.
	Check that power is going to fans.
	Check that fan wiring is connected on terminal blocks.
System is not Operating	Check that the utility power is on.
	Check the circuit breaker box for tripped circuits.
Case is not Holding Temperature	If a large amount of warm product was added to the case, it will take time for the temperature to adjust. Product should be pre-chilled before placing in display case.
	Check Temperature Controller section in this manual
	Check that the case is not in the sun or near heat or air conditioning vent.
	If case is located near outside doors, temperature fluctuation can hinder unit's ability to maintain temperature.
	Check Set Point Temperature; it may be adjusted too high.

Troubleshooting General Issues (Cont'd)

Condition	Troubleshooting
Case Lights are not working	Check that Light switch is in the ON position
	Check for burned out bulbs. Turn lights off & replace.
	Clean dirt and dust from the bulbs to prevent flickering.
	Check to insure voltage at LED Driver. If voltage is entering but not exiting the LED Driver, LED Driver is faulty.
	Check that ALL lights are plugged in and receptacles capped.
Control Display is Flashing	Check Temperature Controller section in this manual.
Considering Unit is not Operating (Self-Contained units only)	Check Temperature Controller section in this manual.
	Check that the power is turned on.
	Review Temperature Controller's Settings for accuracy

18. Troubleshooting Condensing System

Troubleshooting Condensing System (Qualified Service Technicians Only)

Condition	Troubleshooting
Head Pressure too High	Check that the Condensing Coil is not dirty or covered.
	Check the Condensing Fans are working.
	Check that the refrigeration system is not overcharged.
	Check that case is free of non-condensables.
	Check that the Liquid Line Drier Filter is not plugged.
	Check Set Point temperature; it may be adjusted to high.
	Check System Operating temperatures.
	Check that Store Ambient temperature isn't above maximum allowed. See Overview and Warnings Section.
Head Pressure too low	Check that Refrigerant Charge isn't too low.
	Check that Suction Pressure isn't too low.
	Check to verify that Compressor Valves aren't faulty.

19. Troubleshooting Evaporator System

Troubleshooting Condensing System (Qualified Service Technicians Only)

Condition	Troubleshooting
Low Suction Pressure	Check for low refrigerant
	Check that Expansion valve isn't restricted
	Check that Liquid Line or Filter isn't restricted.
	Check that Evaporator Motors are working.
	Check for Superheat setting.
	Check that the Thermostatic Element charge isn't depleted.
	Check that the Coil is not iced up.
High Suction Pressure	Check that Refrigerant Charge isn't too high
	Check that Compressor Valves aren't faulty.
	Check that there is no air seepage around Condensing Coil.
	Check that the Cooling Load isn't high.
	Check that Superheat adjustment isn't low.
	Check TXV Bulb Installation
	a. Poor thermal contact.
	b. Warm location
Check Compressor: Low capacity means it is undersized for its application.	

20. Cleaning Schedule

CLEANING SCHEDULE - TO BE PERFORMED BY STORE PERSONNEL

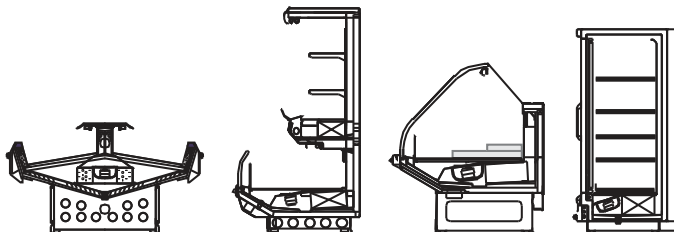
AREA	FREQ	INSTRUCTIONS
Exterior	Daily	All Glass / Mirrors: Clean side glass, front glass, glass shelves, and mirrors with household or commercial glass cleaner. Clean out door track with moist cloth.
	Daily	Rear Sliding Door Exterior Glass: Clean with household or commercial glass cleaner.
	Daily	End Panels, Front Panel, Toe-Kick, etc.: Wipe off all surfaces with warm water and mild soap solution and non-abrasive cloth.
	Weekly	Acrylic (Refrigeration Sections Sneeze Guards): Clean with warm water, mild soap solution and soft cloth; acrylic cleaning solutions are also available. Caution! Never use ammonia-based cleaners in acrylic. Incorrect cleaning agents or abrasive cleaning cloths cause surface to 'cloud' over time.
	Monthly	Condensing Coil: See MAINTENANCE FUNDAMENTALS - REFRIGERATION PACKAGE, EVAPORATOR PAN ACCESS for access instructions. Vacuum or brush grille area on back or case; clean dust and dirt collecting on condenser coil. Avoid damaging fins.
	Monthly	Under Case Cleaning: Remove panels to access area. Vacuum under case to remove all dust and dirt. Replace panels when complete.
Interior	Weekly	Decks: Wipe off decks with moist cloth dipped in mild soap and water solution.
	Monthly	Tub and Drain: Keep clean and free of debris which could clog tub and drain.
		To access Drain area, remove the deck and fan shroud.
		Vacuum tub under deck.
		Direct the drain to a floor drain or a bucket.
		Run hose into drain to flush out debris. Carefully hose out the tub.
		Caution! Avoid splattering water over the case and surrounding area!
	Monthly	Air Return Grille and Fan Shroud Area: 1) Turn off power. 2) Remove decks from case. 3) Clean with moist cloth.

21. Appendices

Appendix A. - Temperature Guidelines

The refrigerators should be operated according to the manufacturer's published engineering specifications for entering air temperatures for specific equipment applications. Table 1 shows the typical temperature of the air entering the food zone one hour before the start of defrost and one hour after defrost for various categories of refrigerators. Refer to Appendix C for Field Evaluation Guidelines.

Type of Refrigerator	Typical Entering Air Temperature
I. OPEN DISPLAY	
A. Non frozen:	
1) Meat	28°F
2) Dairy/Deli	32°F
3) Produce	
a. Processed	36°F
b. Unprocessed	45°F
B. Frozen	0°F
C. Ice Cream	-5°F
II. CLOSED DISPLAY	
A. Non frozen:	
1) Meat	34°F
2) Dairy/Deli	34°F
3) Produce	
a. Processed	36°F
b. Unprocessed	45°F
B. Frozen	0°F
C. Ice Cream	-5°F



Appendix B. - Application Recommendations

- 1.0 Temperature performance is critical for controlling bacteria growth. Therefore, the following recommendations are included in the standard. They are based on confirmed field experience over many years.
- 1.1 The installer is responsible for following the installation instructions and recommendations provided by Hussmann for the installation of each individual type refrigerator.
- 1.2 Refrigeration piping should be sized according to the equipment manufacturer's recommendations and installed in accordance with normal refrigeration practices. Refrigeration piping should be insulated according to Hussmann's recommendations.

- 1.3 A clogged waste outlet blocks refrigeration. The installer is responsible for the proper installation of the system which dispenses condensate waste through an air gap into the building indirect waste system.
- 1.4 The installer should perform a complete start-up evaluation prior to the loading of food into the refrigerator, which includes such items as:
 - a) Initial temperature performance, Coils should be properly fed with a refrigerant according to manufacturer's recommendations.
 - b) Observation of outside influences such as drafts, radiant heating from the ceiling and from lamps. Such influence should be properly corrected or compensated for.
 - c) At the same time, checks should be made of the store dry-bulb and wet-bulb temperatures to ascertain that they are within the limits prescribed by Hussmann.
 - d) Complete start-up procedures should include checking through a defrost to make certain of its adequate frequency and length without substantially exceeding the actual needs. This should include checking the electrical or refrigerant circuits to make sure that defrosts are correctly programmed for all the refrigerators connected to each refrigeration system.
 - e) Recording instruments should be used to check performance.

Appendix C. - Field Recommendations

Recommendations for field evaluating the performance of retail food refrigerators and hot cases

- 1.0 The most consistent indicator of display refrigerator performance is temperature of the air entering the product zone (see Appendix A). In practical use, the precise determination of return air temperature is extremely difficult. Readings of return air temperatures will be variable and results will be inconsistent. The product temperature alone is not an indicator of refrigerator performance.

NOTE:Public Health will use the temperature of the product in determining if the refrigerator will be allowed to display potentially hazardous food. For the purpose of this evaluation, product temperature above the FDA Food Code 1993 temperature for potentially hazardous food will be the first indication that an evaluation should be performed. It is expected that all refrigerators will keep food at the FDA Food Code 1993 temperature for potentially hazardous food.

Appendices (Cont'd)

- 1.1 The following recommendations are made for the purpose of arriving at easily taken and understood data which, coupled with other observations, may be used to determine whether a display refrigerator is working as intended:
- a) **INSTRUMENT** - A stainless steel stem-type thermometer is recommended and it should have a dial a minimum of 1 inch internal diameter. A test thermometer scaled only in Celsius or dually scaled in Celsius and Fahrenheit shall be accurate to 1°C (1.8°F). Temperature measuring devices that are scaled only in Fahrenheit shall be accurate to 2°F. The thermometer should be checked for proper calibration. (It should read 32°F when the stem is immersed in an ice water bath).
 - b) **LOCATION** - The probe or sensing element of the thermometer should be located in the airstream where the air first enters the display or storage area, and not more than 1 inch away from the surface and in the center of the discharge opening.
 - c) **READING** - It should first be determined that the refrigerator is refrigerating and has operated at least one hour since the end of the last defrost period. The thermometer reading should be made only after it has been allowed to stabilize, i.e., maintain a constant reading.
 - d) **OTHER OBSERVATIONS** - Other observations should be made which may indicate operating problems, such as unsatisfactory product, feel/appearance.
 - e) **CONCLUSIONS** - In the absence of any apparent undesirable conditions, the refrigerator should be judged to be operating properly. If it is determined that such condition is undesirable, i.e., the product is above proper temperature, checks should be made for the following:
 1. Has the refrigerator been loaded with warm product?
 2. Is the product loaded beyond the "Safe Load Line" markers?
 3. Are the return air ducts blocked?
 4. Are the entering air ducts blocked?
 5. Is a dumped display causing turbulent air flow and mixing with room air?
 6. Are spotlights or other high intensity lighting directed onto the product?
 7. Are there unusual draft conditions (from heating/air-conditioning ducts, open doors, etc.)?
 8. Is there exposure to direct sunlight?
 9. Are display signs blocking or diverting airflow?
 10. Are the coils of the refrigerator iced up?
 11. Is the store ambient over 75°F, 55% RH as set forth in ASHRAE Standard 72 and ASHRAE Standard 117?
 12. Are the shelf positions, number, and size other than recommended by Hussmann?
 13. Is there an improper application or control system?
 14. Is the evaporator fan motor/blade inoperative?
 15. Is the defrost time excessive?
 16. Is the defrost termination, thermostat (if used) set too high?
 17. Are the refrigerant controls incorrectly adjusted?
 18. Is the air entering the condenser above design conditions? Are the condenser fins clear of dirt, dust, etc.?
 19. Is there a shortage of refrigerant?
 20. Has the equipment been modified to use replacements for CFC-12, CFC-502 or other refrigerant? If so, have the modifications been made in accordance with the recommendations of the equipment manufacturer? Is the refrigerator charged with the proper refrigerant and lubricant? Does the system use the recommended compressor?

Appendix D. - Recommendations to User

- 1.0 Hussmann Corporation provides instructions and recommendations for proper periodic cleaning. The user will be responsible for such cleaning, including the cleaning of low temperature equipment within the compartment and the cooling coil area(s). Cleaning practices, particularly with respect to proper refrigerator unloading and warm-up, must be in accordance with applicable recommendations.
- 1.1 Cleaning of non frozen food equipment should include a weekly cleaning of the food compartment as a minimum to prevent bacteria growth from accumulating. Actual use and products may dictate more frequent cleaning. Circumstances of use and equipment design must also dictate the frequency of cleaning the display areas. Weekly washing down of the storage compartment is also recommended, especially for equipment subject to drippage of milk or other liquids, or the collection of vegetable, meat, crumbs, etc. or other debris or litter. Daily cleaning of the external areas surrounding the storage or display compartments with detergent and water will keep the equipment presentable and prevent grime buildup.

Appendices (Cont'd)

- 1.2 Load levels as defined by the manufacturer must be observed.
- 1.3 The best preservation is achieved by following these rules:
- a) Buy quality products.
 - b) Receive perishables from transit equipment at the ideal temperature for the particular product.
 - c) Expedite perishables to the store's storage equipment to avoid unnecessary warm-up and prolonged temperature recovery. Food store refrigerators are not food chillers nor can they reclaim quality lost through previous mishandling.
 - d) Care must be taken when cross merchandising products to ensure that potentially hazardous vegetable products are not placed in non refrigerated areas.
 - e) Display and storage equipment doors should be kept closed during periods of inactivity.
 - f) Minimize the transfer time of perishables from storage to display.
 - g) Keep meat under refrigeration in meat cutting and processing area except for the few moments it is being handled in processing. When a cut or tray of meat is not to be worked

- on immediately, the procedure should call for returning it to refrigeration.
- h) Keep tools clean and sanitized. Since mechanical equipment is used for fresh meat processing, all such equipment should be cleaned at least daily and each time a different kind of meat product comes in contact with the tool or equipment.
 - i) Make sure that all refrigeration equipment is installed and adjusted in strict accordance with the manufacturer's recommendations.
 - j) See that all storage and refrigeration equipment is kept in proper working order by routine maintenance.

Service Record

Last service date: By:

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

HUSSMANN®/Chino

Additional copies of this publication may be obtained by contacting:

Hussmann® Chino
13770 Ramona Avenue • Chino, California 91710
(909) 628-8942 FAX
(909) 590-4910
(800) 395-9229

The *MODEL NAME* and *SERIAL NUMBER* is required in order to provide you with the correct parts and information for your particular unit.

They can be found on a small metal plate on the unit.
Please note them below for future reference.

MODEL:

SERIAL NUMBER: