



Heated Shelf Merchandiser

HSM-48-5S
HSM-36/5S
HSM-24/5S
HSM-36/3S-CT
HSM-24/3S-CT



MN-47788

REV.01
3/22

EN

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Manufacturer Alto-Shaam, Inc.
P.O. Box 450
W164 N9221 Water Street
Menomonee Falls, WI 53052

Original instructions The content in this manual is written in American English.

Alto-Shaam 24/7 Emergency Repair Service

- Call** Call 800-558-8744 to reach our 24-hour emergency service call center for immediate access to local authorized service agencies outside standard business hours. The emergency service access is provided exclusively for Alto-Shaam equipment and is available throughout the United States through Alto-Shaam's toll free number.
- Availability** Emergency service access is available seven days a week, including holidays.

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The Meaning of Signal Words

This manual contains signal words where needed. These signal words must be obeyed to reduce the risk of death, personal injury, or equipment damage. The meaning of these signal words is explained below.

**DANGER**

Danger indicates a hazardous situation which, if not avoided, will result in serious injury or death.

**WARNING**

Warning indicates a hazardous situation which, if not avoided, could result in serious injury or death.

**CAUTION**

Caution indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE

Notice indicates a situation which, if not avoided, could result in property damage.



NOTE: Note indicates additional information that is important to a concept or procedure.

Safety Precautions

Before you begin

Read and understand all instructions in this manual.

- The merchandiser is intended to hold pre-packaged food for human consumption. No other use for this merchandiser is authorized by the manufacturer or its agents and is therefore considered dangerous.
 - The merchandiser is intended for use in commercial establishments where all operators are familiar with the purpose, limitations, and associated hazards of this merchandiser. Operating instructions and warnings must be read and understood by all operators and users. Alto-Shaam recommends regular staff training to avoid the risk of accident or damage to the merchandiser. Operators must also receive regular safety instructions.
-

Usage precautions

Follow these precautions when using the appliance:

- To prevent serious injury, death or property damage, the merchandiser should be inspected and serviced at least every twelve (12) months by an authorized service partner or trained technician.
- Only allow an authorized service partner or trained technician to service or to repair the merchandiser. Installation or repairs that are not performed by an authorized service partner or trained technician, or the use of non-factory authorized parts will void the warranty and relieve Alto-Shaam of all liability.
- When working on this merchandiser, observe precautions in the manual, on tags, on labels attached to or shipped with the merchandiser, and other safety precautions that may apply.
- If the merchandiser is installed on casters, freedom of movement of the merchandiser must be restricted so that utility connections (electricity) cannot be damaged when the merchandiser is moved before moving. If the merchandiser is moved, make sure all utility connections are disconnected. When returning the merchandiser to its original position, make sure that retention devices and utility connections are connected.
- Only use the merchandiser when it is stationary. Unload the merchandiser before moving it. Merchandises on casters can tip over when being moved over an uneven floor or threshold and cause serious injury. Always apply caster brakes on the mobile merchandiser when it is not being moved.

Electrical usage

An identification tag is permanently mounted on the cabinet. Permanent wiring or electrical outlets for this merchandiser must be installed by a licensed electrician in accordance with local, country, or national codes.

This merchandiser must be connected to a dedicated circuit: (see below)

- HSM-48: 30 Amp circuit
- HSM-36: 20 Amp circuit
- HSM-24: 20 Amp circuit

Cord and plug models

- In the event of an emergency, always position the merchandiser so the power supply cord is easily accessible.
- Plug the unit into a properly grounded receptacle only. Arcing will occur when connecting or disconnecting the unit unless all controls are in the OFF position.

Hard wired model:

Hard wired models must be equipped with a country certified external allpole disconnection switch with sufficient contact separation.

Hard wired models that are mounted on casters must have a strain relief device (tether) to prevent strain on the power supply cord.

If a power cord is used for the connection of the product, an oil resistant cord like H05RN or H07RN equivalent must be used.

NOTICE

Where local codes and CE regulatory requirements apply, appliances must be connected to an electrical circuit that is protected by an external GFCI outlet.

**CAUTION**

Power source must match the voltage identified on appliance rating tag. The rating tag provides essential technical information required for an appliance installation, maintenance or repairs. Do not remove, damage or modify the rating tag.

**WARNING**


To prevent serious injury, death, or property damage:

All electrical connections must be made by qualified and trained service technician in accordance with applicable electrical codes.













This appliance must be adequately grounded in accordance with local electrical codes or, in the absence of local codes, with the current edition of the National Electrical Code ANSI/NFPA No. 70. In Canada, all electrical connections are to be made in accordance with CSA C22.1, Canadian Electrical Code Part 1 or local codes.



CE-approved appliances include an equipotential-bonding terminal marked with the symbol shown on the left. Provisions for earthing are to be made in accordance with IEC:2010 60335-1 section 27 or local codes.

 **WARNING**
 Electric shock hazard:
 This appliance may be equipped with a three-pronged (grounding) plug for your protection against shock hazard and should be plugged directly into a properly grounded three-prong receptacle.
 Do not cut or remove the grounding prong from this plug. Removing the grounding prong may result in serious injury, death or property damage.

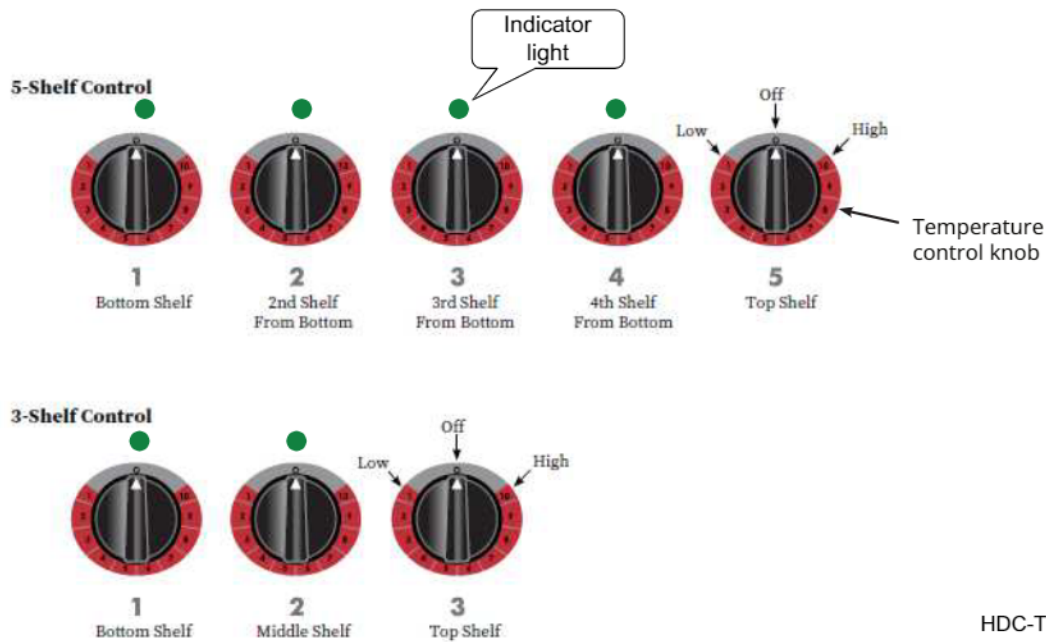
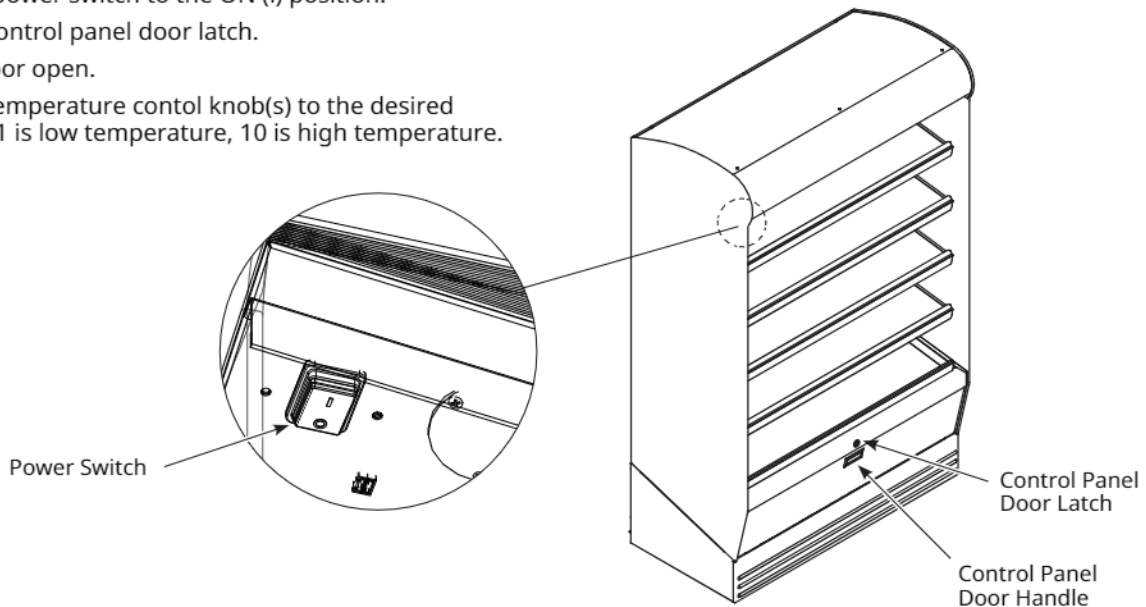
Electrical specifications

Electrical							
	V	Ph	Hz	A	kW	Dedicated Circuit Breaker	Plug Configuration
HSM-48/5S	208-240	1	60	19.0-21.9	4.0-5.3	30	cord, no plug
	230	1	50/60	20.0	4.6	30	cord, no plug
HSM-36/5S	208-240	1	60	14.4-16.7	3.0-4.0	20	cord, no plug
	230	1	50/60	15.0	3.5	20	 CEE 7/7
HSM-24/5S	208-240	1	60	10.8-12.5	2.3-3.0	20	 NEMA 6-20P 20A - 250V PLUG
	230	1	50/60	11.5	2.9	20	 CEE 7/7
HSM-36/3S-CT	208-240	1	60	8.8-9.2	1.9-2.5	20	 NEMA 6-20P 20A - 250V PLUG
	230	1	50/60	9.0	2.1	20	 CEE 7/7  CH2-16P  BS 1363
HSM-24/3S-CT	120	1	60	15.0	1.8	20	 NEMA 5-20P 20A - 125V PLUG
	208-240	1	60	6.5-7.5	1.4-1.8	20	 NEMA 6-20P 20A - 250V PLUG
	230	1	50/60	7.0	1.8	20	 CEE 7/7  CH2-16P  BS 1363

HDC-PHD-000525

Operating the Merchandiser

1. Make sure the merchandiser is connected to the appropriate power source.
2. Locate the power switch below the top canopy of the left side of the merchandiser.
3. Press the power switch to the ON (I) position.
4. Turn the control panel door latch.
5. Pull the door open.
5. Turn the temperature control knob(s) to the desired number-- 1 is low temperature, 10 is high temperature.



HDC-TS-000533

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Component Identification



HSM-48/5S



HSM-24/5S



HSM-36/3S-CT



HSM-24/3S-CT

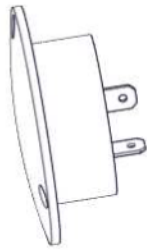
HDC-PHD-000538

COMPONENTS

(RTD) Temperature sensor, 1000 ohm



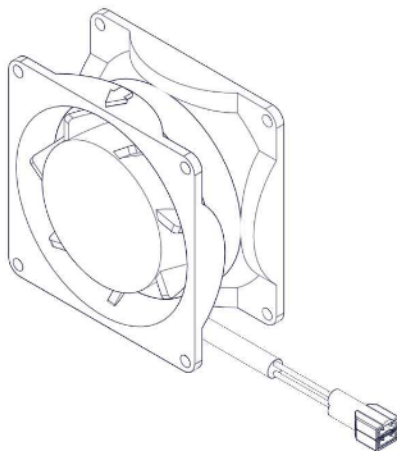
LED lights, non-polarized terminals



LED light bar, Polarity specific wiring
Positive wire (+) denoted by the white stripe.

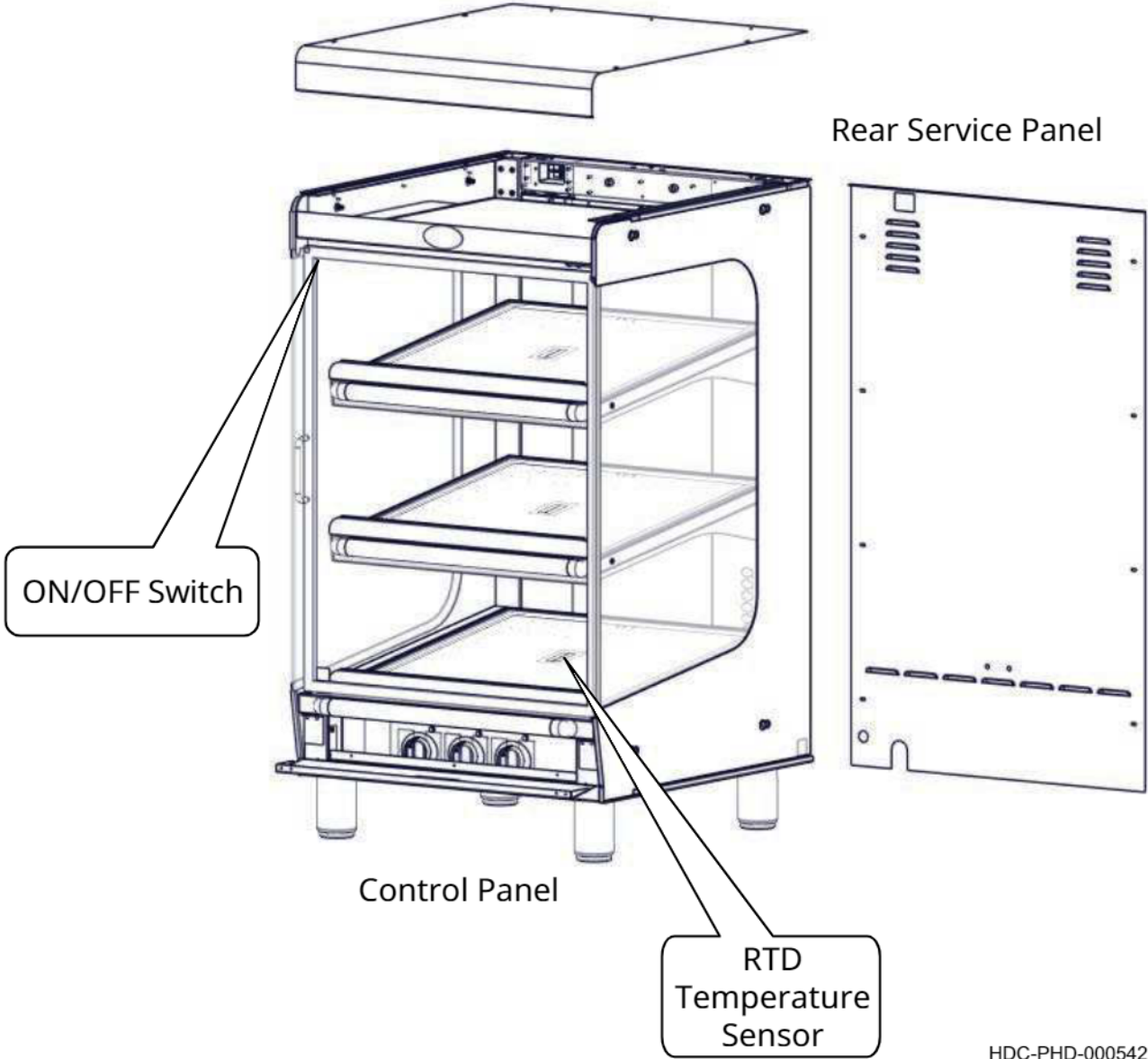


3-inch box fan, impedance protected
Airflow direction specific.



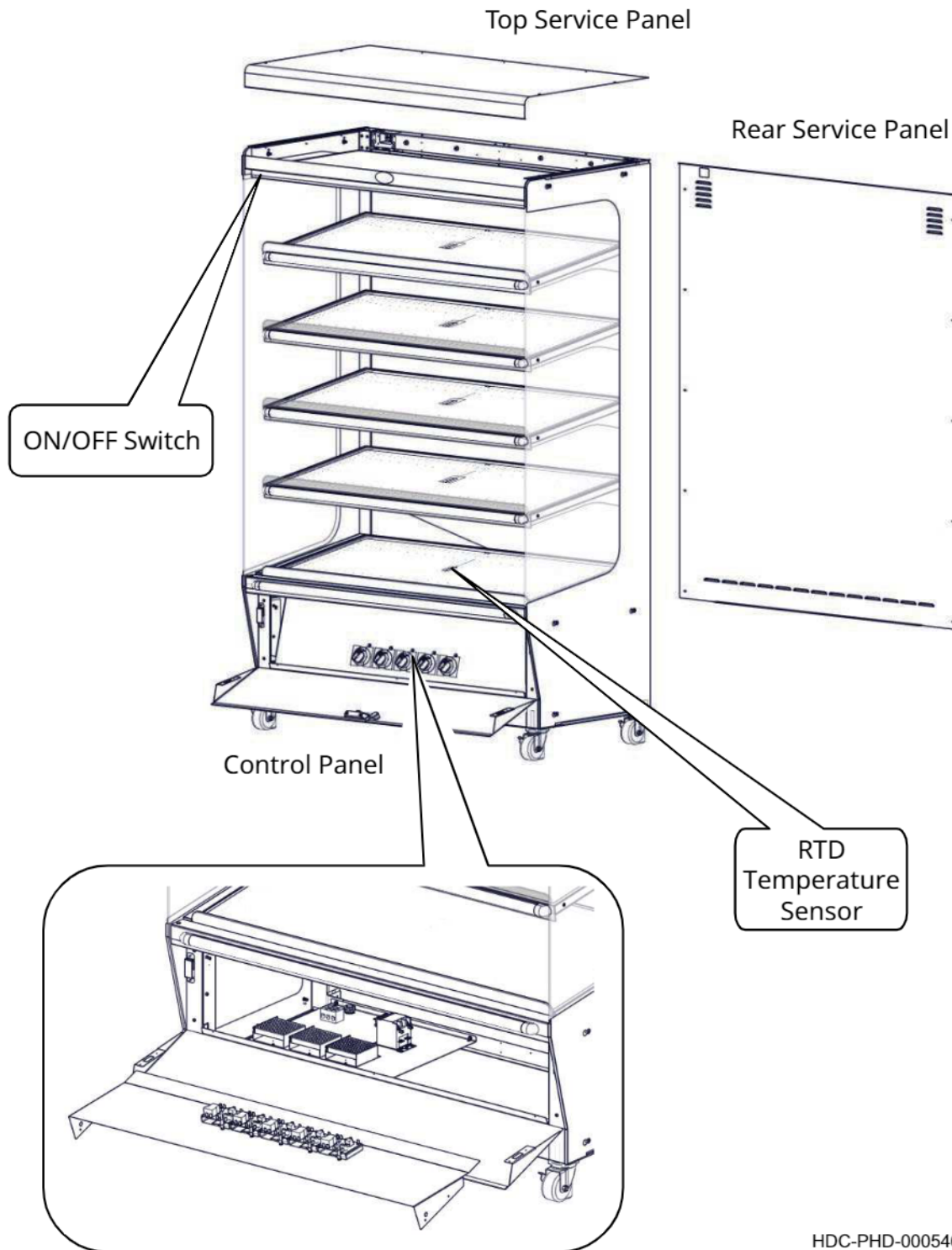
HDC-PHD-000579

HSM-CT Component Access Panels



HDC-PHD-000542

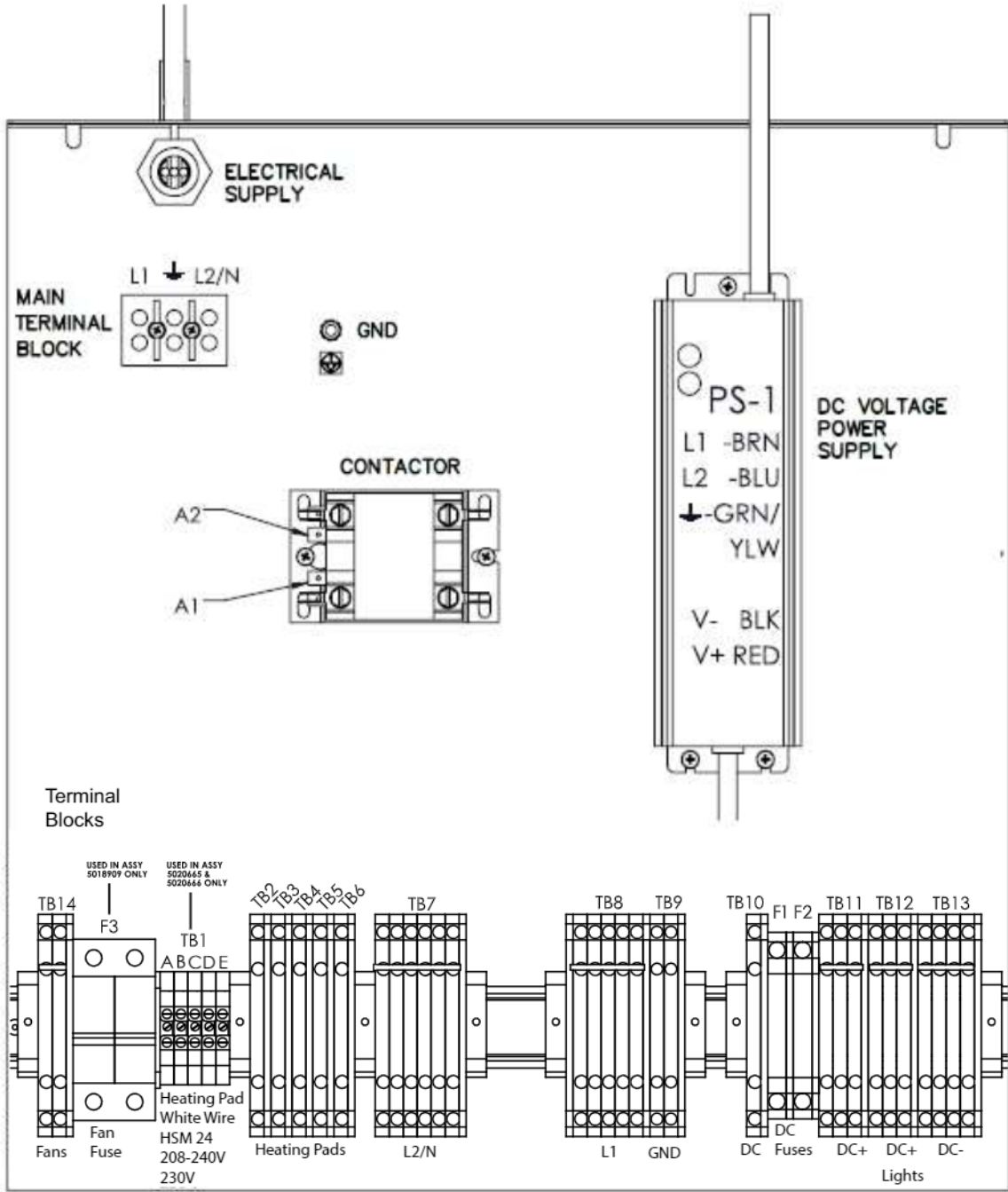
HSM-5S Component Access Panels



HDC-PHD-000546

HSM—Electrical Assembly

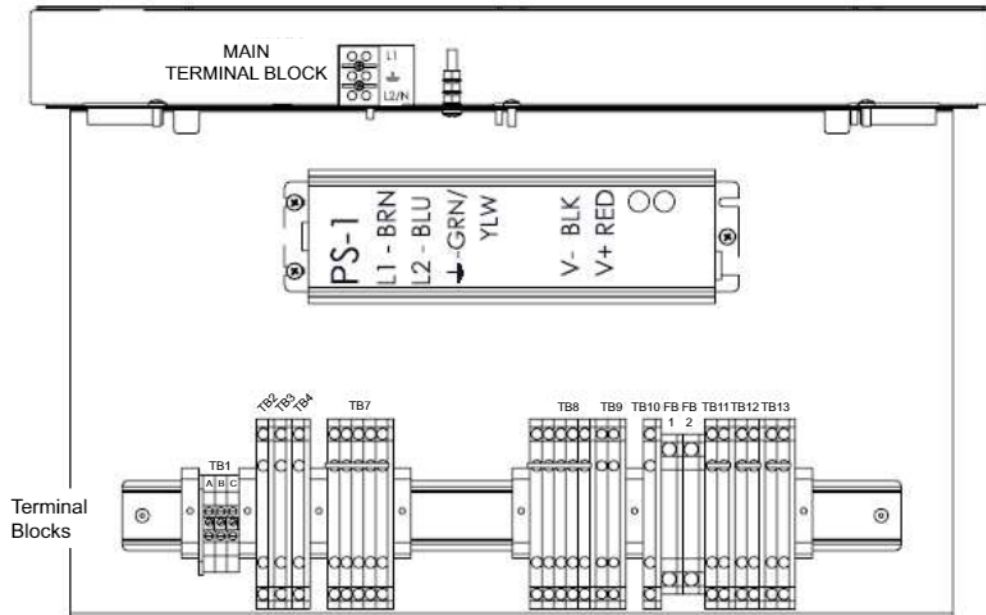
HSM-24/5S, HSM-36/5S, HSM-48/5S



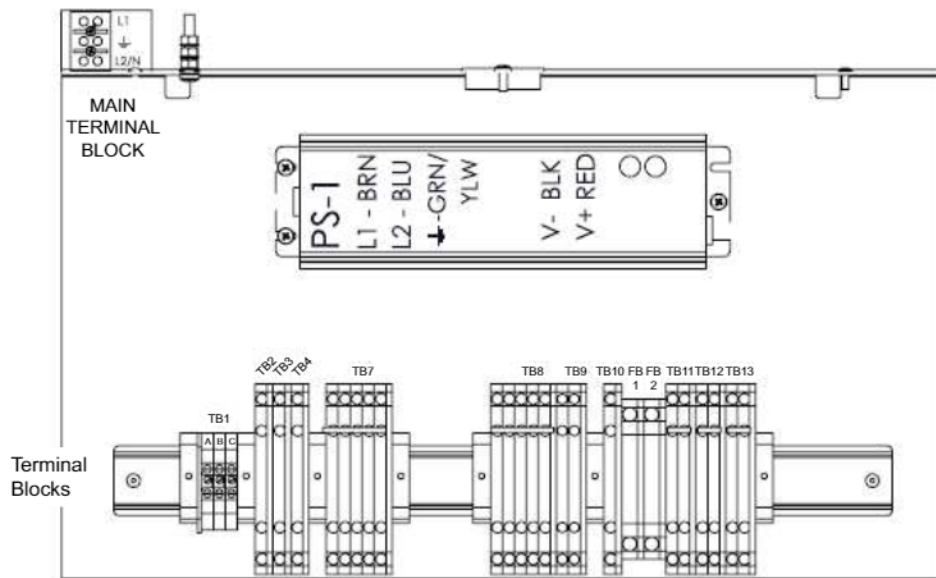
HDC-PHD-000567

HSM Electrical Assembly Cont.

HSM-24/3S-CT Electrical Assembly

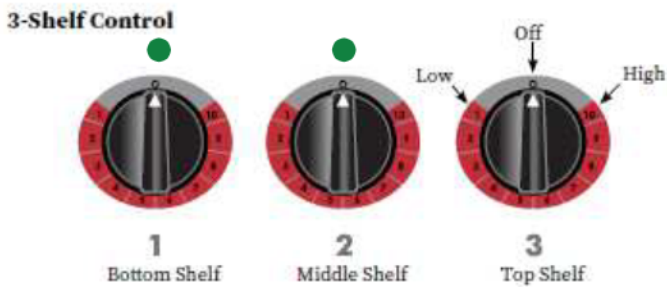
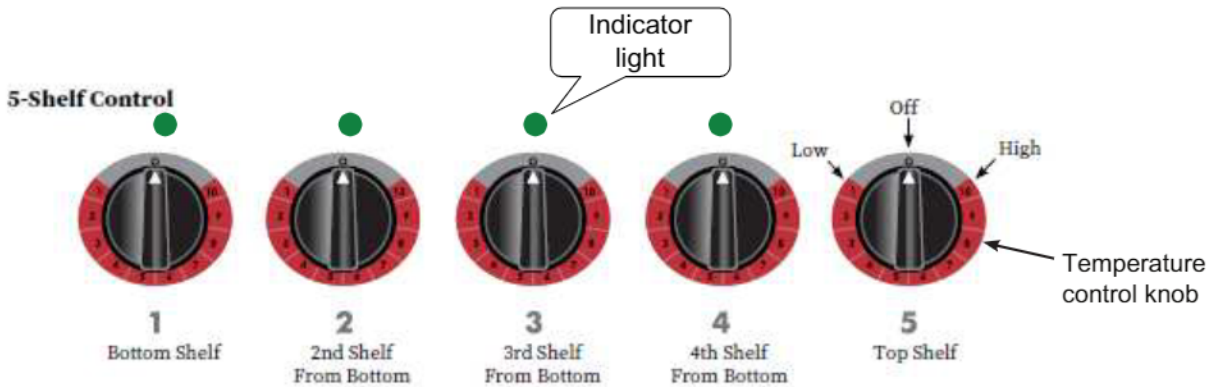
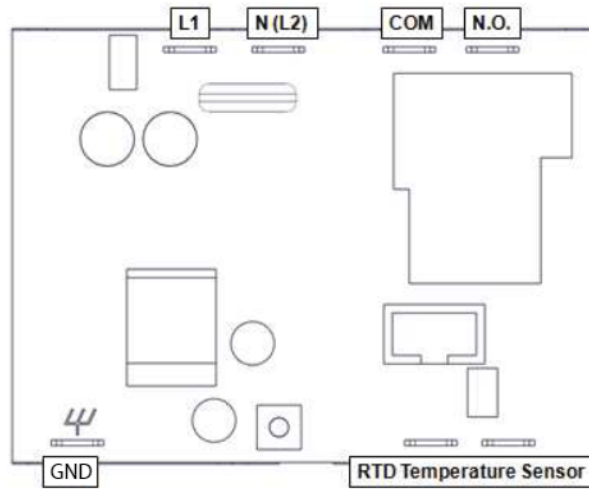
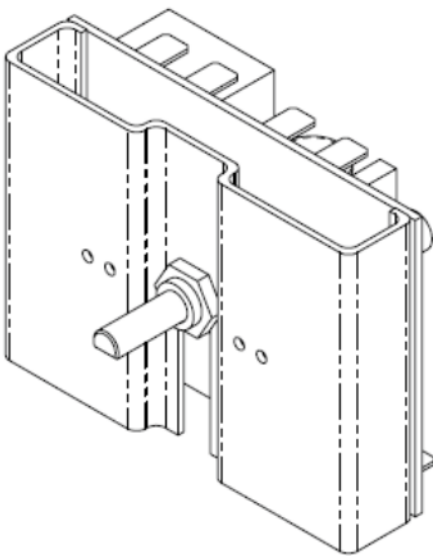


HSM-36/3S-CT Electrical Assembly



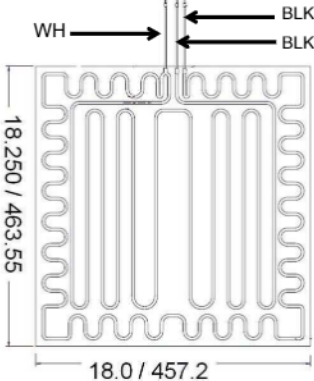
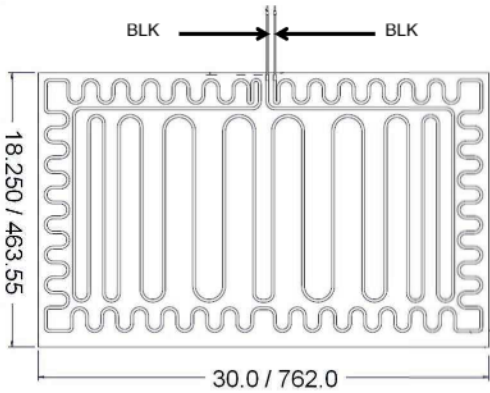
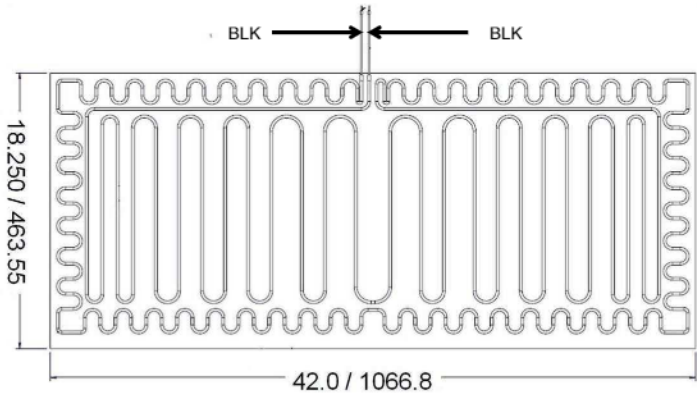
HDC-PHD-000550

Temperature Controller



HDC-PHD-000571

Heating Pads

<p>120 & 240 Volt, 550 Watts HSM-24</p> 	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Wire</th> <th style="text-align: left;">Ohm</th> </tr> </thead> <tbody> <tr> <td>WH to either BLK</td> <td>52</td> </tr> <tr> <td>BLK to BLK</td> <td>105</td> </tr> </tbody> </table>	Wire	Ohm	WH to either BLK	52	BLK to BLK	105
Wire	Ohm						
WH to either BLK	52						
BLK to BLK	105						
<p>240 Volt, 750 Watts HSM-36</p> 	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Wire</th> <th style="text-align: left;">Ohm</th> </tr> </thead> <tbody> <tr> <td>BLK to BLK</td> <td>77</td> </tr> </tbody> </table>	Wire	Ohm	BLK to BLK	77		
Wire	Ohm						
BLK to BLK	77						
<p>240 Volt, 1000 Watts HSM-48</p> 	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Wire</th> <th style="text-align: left;">Ohm</th> </tr> </thead> <tbody> <tr> <td>BLK to BLK</td> <td>58</td> </tr> </tbody> </table>	Wire	Ohm	BLK to BLK	58		
Wire	Ohm						
BLK to BLK	58						

HDC-PHD-000577

Heating Pad and Calrods

120 & 240 Volt, HSM-24

Wire	Ohm
BLK to either WH	145
WH to WH	290

Calrod	Ohm
	75

208-240 Volt, HSM-36

Wire to wire	Ohm
	220

Calrod	Ohm
	225

208-240 Volt, HSM-48

Wire to wire	Ohm
	163

Calrod	Ohm
	164

HDC-PHD-013681

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HSM-24/5S (208-240V, 230V)

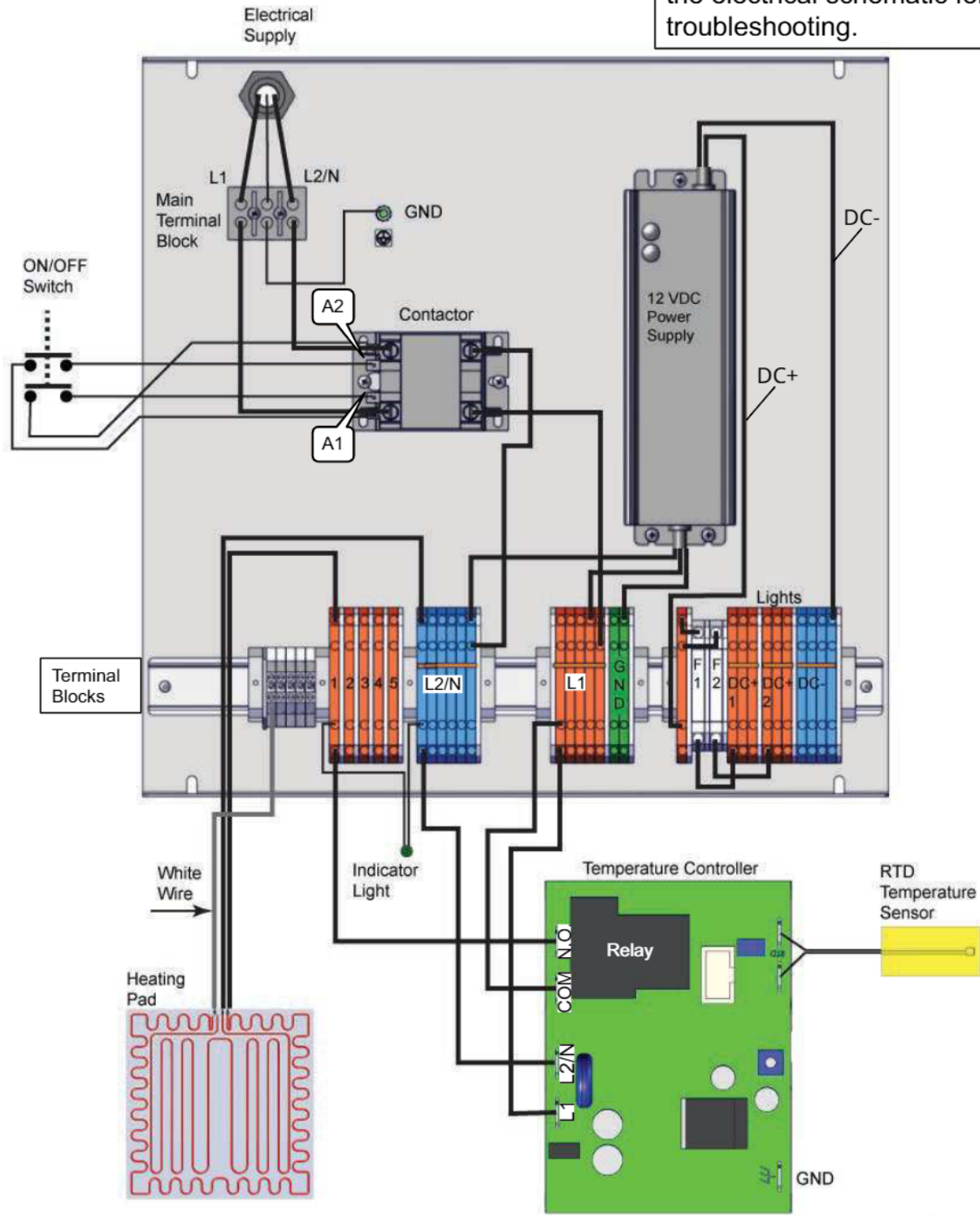
Electrical power is supplied into the unit to the main terminal block, the contactor and the ON/OFF switch. When the ON/OFF switch is selected to the ON position, line voltage is supplied to the A1 and A2 terminals of the contactor. The contactor activates and supplies power to L1 and L2/N terminal blocks, the fans, and the 12 VDC power supply.

12 VDC is supplied to fuses FB1 and FB2 from the power supply. The DC+ and DC- terminal blocks are the connection points for the lights.

Line voltage is supplied to the L1, L2/N, and COM terminals of the temperature controller from the L1 and L2/N terminal blocks. The RTD temperature sensor provides a resistance signal into the temperature controller corresponding to surface temperature of the shelf it is mounted to. The temperature controller monitors the requested temperature from the temperature control knob setting and the shelf temperature from the RTD temperature sensor. When a call for heat is made, the temperature controller closes the NO contacts of the relay. L1 voltage is supplied to the terminal block and then to one of the wires of the heating pad. The other wire from the heating pad is connected to the L2/N terminal block. The center tap from the heating pad is connected to the terminal block with no other connection. The two coils in the heating pad are connected in series. The two calrods in the top heat equipped HSM are connected in series. The indicator light illuminates signaling the call for heat from the temperature controller.

When the shelf has reached the requested temperature, the temperature controller opens the NO contacts of the relay. L1 voltage is no longer supplied to the heating pad and calrods. The indicator light goes out.

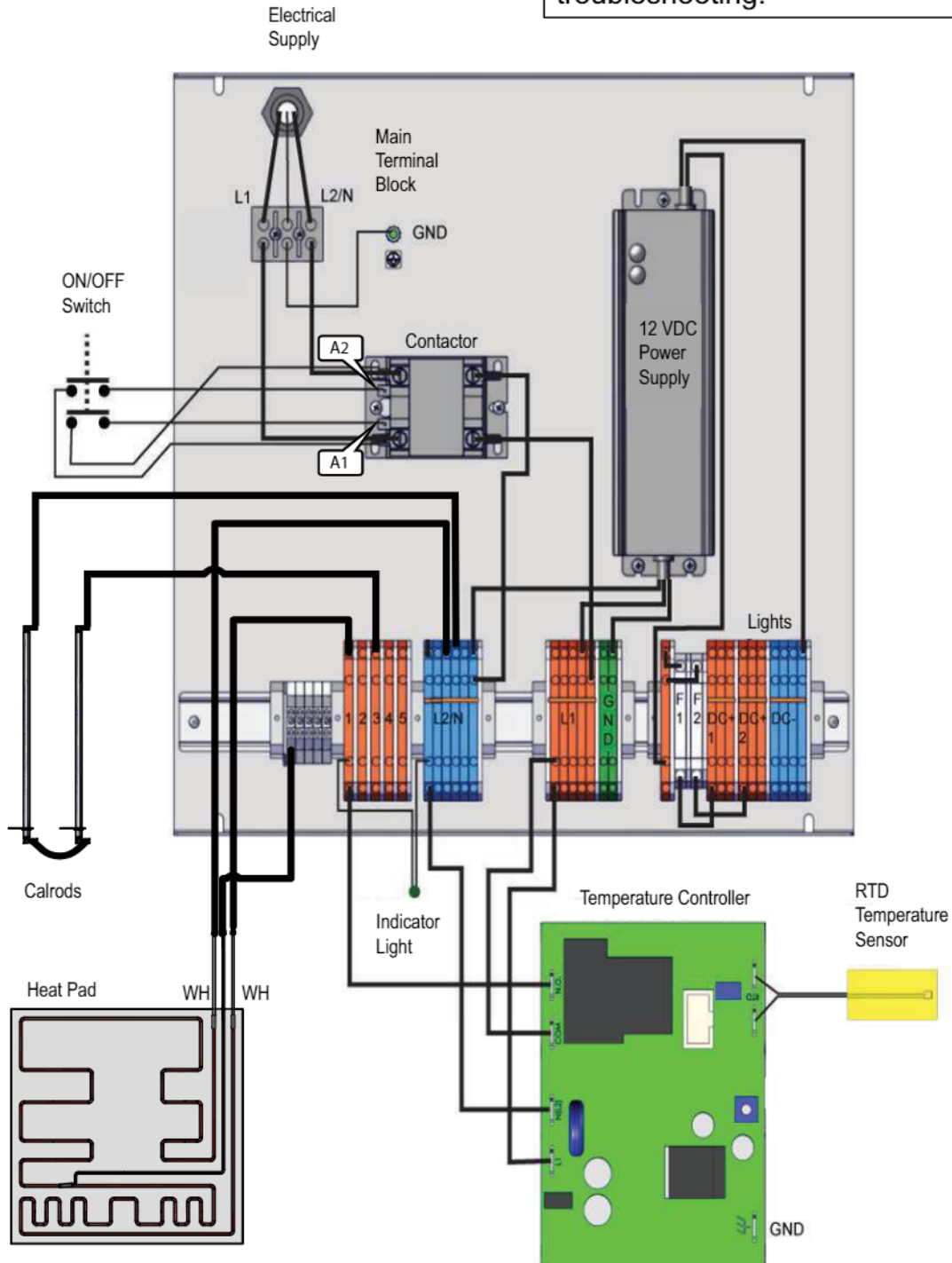
Reference image only. Use the electrical schematic for troubleshooting.



HDC-WD-000597

Top Heat

Reference image only. Use the electrical schematic for troubleshooting.



HDC-WD-013684

HSM-36/5S (208-240V, 230V)

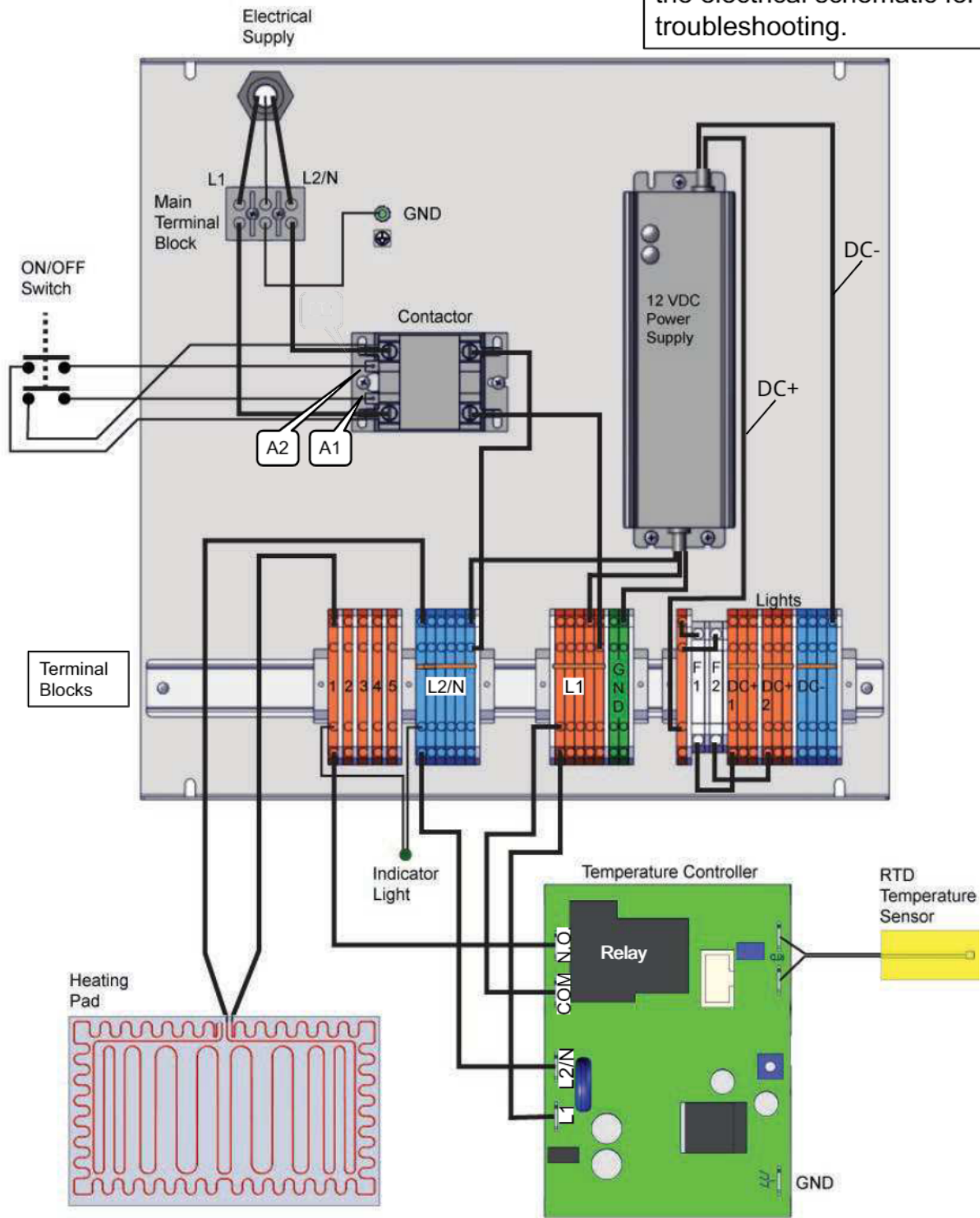
Electrical power is supplied into the unit to the main terminal block, the contactor and the ON/OFF switch. When the ON/OFF switch is selected to the ON position, line voltage is supplied to the A1 and A2 terminals of the contactor. The contactor activates and supplies power to L1 and L2/N terminal blocks, the fans, and the 12 VDC power supply.

12 VDC is supplied to fuses FB1 and FB2 from the power supply. The DC+ and DC- terminal blocks are the connection points for the lights.

Line voltage is supplied to the L1, L2/N, and COM terminals of the temperature controller from the L1 and L2/N terminal blocks. The RTD temperature sensor provides a resistance signal into the temperature controller corresponding to surface temperature of the shelf it is mounted to. The temperature controller monitors the requested temperature from the temperature control knob setting and the shelf temperature from the RTD temperature sensor. When a call for heat is made, the temperature controller closes the NO contacts of the relay. L1 voltage is supplied to the terminal block and then to one of the wires of the heating pad. The other wire from the heating pad is connected to the L2/N terminal block. The two calrods in the top heat equipped HSM are connected in series. The indicator light illuminates signaling the call for heat from the temperature controller.

When the shelf has reached the requested temperature, the temperature controller opens the NO contacts of the relay. L1 voltage is no longer supplied to the heating pad and calrods. The indicator light goes out.

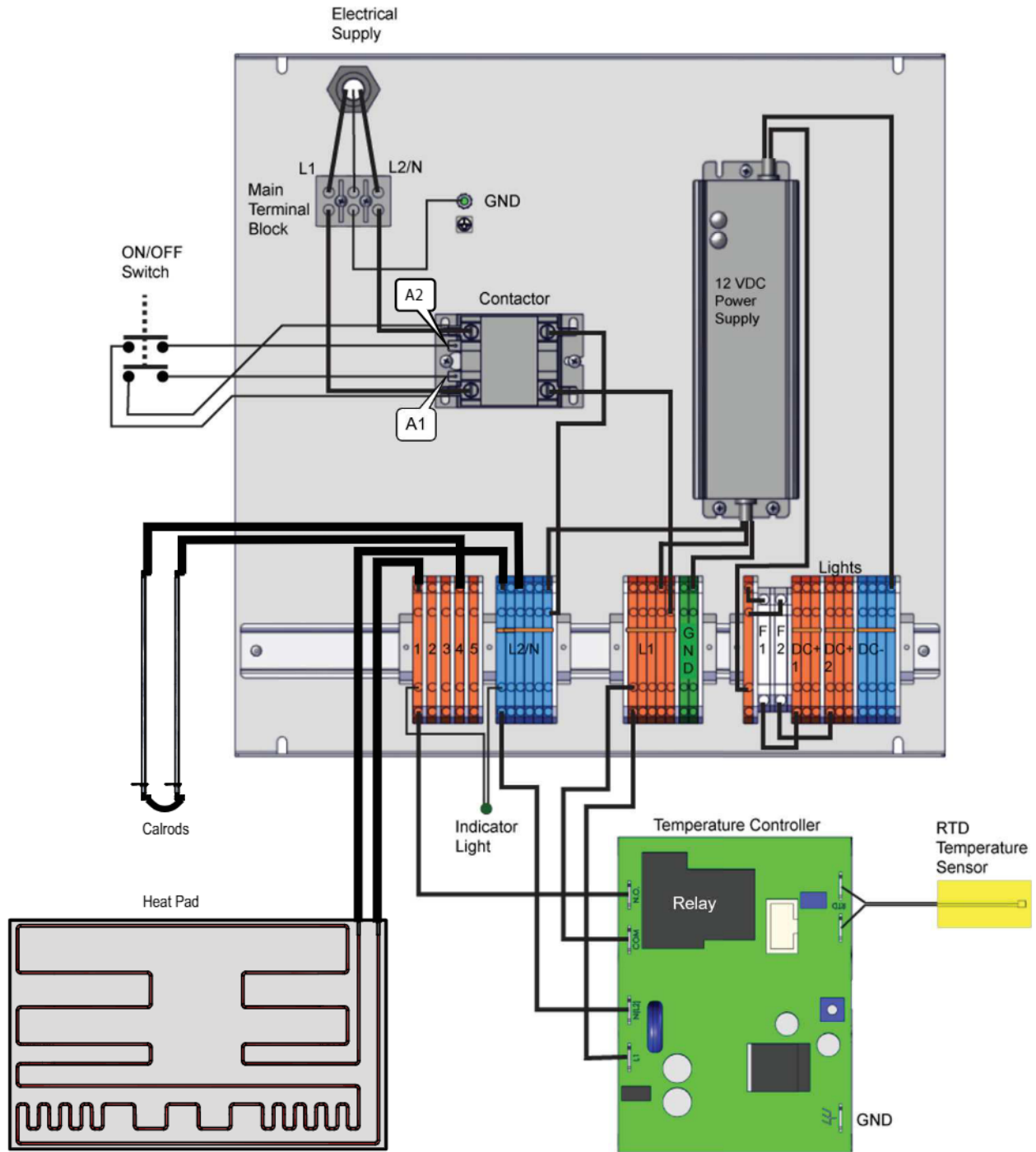
Reference image only. Use the electrical schematic for troubleshooting.



HDC-WD-000601

Top Heat

Reference image only. Use the electrical schematic for troubleshooting.



HDC-WD-013686

HSM-48/5S (208-240V, 230V)

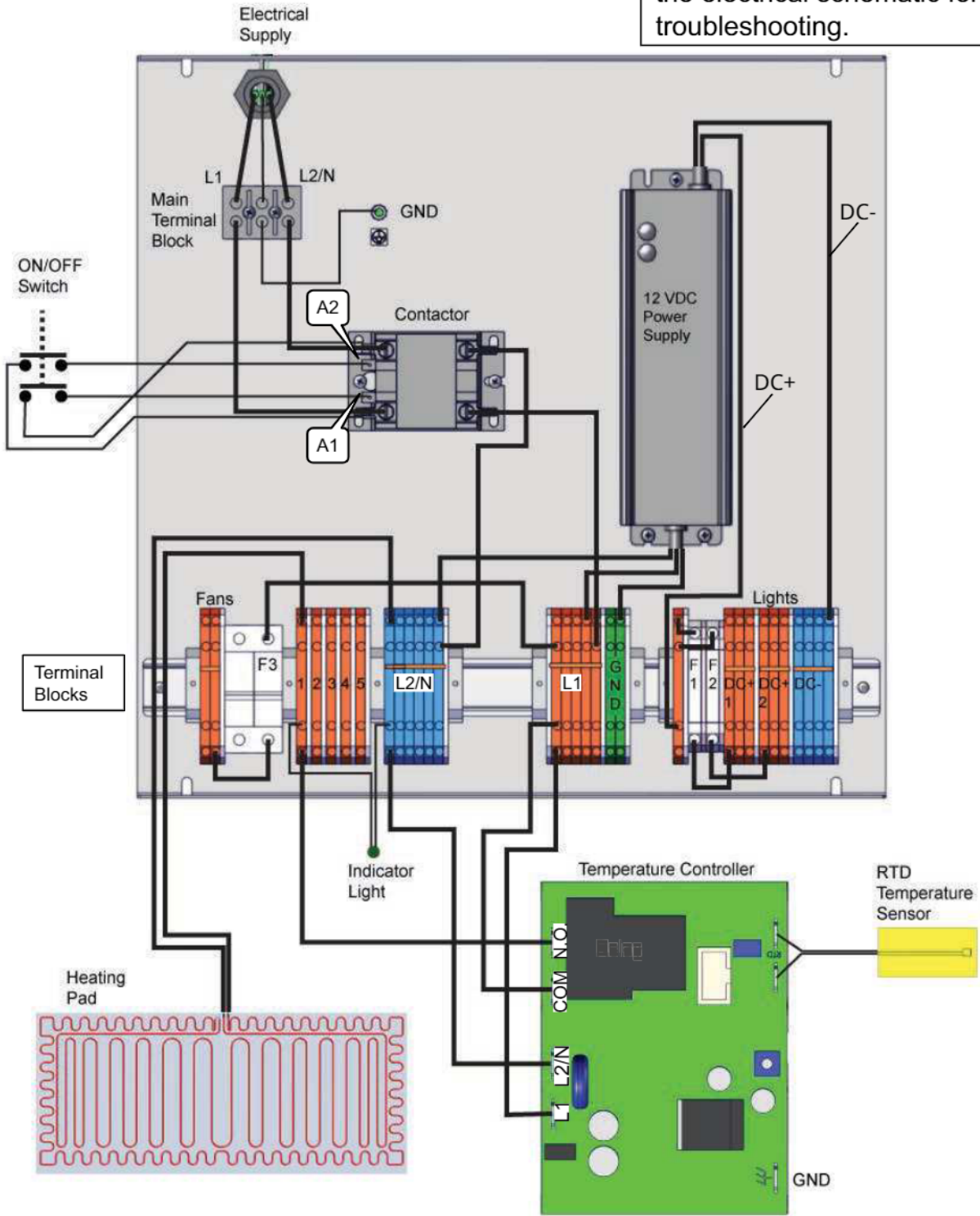
Electrical power is supplied into the unit to the main terminal block, the contactor and the ON/OFF switch. When the ON/OFF switch is selected to the ON position, line voltage is supplied to the A1 and A2 terminals of the contactor. The contactor activates and supplies power to L1 and L2/N terminal blocks, the fans, and the 12 VDC power supply. The fan circuit has a fuse (F3) and additional terminal blocks.

12 VDC is supplied to fuses FB1 and FB2 from the power supply. The DC+ and DC- terminal blocks are the connection points for the lights.

Line voltage is supplied to the L1, L2/N, and COM terminals of the temperature controller from the L1 and L2/N terminal blocks. The RTD temperature sensor provides a resistance signal into the temperature controller corresponding to surface temperature of the shelf it is mounted to. The temperature controller monitors the requested temperature from the temperature control knob setting and the shelf temperature from the RTD temperature sensor. When a call for heat is made, the temperature controller closes the NO contacts of the relay. L1 voltage is supplied to the terminal block and then to one of the wires of the heating pad. The other wire from the heating pad is connected to the L2/N terminal block. The two calrods in the top heat equipped HSM are connected in series. The indicator light illuminates signaling the call for heat from the temperature controller.

When the shelf has reached the requested temperature, the temperature controller opens the NO contacts of the relay. L1 voltage is no longer supplied to the heating pad and calrods. The indicator light goes out.

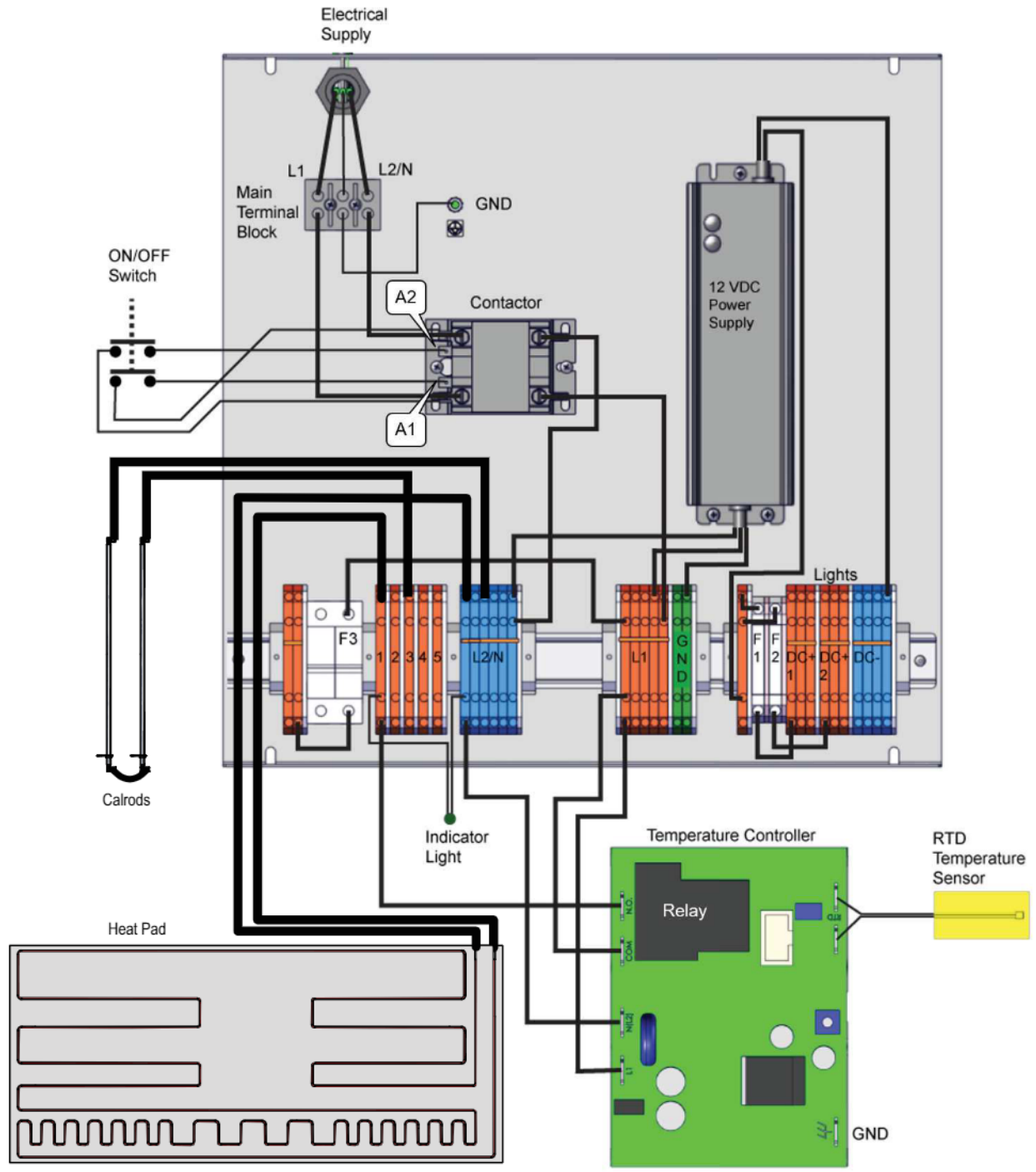
Reference image only. Use the electrical schematic for troubleshooting.



HDC-WD-000605

Top Heat

Reference image only. Use the electrical schematic for troubleshooting.



HDC-WD-013688

HSM-24/3S-CT (120V)

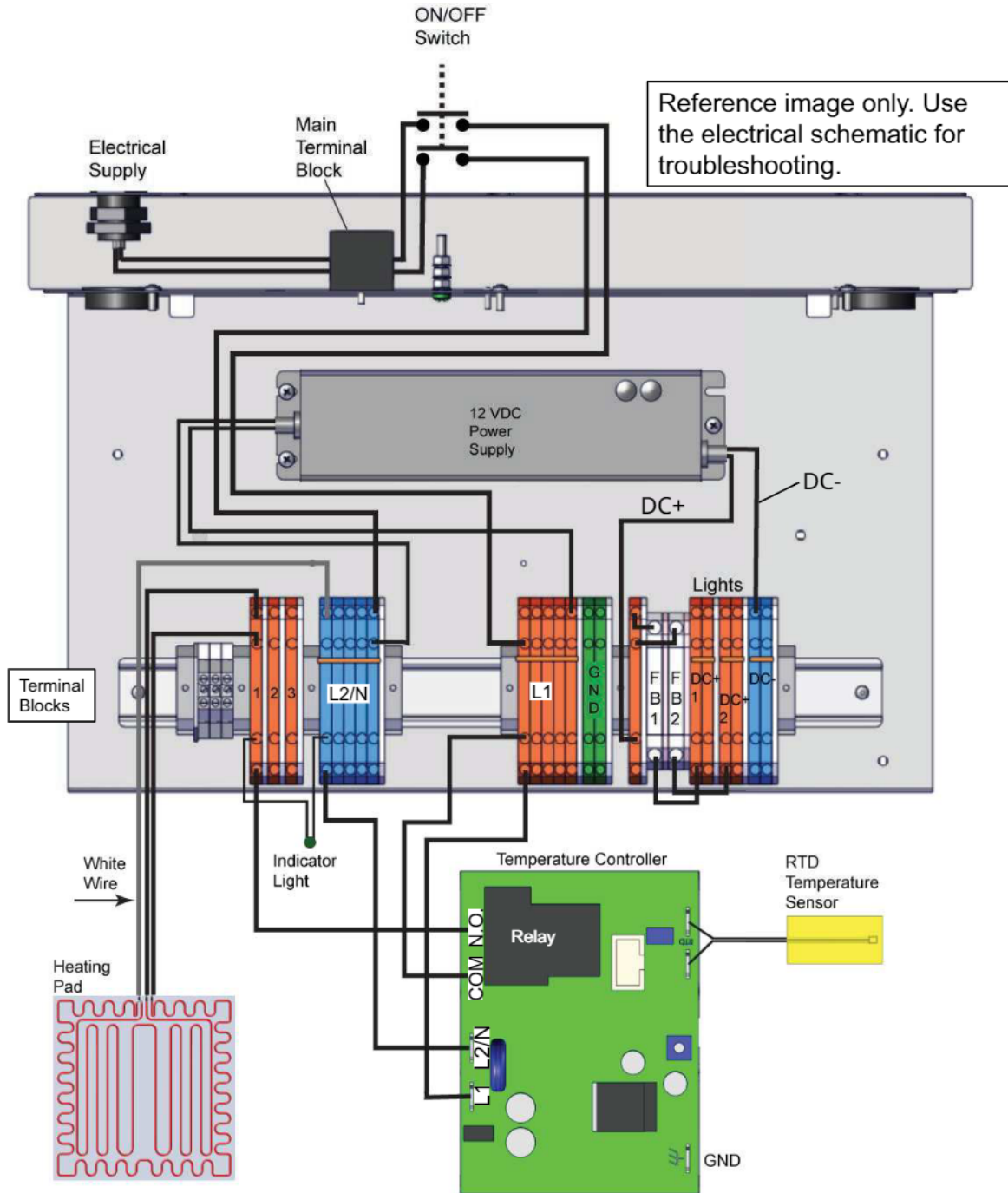
Electrical power is supplied into the unit and connected at the main terminal block. When the ON/OFF switch is selected to the ON position, line voltage is supplied to the L1 terminal block, the fans, and the 12 VDC power supply. The L2/N terminal block acts as neutral.

12 VDC is supplied to fuses FB1 and FB2 from the power supply. The DC+ and DC- terminal blocks are the connection points for the lights.

Line voltage (L1) is supplied to the L1 and COM terminal of the temperature controller from the L1 terminal block. The RTD temperature sensor provides a resistance signal to the temperature controller corresponding to surface temperature of the shelf it is mounted to.

The temperature controller monitors the requested temperature from the temperature control knob setting and the shelf temperature from the RTD temperature sensor. When a call for heat is made, the temperature controller closes the NO contacts of the relay. The two coils in the heating pad are connected in parallel. The two calrods in the top heat equipped HSM are connected in parallel. The indicator light illuminates signaling the call for heat from the temperature controller.

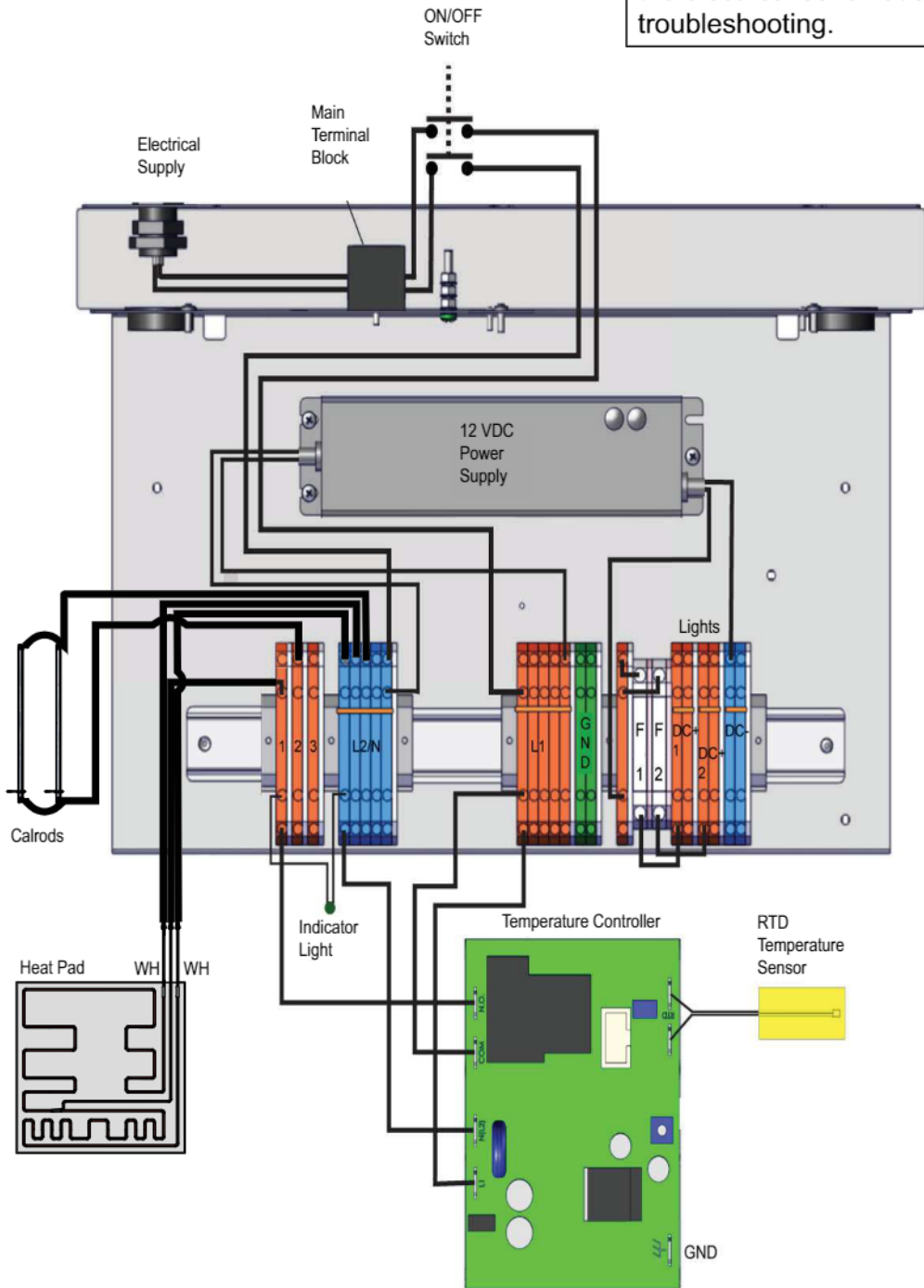
When the shelf has reached the requested temperature, the temperature controller opens the NO contacts of the relay. L1 voltage is no longer supplied to the heating pad and calrods. The indicator light goes out.



HDC-WD-000584

Top Heat

Reference image only. Use the electrical schematic for troubleshooting.



HDC-WD-013690

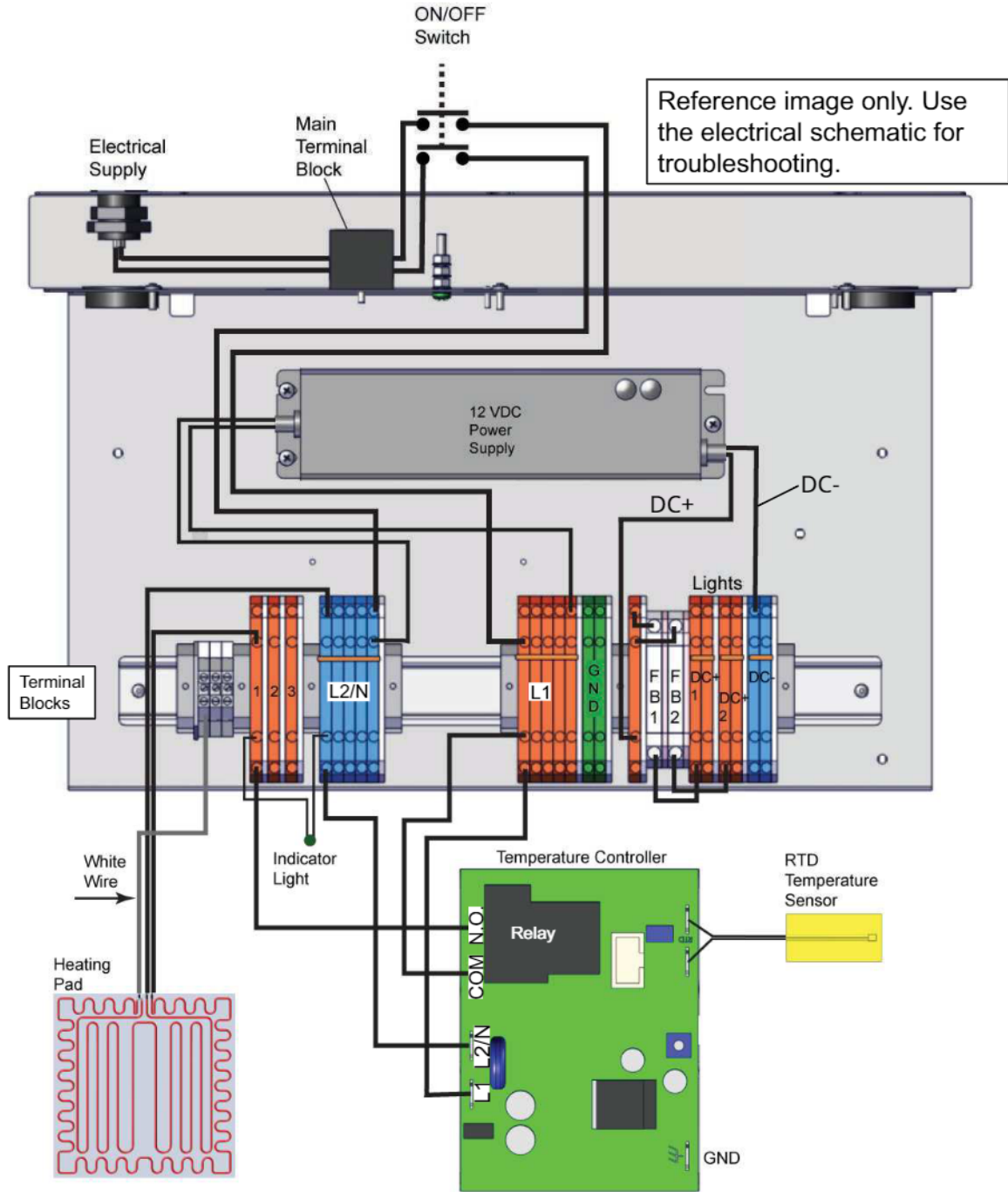
HSM-24/3S-CT (208-240V, 230V)

Electrical power is supplied into the unit and connected at the main terminal block. When the ON/OFF switch is selected to the ON position, line voltage is supplied to the L1 and L2/N terminal blocks, the fans, and the 12 VDC power supply.

12 VDC is supplied to fuses FB1 and FB2 from the power supply. The DC+ and DC- terminal blocks are the connection points for the lights.

Line voltage is supplied to the L1, L2/N, and COM terminals of the temperature controller from the L1 and L2/N terminal blocks. The RTD temperature sensor provides a resistance signal into the temperature controller corresponding to surface temperature of the shelf it is mounted to. The temperature controller monitors the requested temperature from the temperature control knob setting and the shelf temperature from the RTD temperature sensor. When a call for heat is made, the temperature controller closes the NO contacts of the relay. L1 voltage is supplied to the terminal block and then to one of the black wires of the heating pad. The other wire from the heating pad is connected to the L2/N terminal block. The wire from the heating pad is connected to the terminal block with no other connection. The two coils in the heating pad are connected in series. The two calrods in the top heat equipped HSM are connected in series. The indicator light illuminates signaling the call for heat from the temperature controller.

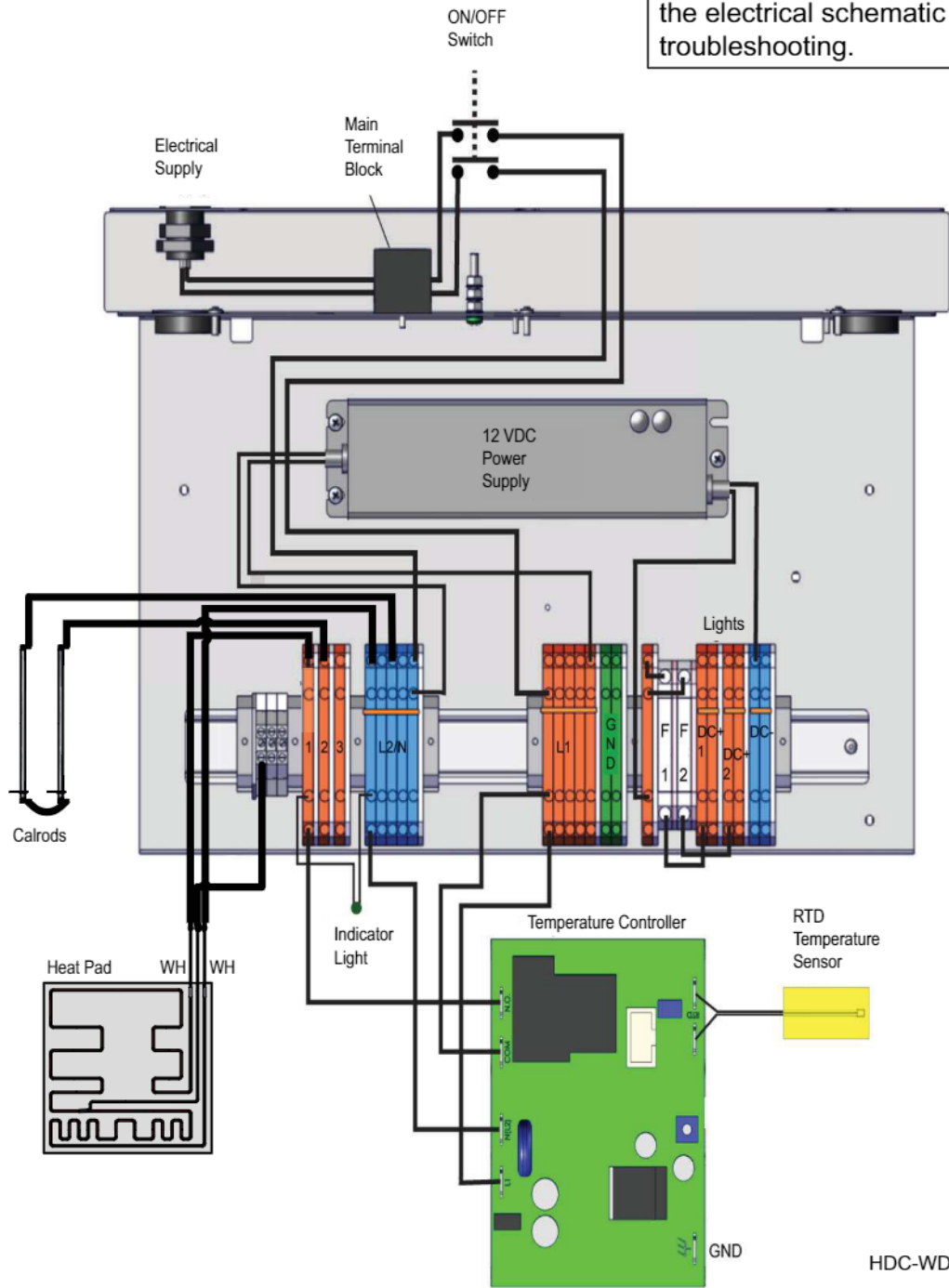
When the shelf has reached the requested temperature, the temperature controller opens the NO contacts of the relay. L1 voltage is no longer supplied to the heating pad and calrods. The indicator light goes out.



HDC-WD-588

Top Heat

Reference image only. Use the electrical schematic for troubleshooting.



HDC-WD-013692

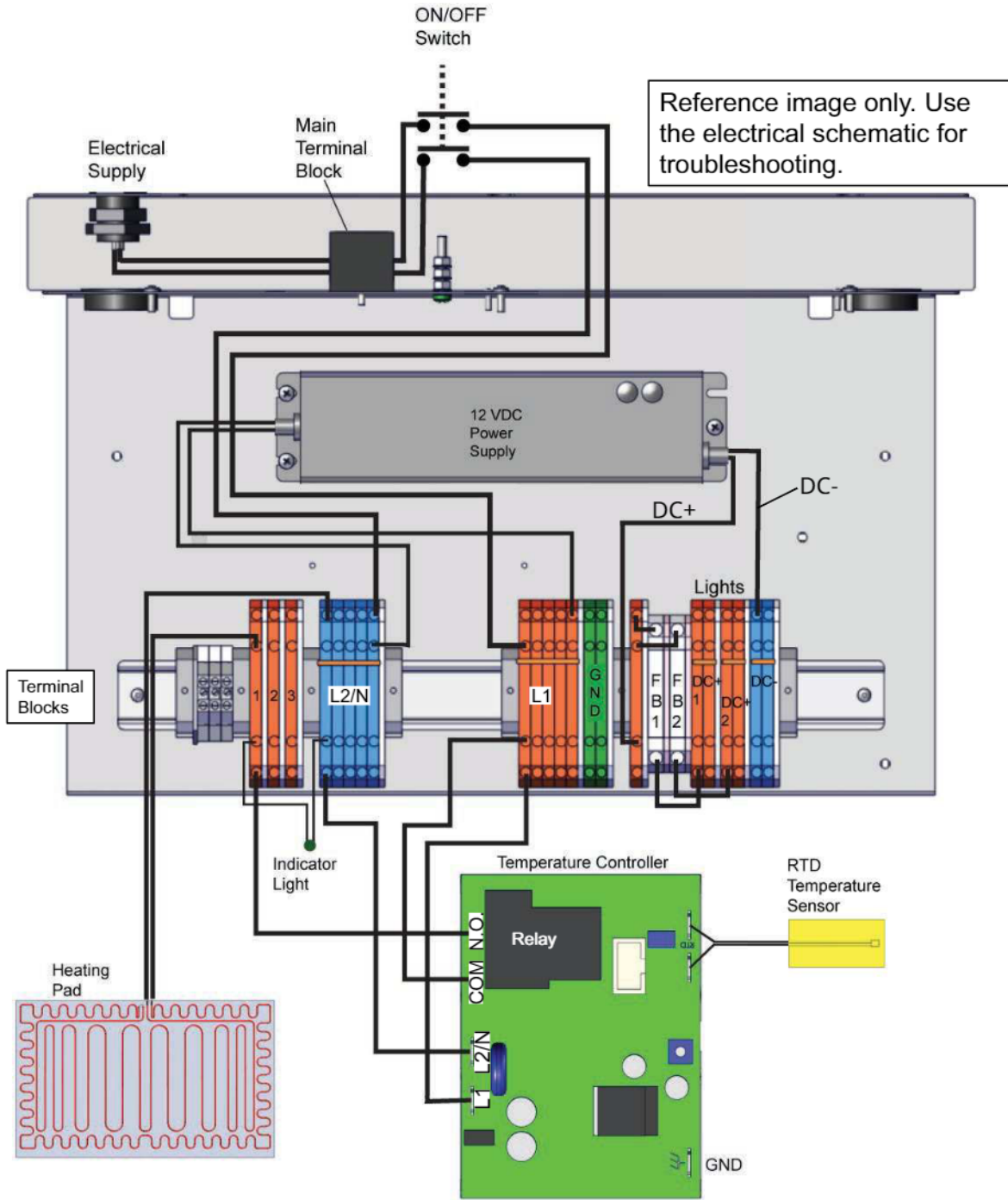
HSM-36/3S-CT (208-240V, 230V)

Electrical power is supplied into the unit and connected at the main terminal block. When the ON/OFF switch is selected to the ON position, line voltage is supplied to the L1 and L2/N terminal blocks, the fans, and the 12 VDC power supply.

12 VDC is supplied to fuses FB1 and FB2 from the power supply. The DC+ and DC- terminal blocks are the connection points for the lights.

Line voltage is supplied to the L1, L2/N, and COM terminals of the temperature controller from the L1 and L2/N terminal blocks. The RTD temperature sensor provides a resistance signal into the temperature controller corresponding to surface temperature of the shelf it is mounted to. The temperature controller monitors the requested temperature from the temperature control knob setting and the shelf temperature from the RTD temperature sensor. When a call for heat is made, the temperature controller closes the NO contacts of the relay. L1 voltage is supplied to the terminal block and then to one of the wires of the heating pad. The other wire from the heating pad is connected to the L2/N terminal block. The two calrods in the top heat equipped HSM are connected in series. The indicator light illuminates signaling the call for heat from the temperature controller.

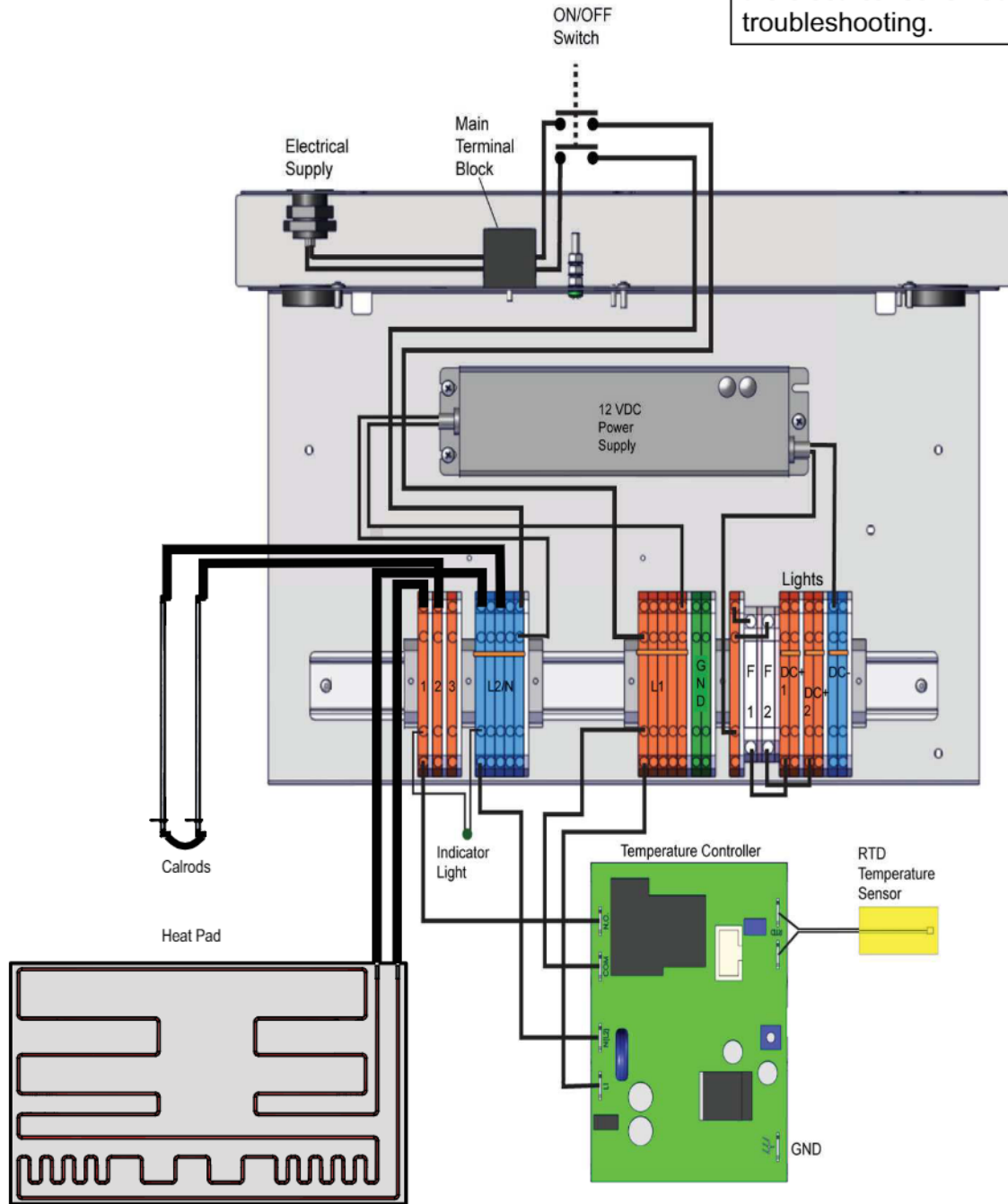
When the shelf has reached the requested temperature, the temperature controller opens the NO contacts of the relay. L1 voltage is no longer supplied to the heating pad and calrods. The indicator light goes out.



HDC-WD-000592

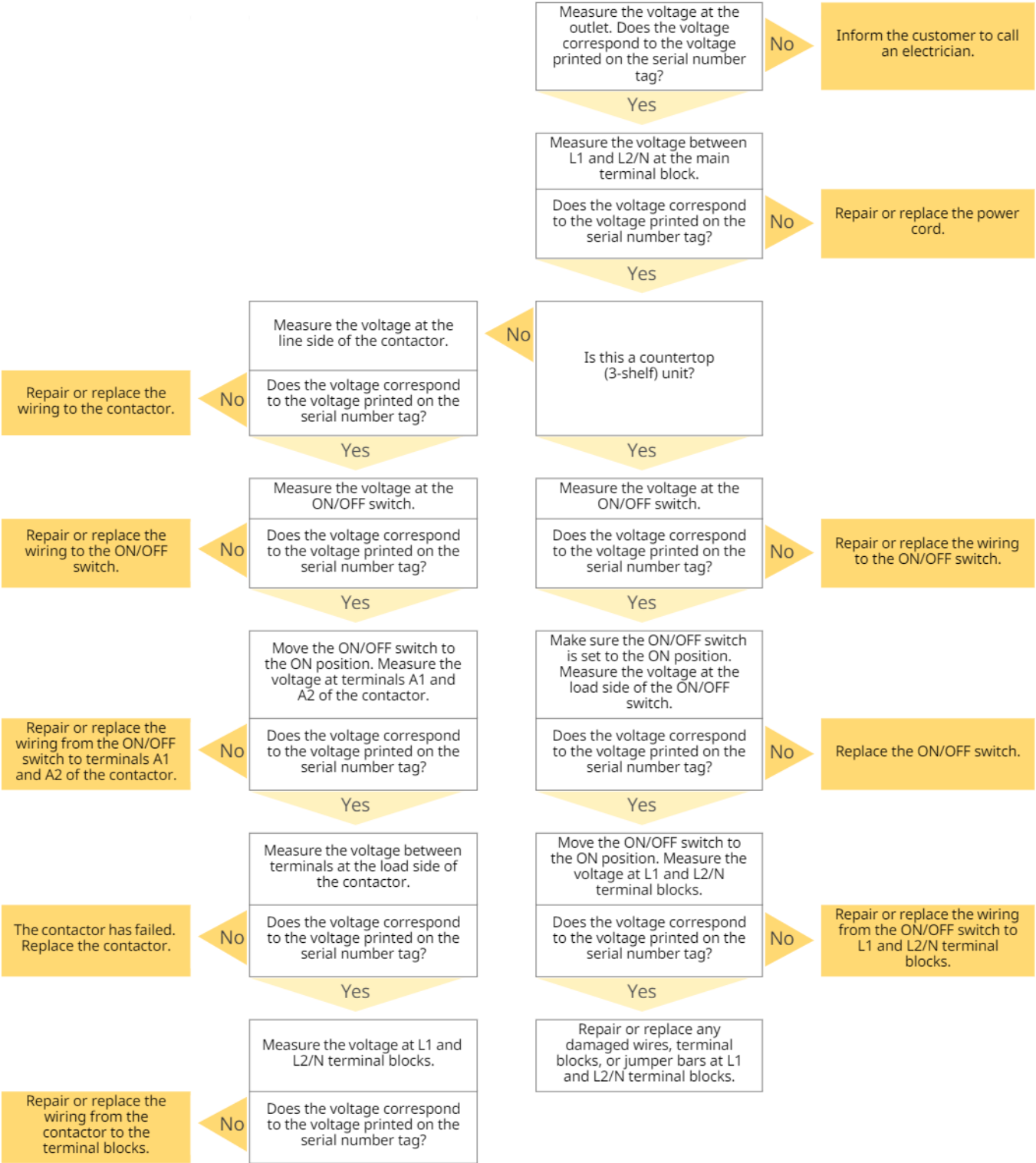
Top Heat

Reference image only. Use the electrical schematic for troubleshooting.



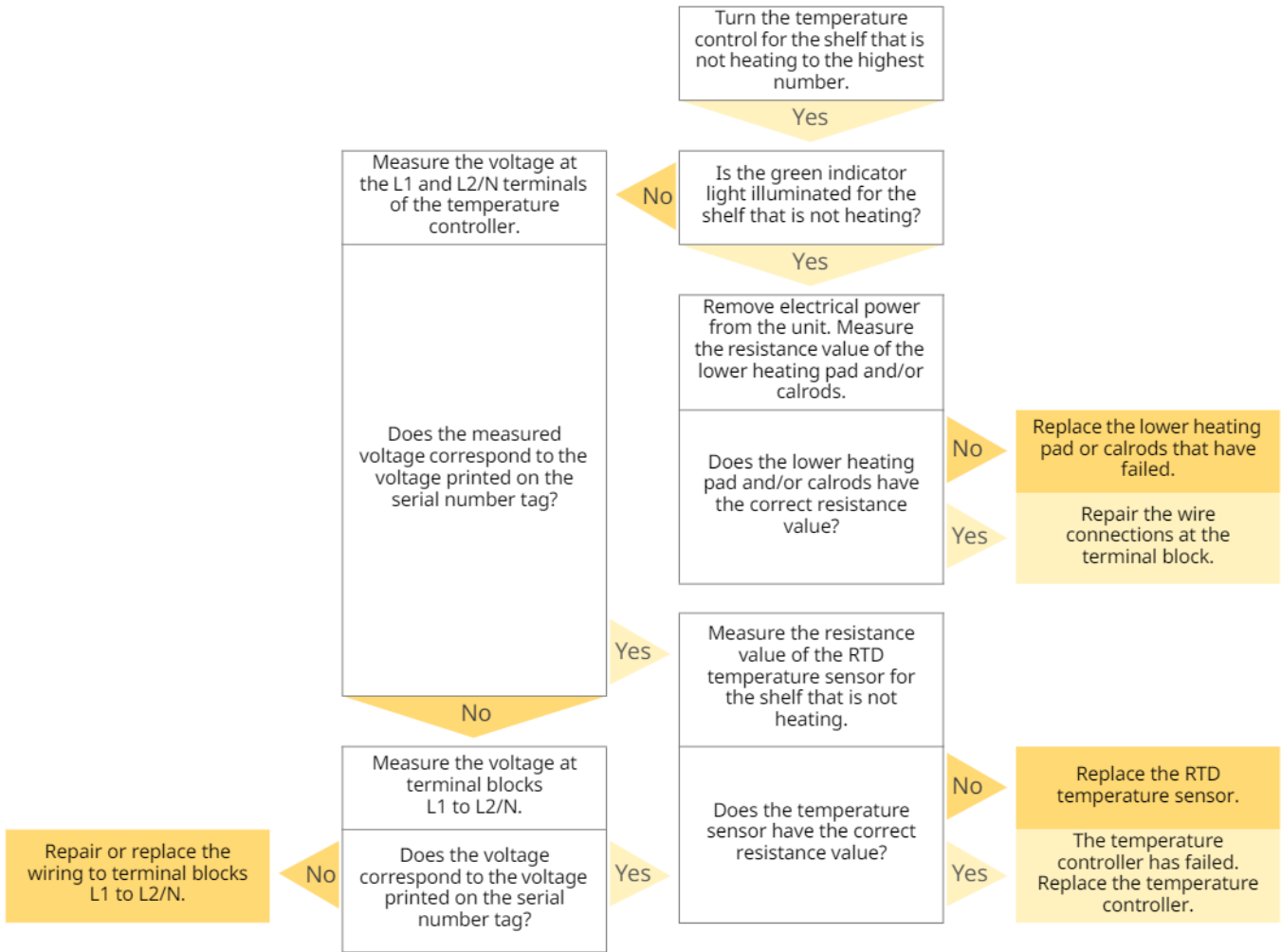
HDC-WD-013694

No Operation

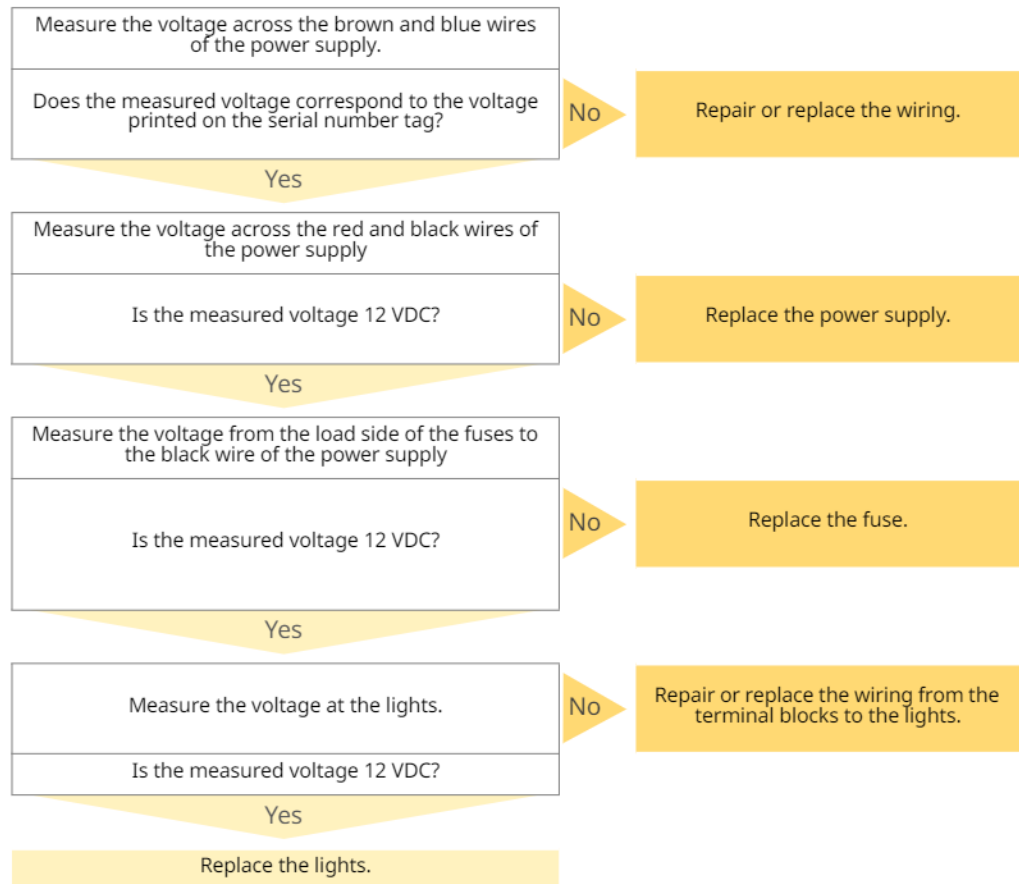


TROUBLESHOOTING

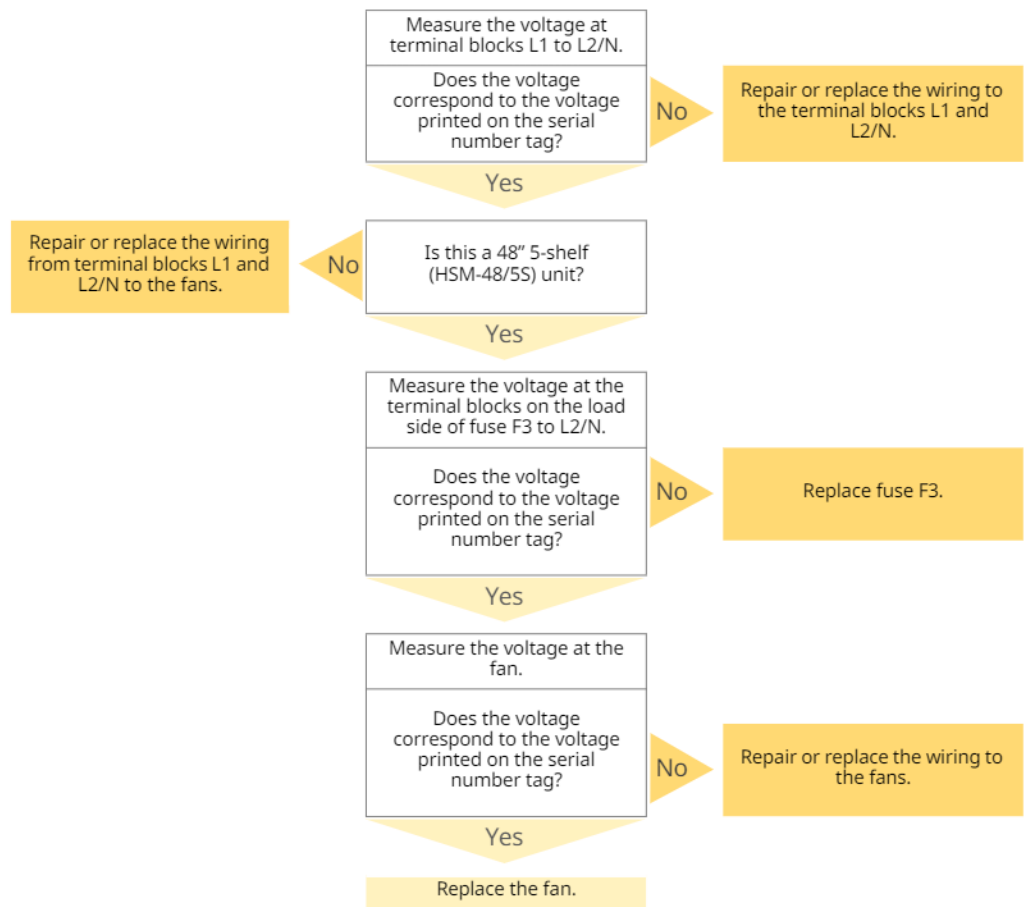
One Shelf Not Heating



All Lights, or one Bank of Lights, will not Illuminate


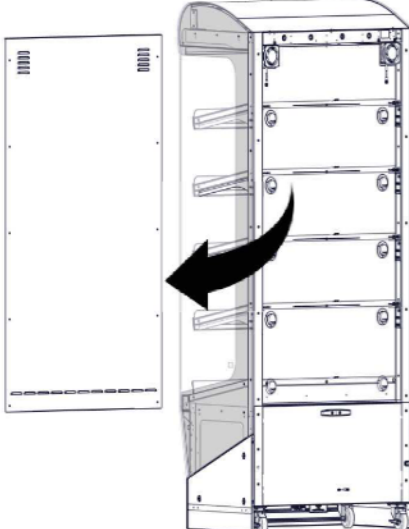
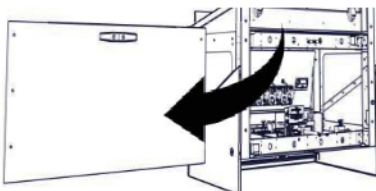
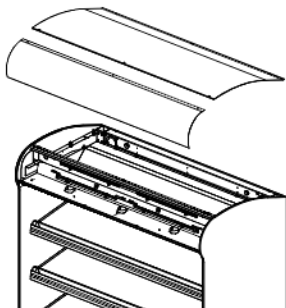
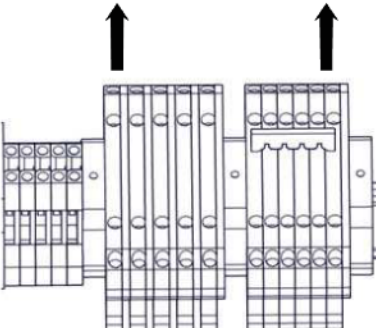


Fans Will Not Turn On



Replacing the Shelf Heating Element/Calrods Heating Elements

 **WARNING: DISCONNECT POWER BEFORE SERVICING!**

<p>1 Disconnect the electrical power source to the merchandiser. Install lockout/tagout equipment.</p> 	<p>2 Remove the rear service panel.</p> 
<p>3 Remove the electrical service panel</p>  <p>NOTE: Remove the top panels to access the top calrods.</p> 	<p>4 Record the terminal blocks that the heating pad (shelf removal) and calrod wires are installed into. Disconnect the wires from the terminal blocks.</p> 

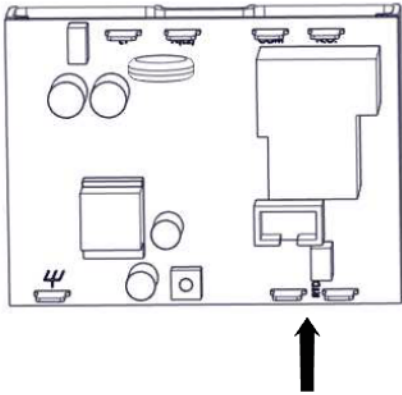
HDC-TS-000609

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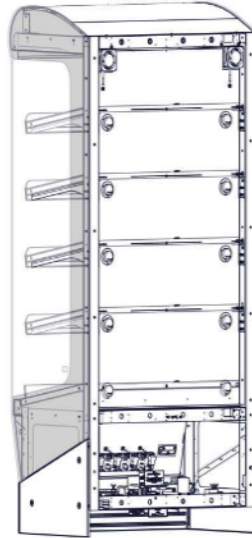
5 Disconnect the temperature sensor wires from the temperature controller.

NOTE: Disregard this step for top calrod replacement.

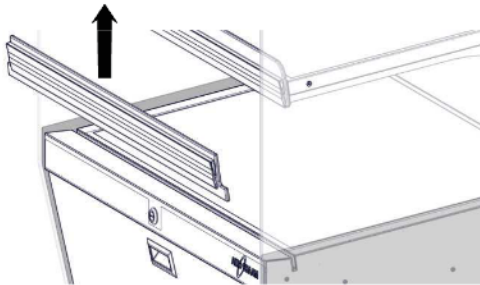


6 Remove the screws securing the shelf to the back of the unit.

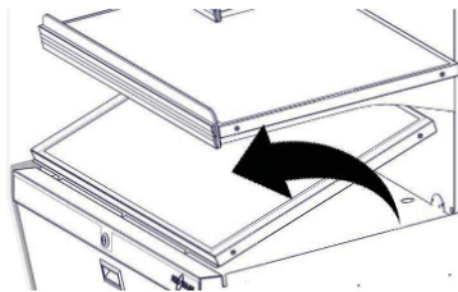
NOTE: Disregard shelf removal steps for top calrod replacement.



7 (Bottom shelf only) Remove the shelf guard assembly.



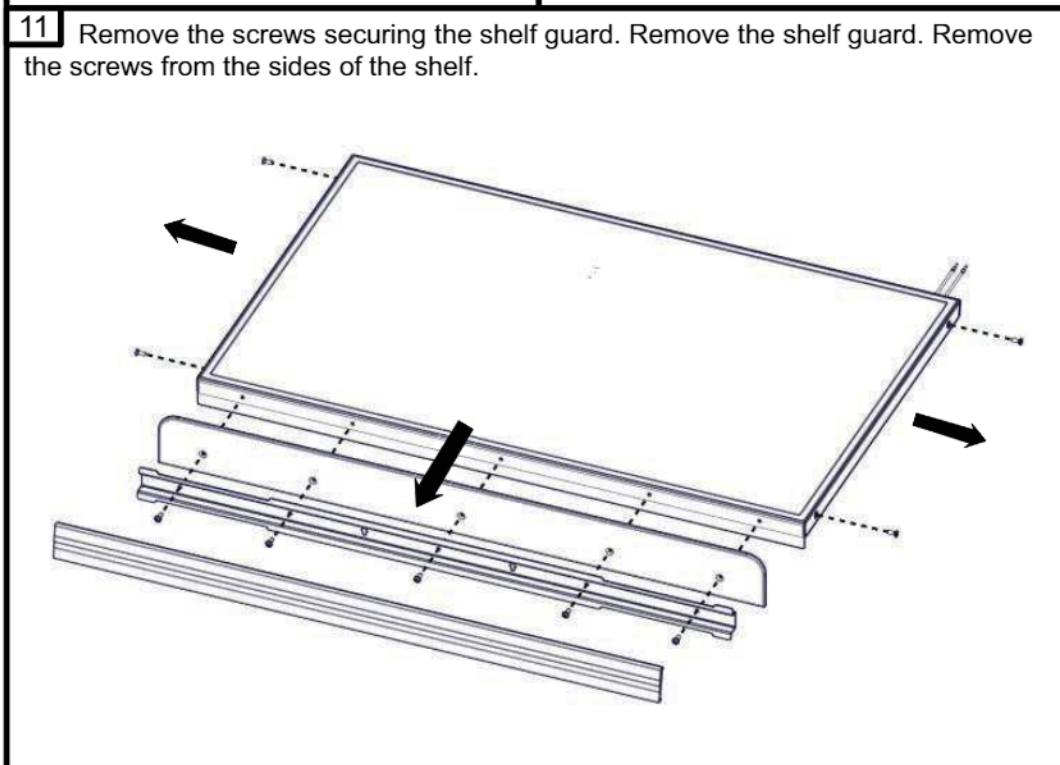
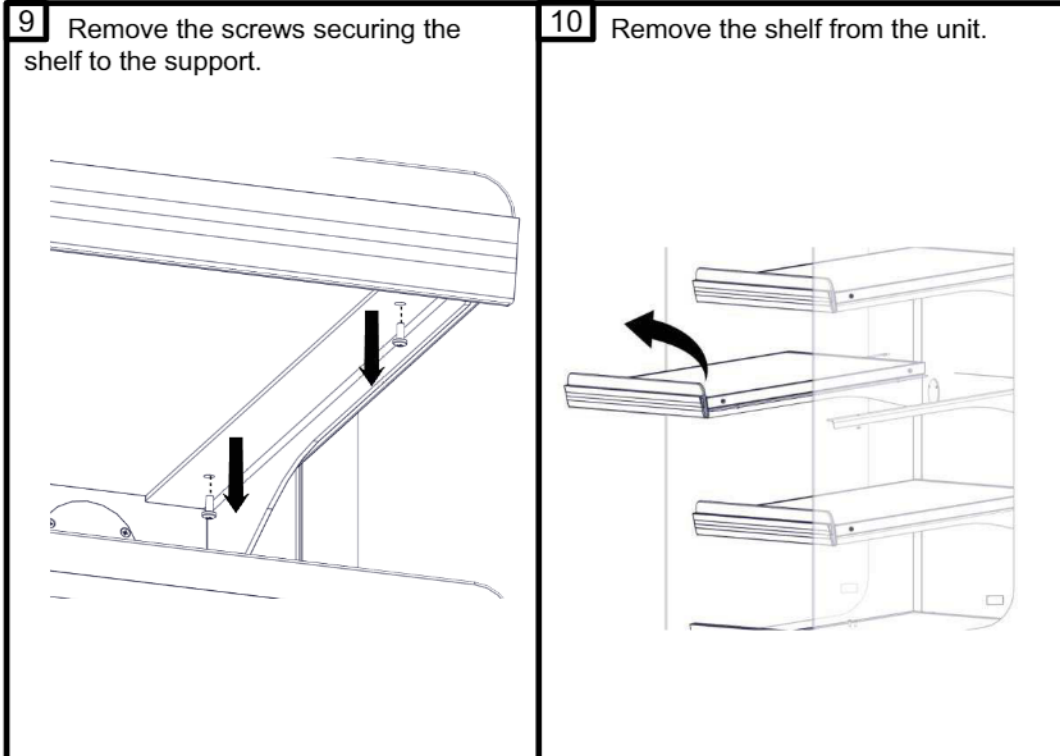
8 (Bottom shelf only) Remove the shelf assembly.



HDC-TS-000612

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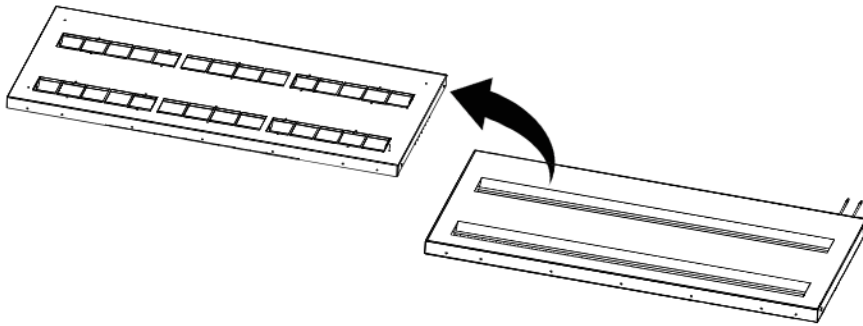


HDC-TS-000656

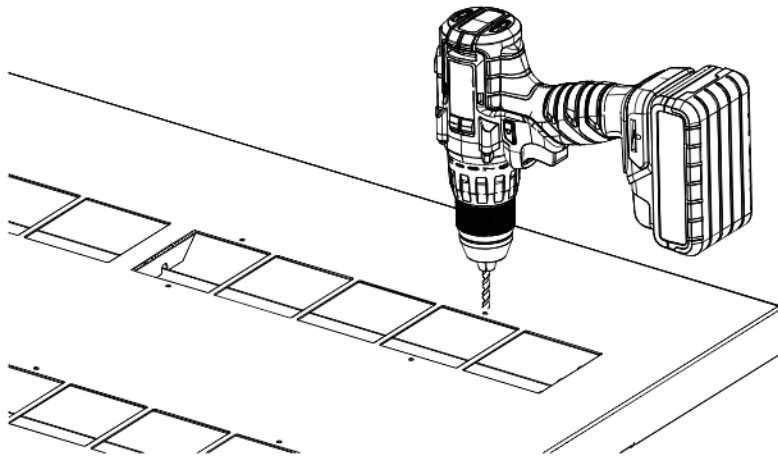
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12 Turn the shelf over. Remove the shelf bottom.



13 Drill the rivets securing the reflector bonnets.

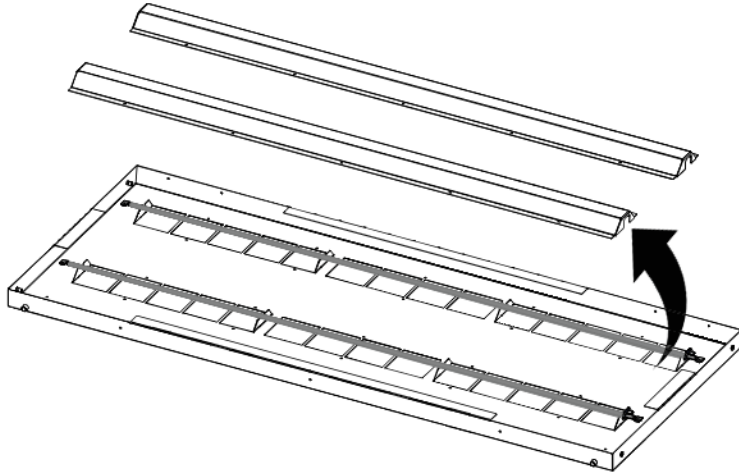


HDC-TS-000658

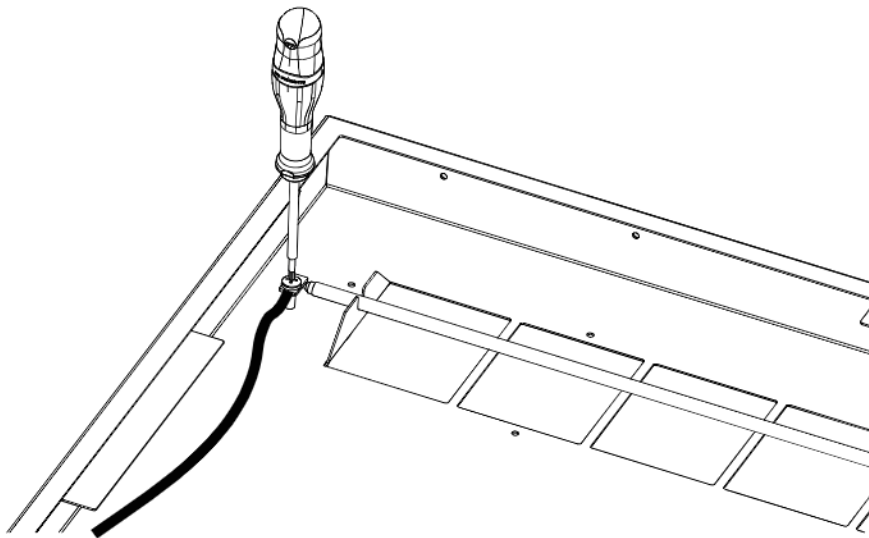
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14 Remove the reflector bonnets.



15 Disconnect the wires from the calrods and remove the calrods. Install the new calrods and connect the wires.

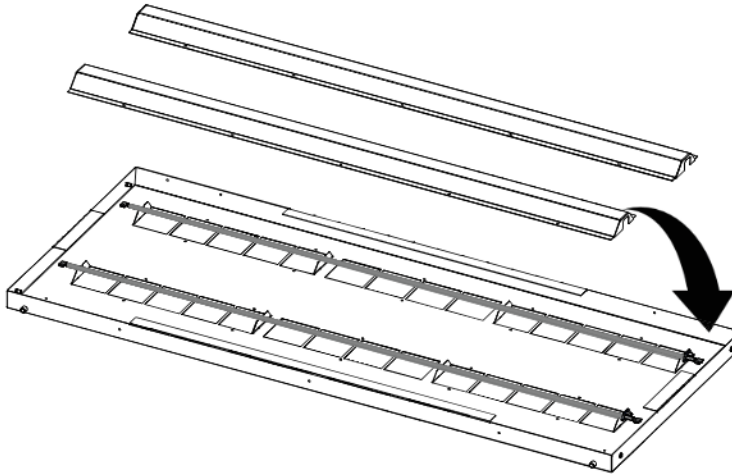


HDC-TS-000660

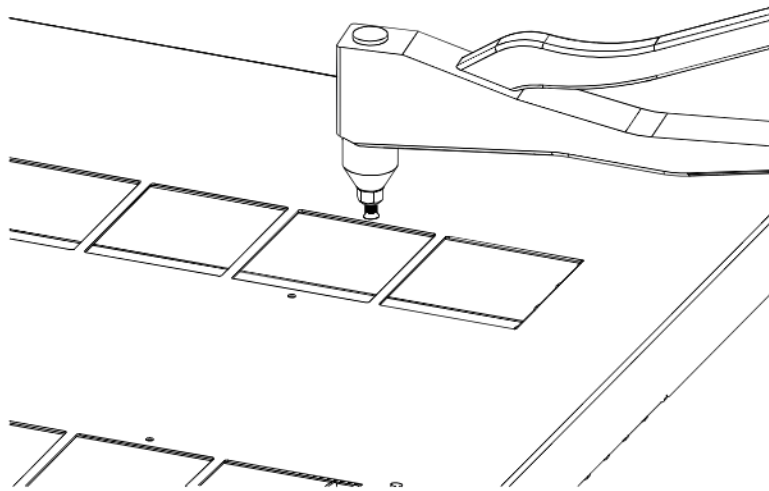
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16 Install the reflector bonnets.



17 Install the rivets securing the reflector bonnets.

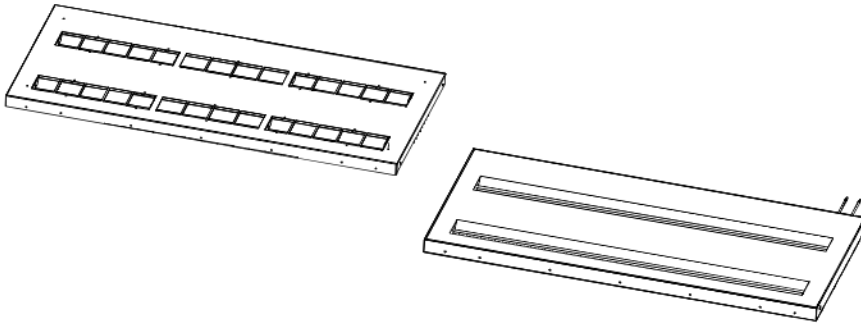


HDC-TS-000662

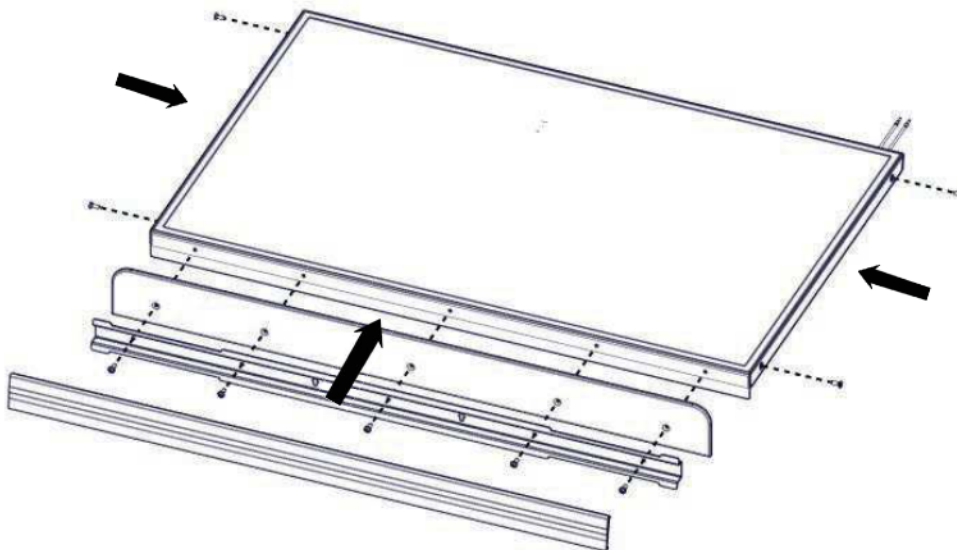
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18 Install the shelf bottom.



19 Install the shelf guard. Install the screws securing the shelf guard. Install the screws into the sides of the shelf.

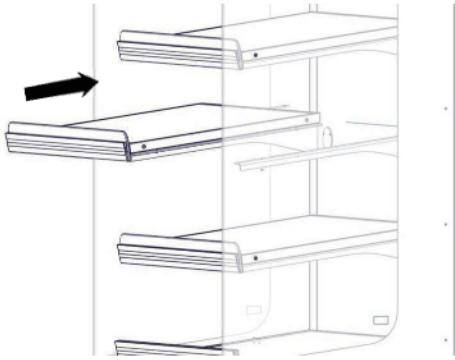


HDC-TS-013697

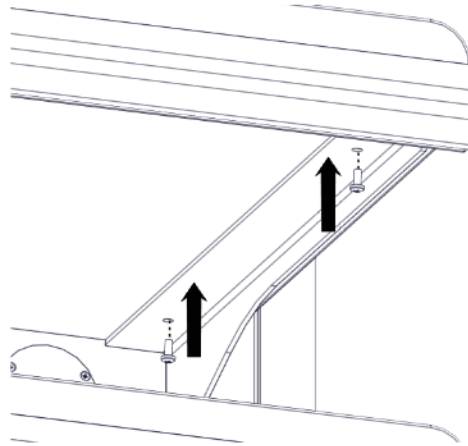
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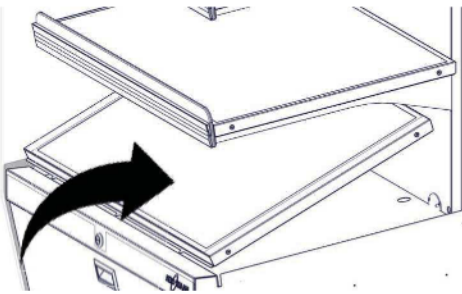
20 Install the shelf into the unit.



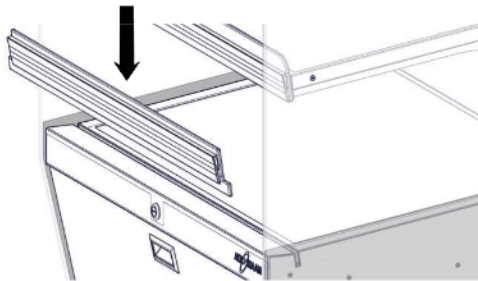
21 Install the screws securing the shelf to the support.



22 (Bottom shelf only) Install the shelf assembly into the unit.



23 (Bottom shelf only) Install the shelf guard assembly.

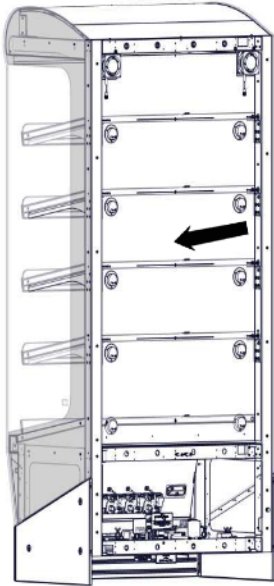


HDC-TS-000664

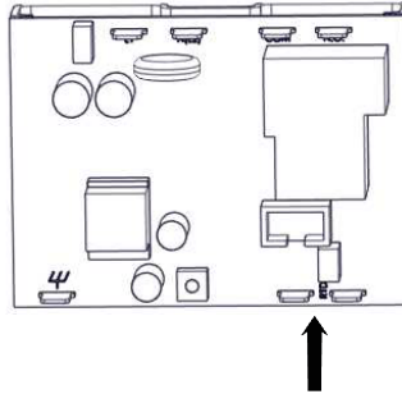
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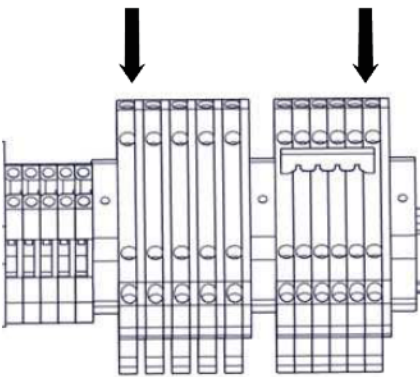
24 Install the screws securing the shelf to the back of the unit.



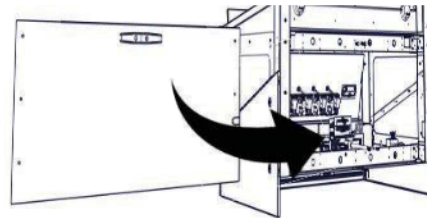
25 Connect the temperature sensor wires to the temperature controller.



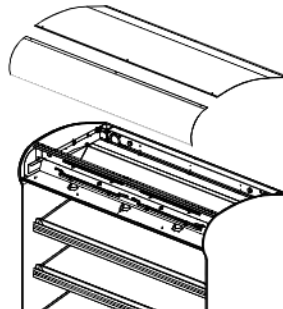
26 Connect the heating pads wires into the terminal blocks.



27 Install the electrical service panel.



NOTE: Install the top panels if removed for top calrod replacement.

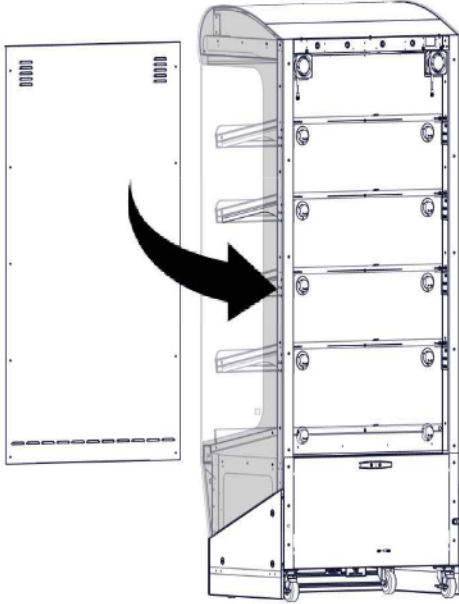


HDC-TS-000666

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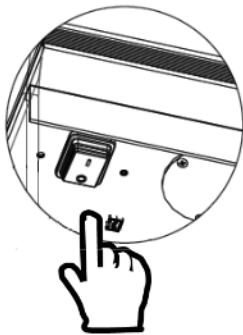
28 Install the rear service panel.



29 Remove the lockout/tagout equipment.



30 Supply electrical power to the merchandiser.

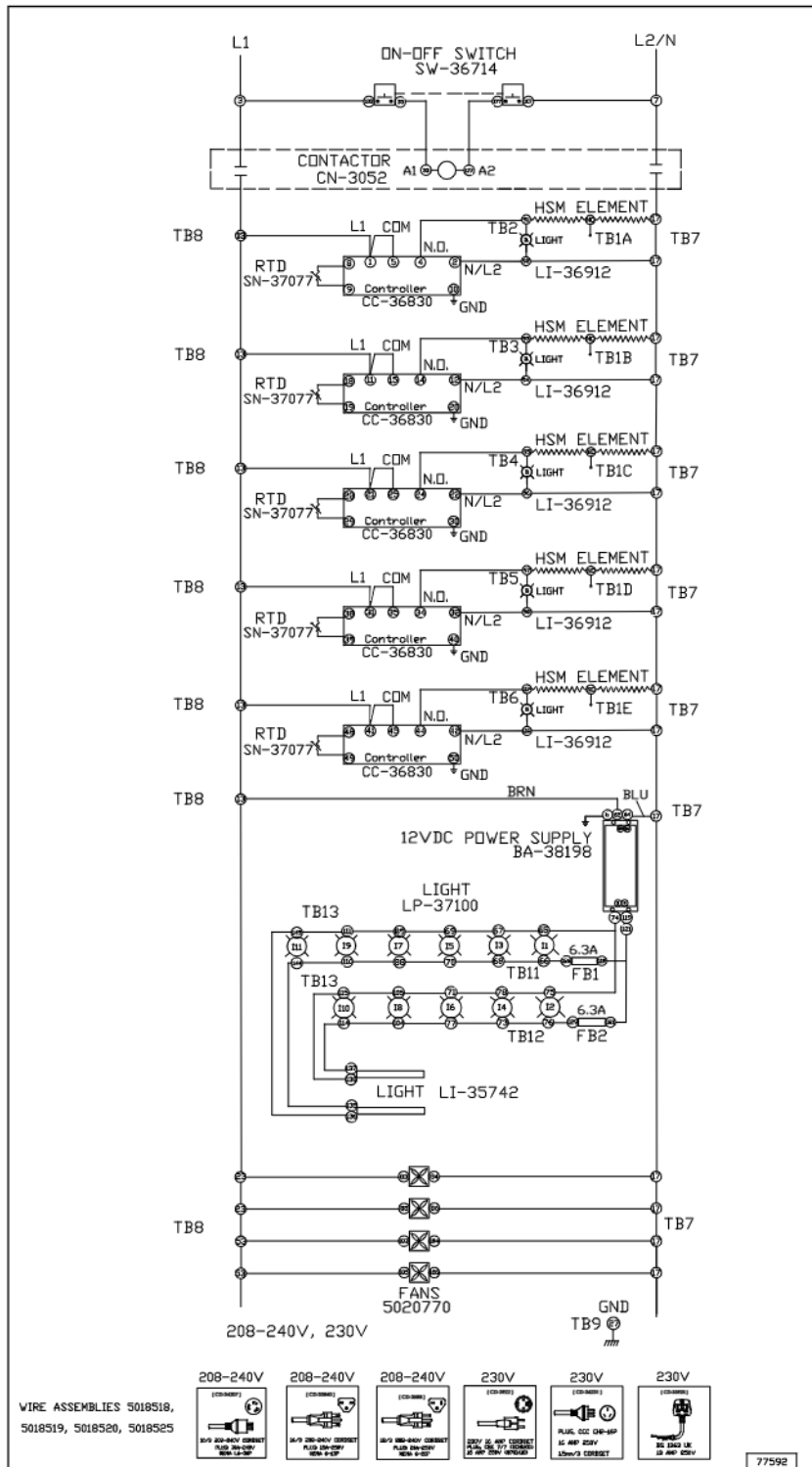


31 Turn the temperature control knob to 10. Test all functions of the merchandiser. This procedure is complete.



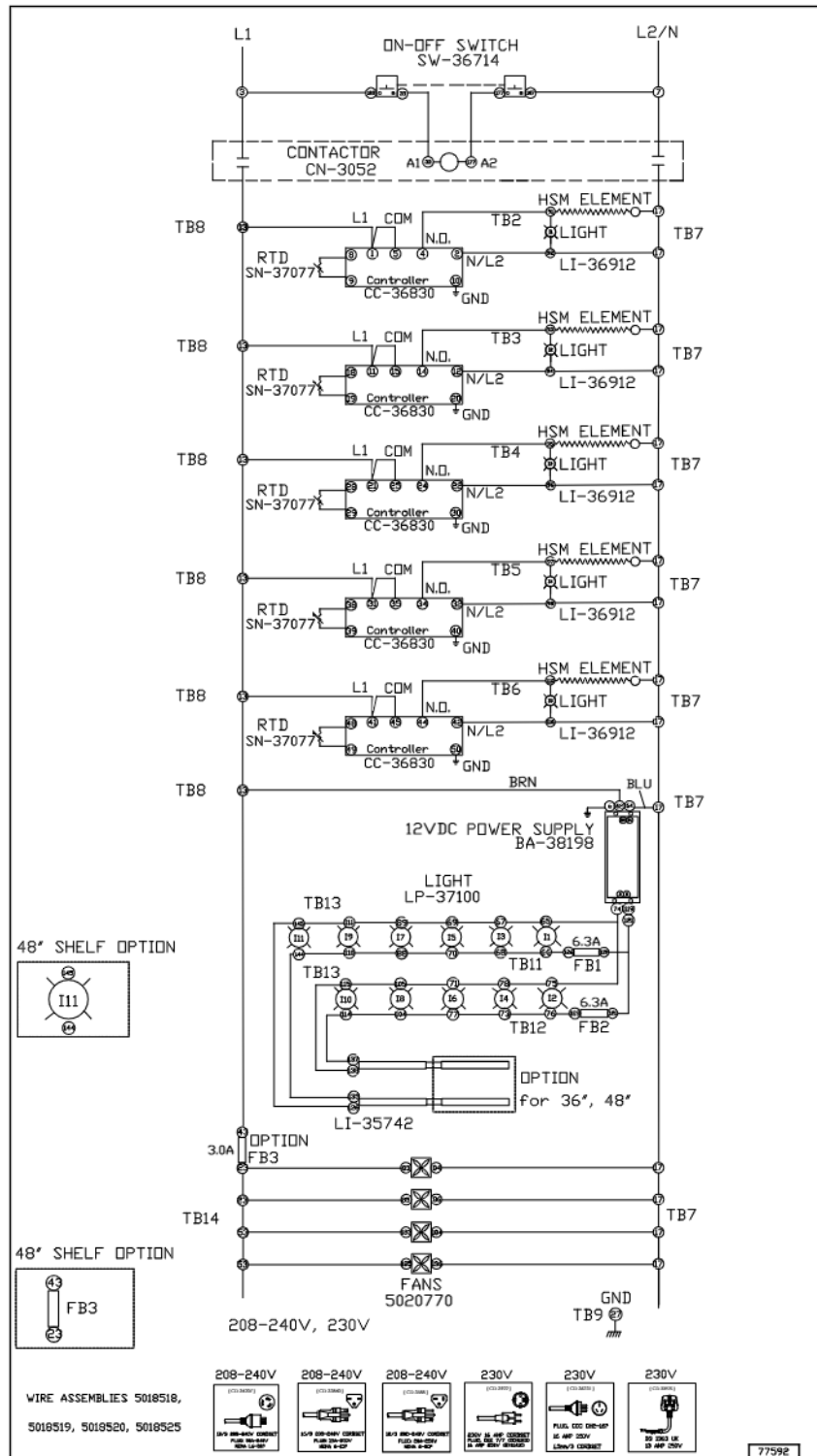
HDC-TS-000668

HSM-24/5S (208-240V, 230V)

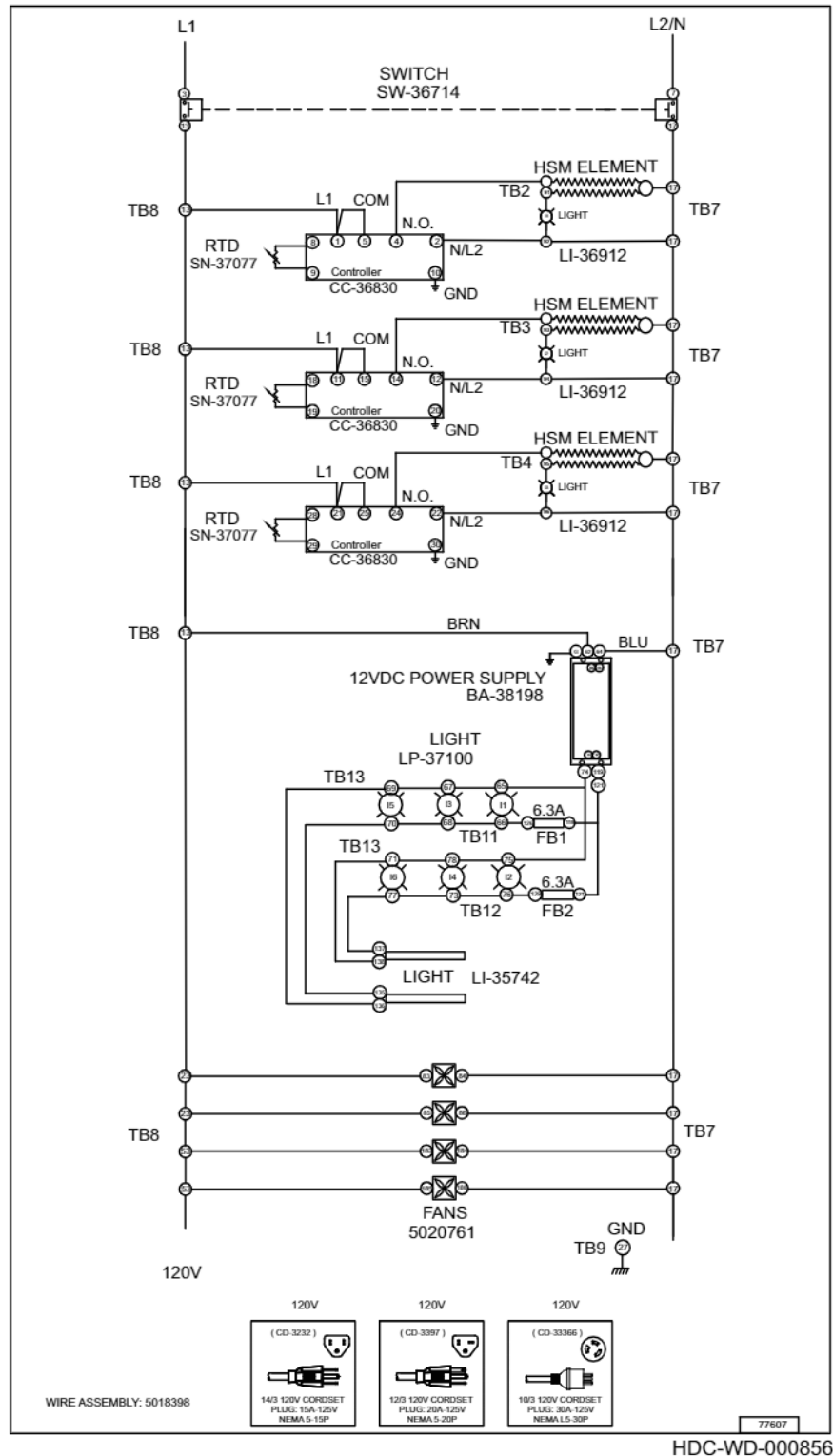


SCHEMATICS

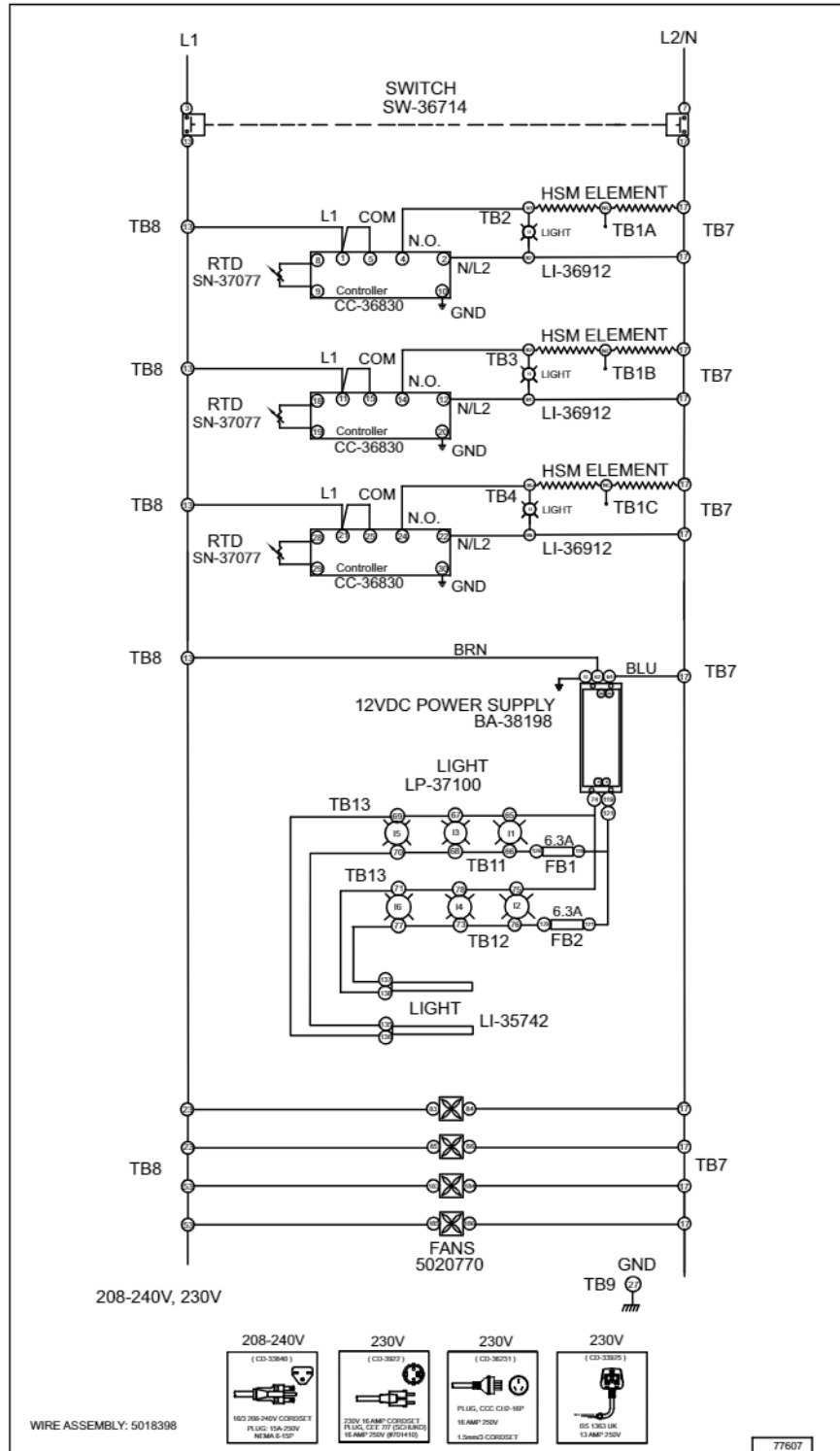
HSM-36/5S, HSM-48/5S (208-240V, 230V)



HSM-24/3S-CT (120V)

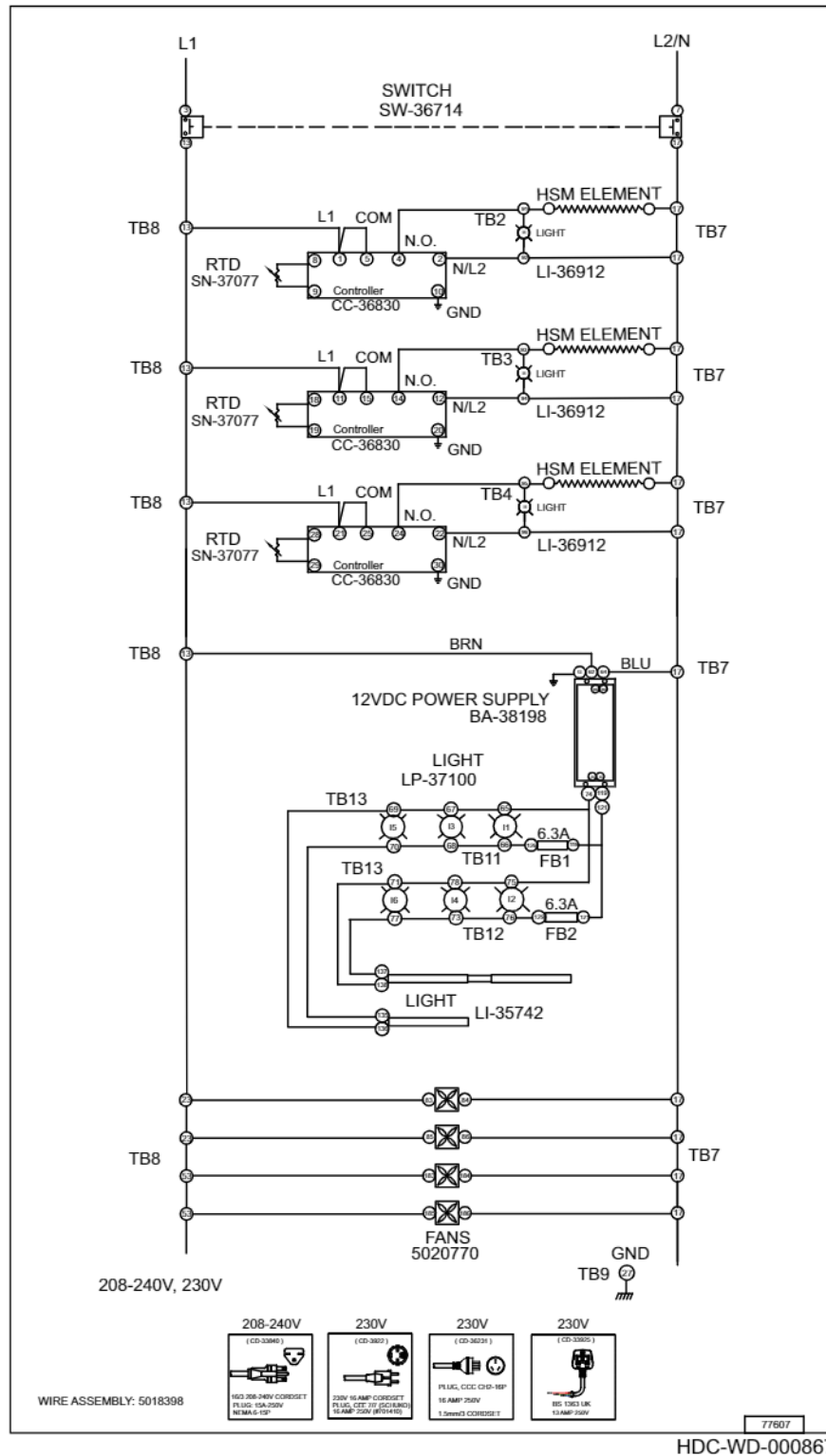


HSM-24/3S-CT (208-240V, 230V)



HDC-WD-000863

HSM-36/3S-CT (208-240V, 230V)



HSM-24/36/48-3S/4S/5S 120/208-240V 1Ph TOP HEAT

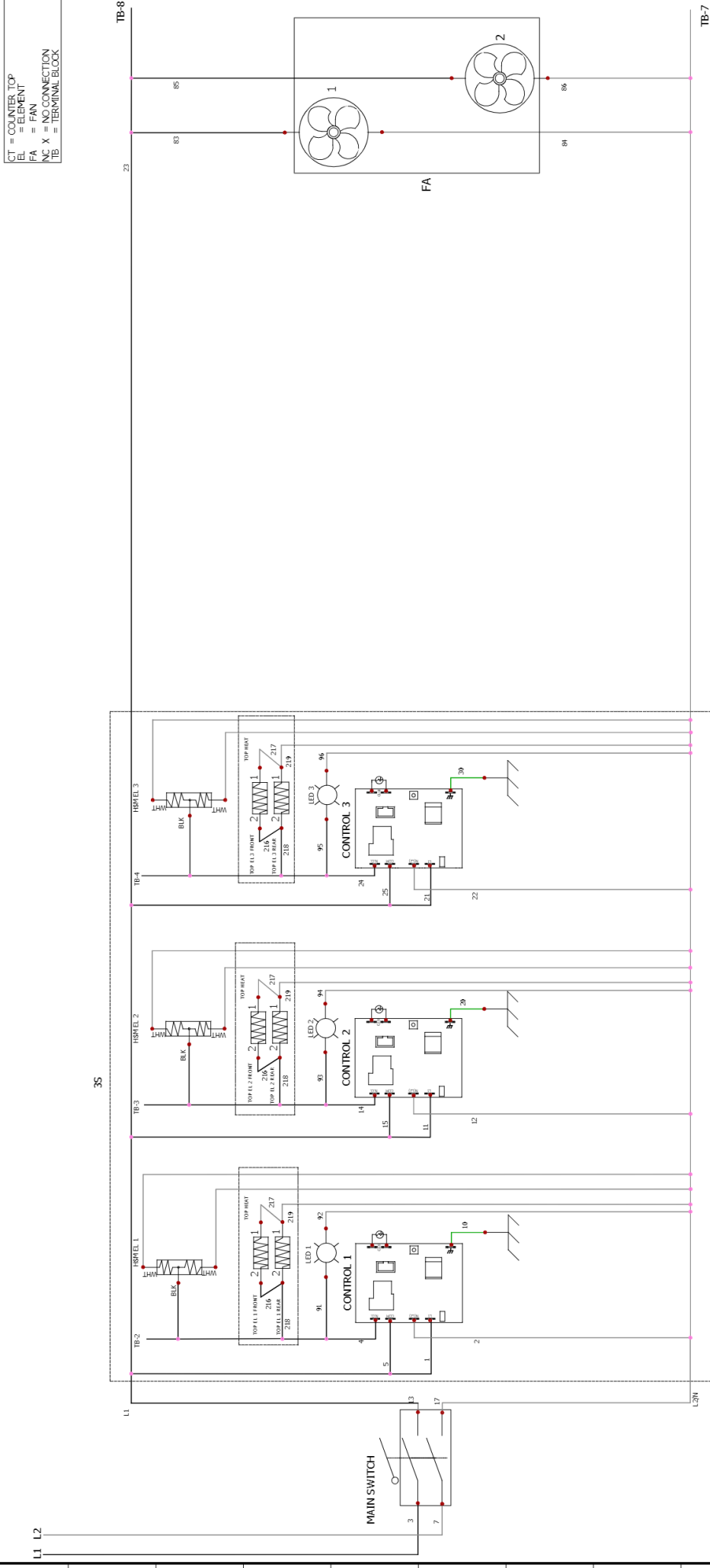
77773

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MAIN SUB SYSTEM 36/48 3S/4S/5S 208-240V	PG 04
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MAIN SUB SYSTEM 36/48 3S/4S/5S 230V	PG 06
MAIN SUB SYSTEM	PG 07
LEGEND	PG 08

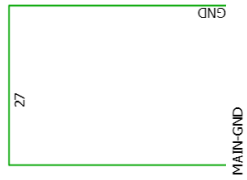
REV.	DATE	NAME	CHANGES
4	1/12/2022	montev	Add Filter CAP 0.1uF for CE unit
3	6/7/2021	montev	Add 120V, update Legend
2	4/24/2021	montev	Add CT model switch, dash line around top heat & wire numbers ECR182309
1	2/12/2021	montev	Common top heat wire sets
0	9/20/2020	montev	NPD
CHANGES			
		77773	731164
		HSM-24/36/48-3S/4S/5S 120/208-240V 1PH	REVISION 4
			SCHEME 1/8

LEGEND
 CT = COUNTER TOP
 EL = ELEMENT
 FA = FAN
 NC X = NO CONNECTION
 TB = TERMINAL BLOCK



NOTE: WIRE LABELS 216-219 ARE COMMON BETWEEN SHELVES. ENSURE EACH SHELF IS ROUTED TO CORRECT CONTROL

REFERENCE 5032119 CT 3S, 5032639



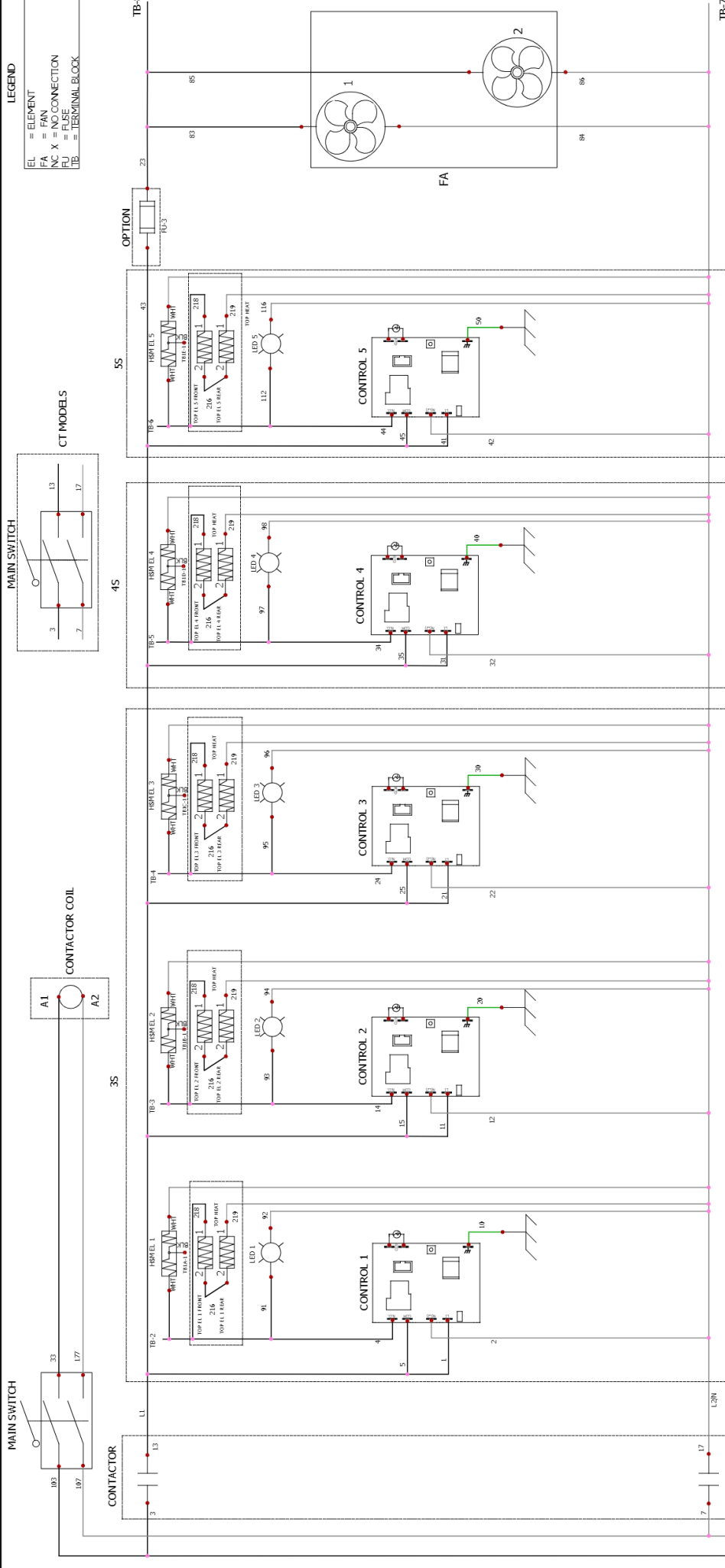
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MAIN SYSTEM 24 3S 120V

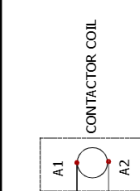
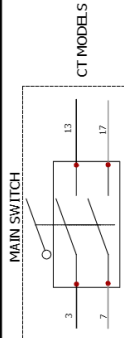
77773

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SCHEME 2/8

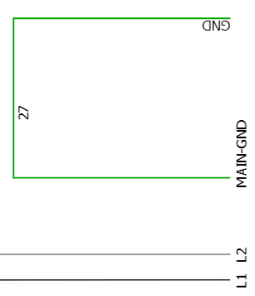


LEGEND
 EL = ELEMENT
 FA = FAN
 NC X = NO CONNECTION
 FU = FUSE
 TB = TERMINAL BLOCK



NOTE: WIRE LABELS 216-219 ARE COMMON BETWEEN SHELVES. ENSURE EACH SHELF IS ROUTED TO CORRECT CONTROL

REFERENCE 5032119 CT 3S, 5032639
 REFERENCE 5032204 FL 3S, 5032639
 REFERENCE 5032204-3S, 5018519, 5032639
 REFERENCE 5032204-3S, 5018519, 5018520, 5032639

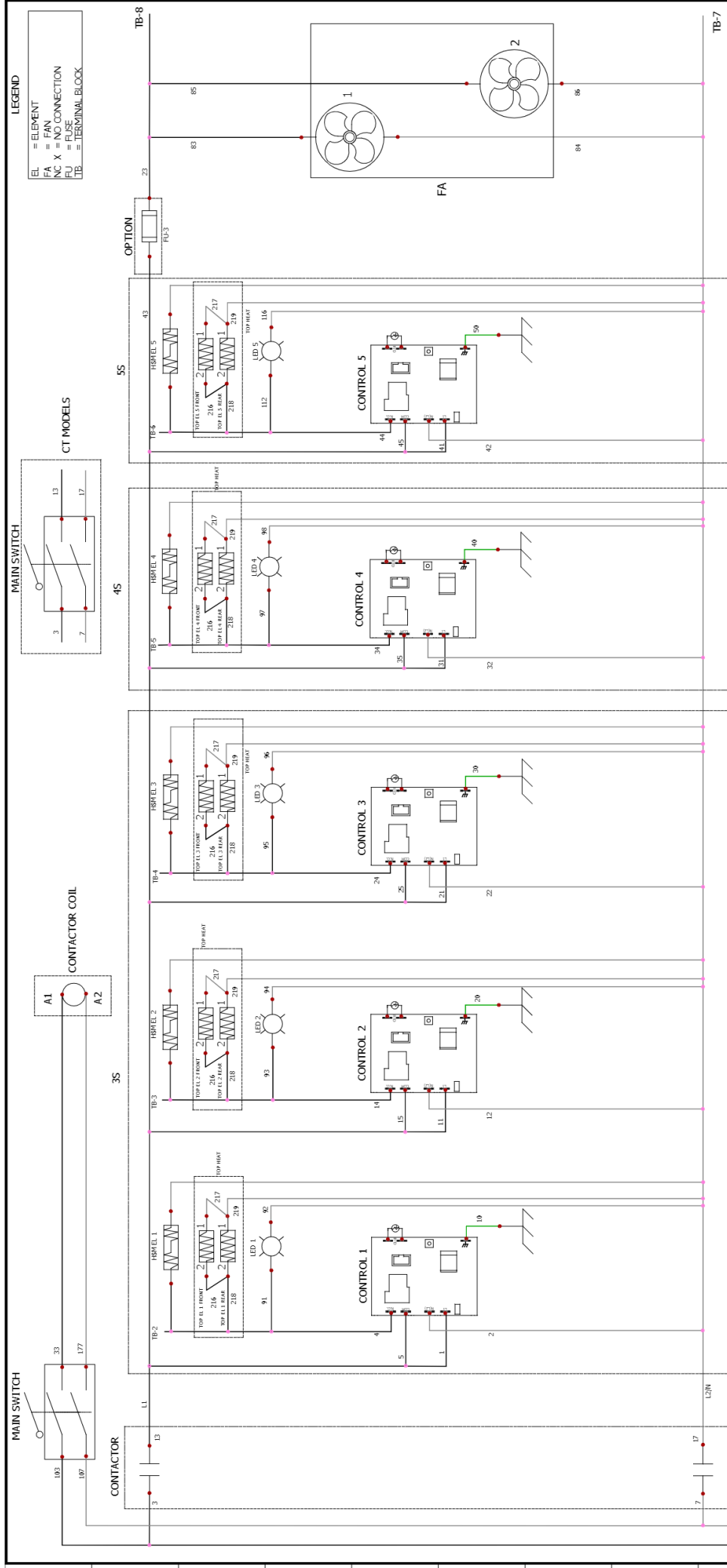


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MAIN SYSTEM 24 3S/4S/5S 208-240V

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REVISION 4
 SCHEME 3/8



NOTE: WIRE LABELS 216-219 ARE COMMON BETWEEN SHELVES. ENSURE EACH SHELF IS ROUTED TO CORRECT CONTROL

REFERENCE 5032119 CT 3S, 5032639

REFERENCE 5032204 FL 3S, 5032639

REFERENCE 5032204-3S, 5018519, 5032639, 5018524(48")

REFERENCE 5032204-3S, 5018519, 5018525, 5032639, 5018524(48")

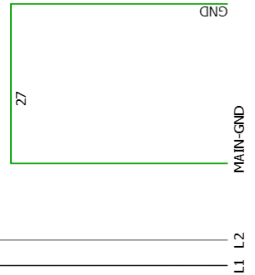
ALTO-SHAAM enthermics®

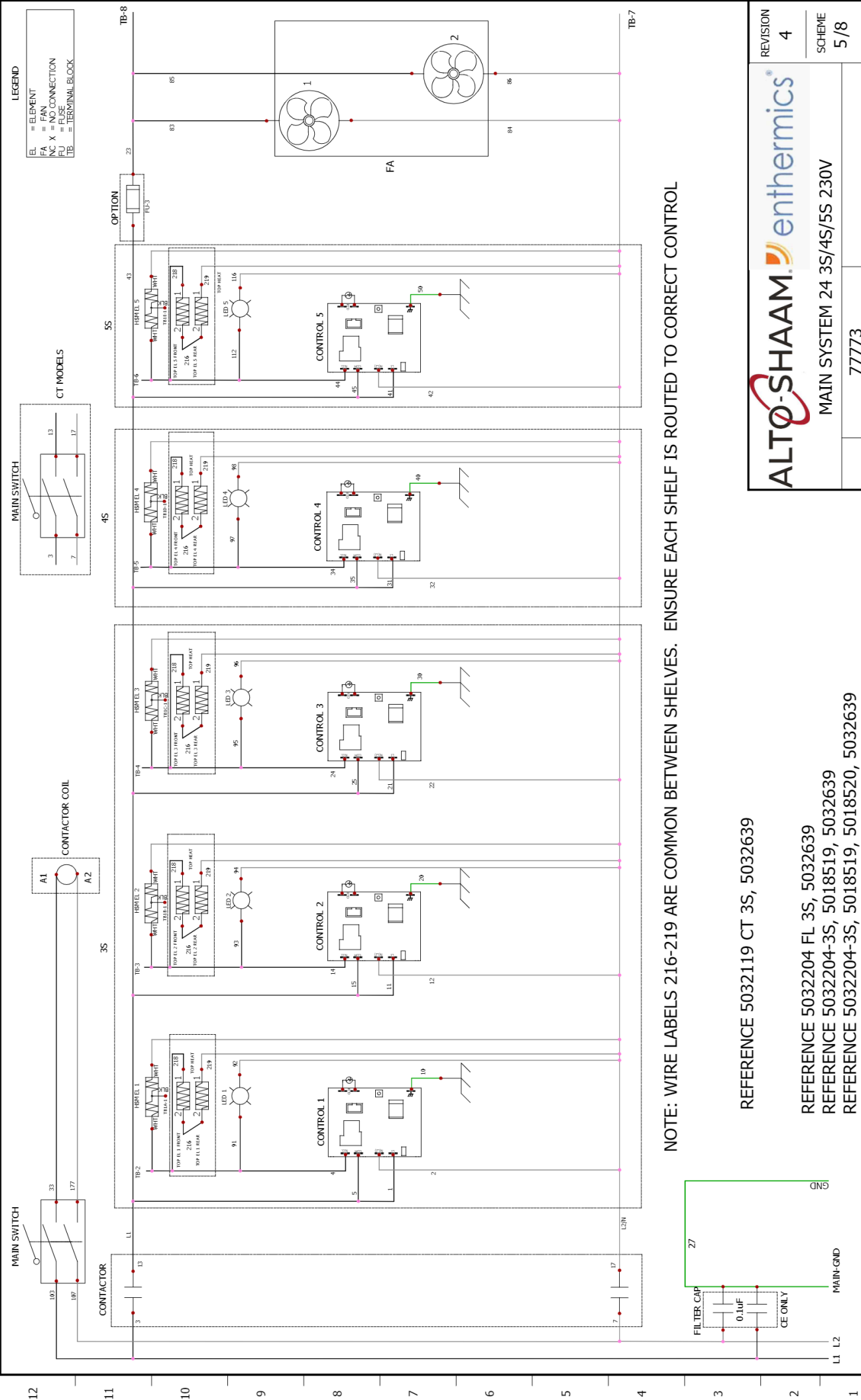
MAIN SYSTEM 36/48 3S/4S/5S 208-240V

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REVISION 4

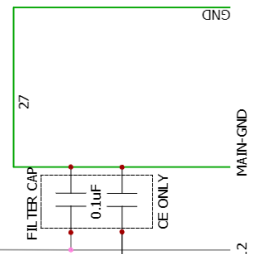
SCHEME 4/8





NOTE: WIRE LABELS 216-219 ARE COMMON BETWEEN SHELVES. ENSURE EACH SHELF IS ROUTED TO CORRECT CONTROL

- REFERENCE 5032119 CT 3S, 5032639
- REFERENCE 5032204 FL 3S, 5032639
- REFERENCE 5032204-3S, 5018519, 5032639
- REFERENCE 5032204-3S, 5018519, 5018520, 5032639



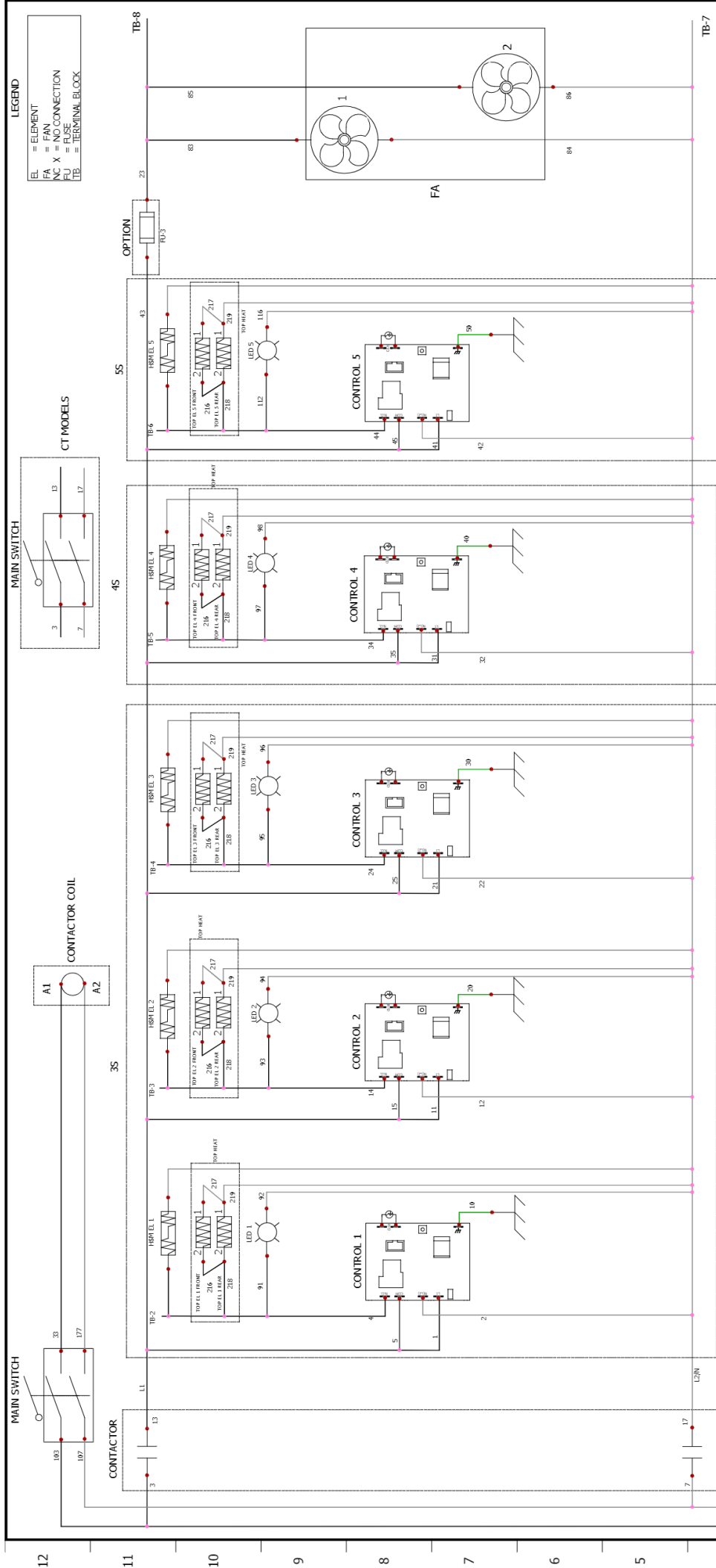
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MAIN SYSTEM 24 3S/4S/5S 230V

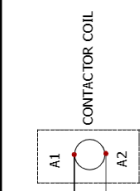
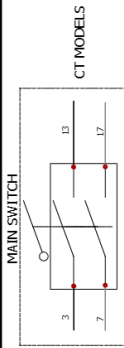
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REVISION 4

SCHEME 5/8



LEGEND
 EL = ELEMENT
 FA = FAN
 NC X = NO CONNECTION
 FU = FUSE
 TB = TERMINAL BLOCK



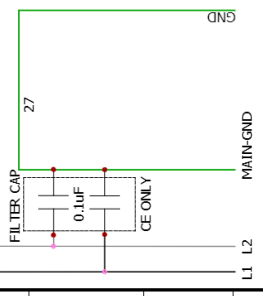
NOTE: WIRE LABELS 216-219 ARE COMMON BETWEEN SHELVES. ENSURE EACH SHELF IS ROUTED TO CORRECT CONTROL

REFERENCE 5032119 CT 3S, 5032639

REFERENCE 5032204 FL 3S, 5032639

REFERENCE 5032204-3S, 5018519, 5032639, 5018524(48")

REFERENCE 5032204-3S, 5018519, 5018520, 5018525, 5032639, 5018524(48")



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MAIN SYSTEM 36/48 3S/4S/5S 230V

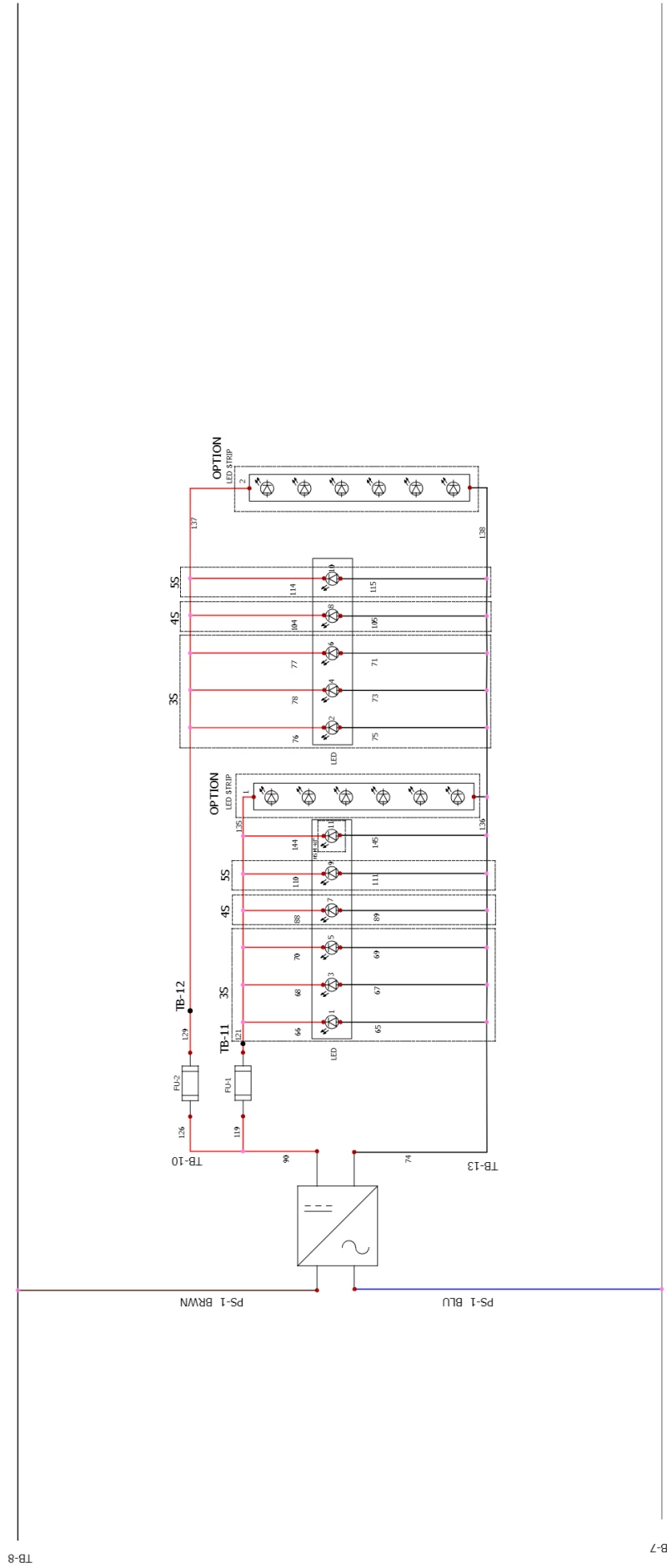
REVISION 4

SCHEME 6/8

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LEGEND

- FU = FUSE
- LED = LIGHT EMITTING DIODE
- PS = POWER SUPPLY
- TB = TERMINAL BLOCK





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MAIN SUB SYSTEM

77773

REVISION
4

SCHEME
7/8

A1	= COIL INPUT (+)	E41	= CONV ELEMENT SET	K3	= BOILER CONTACTOR	N8	= BOILER TEMP PROBE	TM	= TERMINAL
A2	= COIL INPUT(-)	E42	= CONV ELEMENT SET	K40	= CONV CONTACTOR	N9	= HIGH LIMIT	TB	= TERMINAL BLOCK
B1	= H2O PROBE LOW	E43	= CONV ELEMENT SET	K41	= CONV CONTACTOR	N10	= HIGH LIMIT	TX	= TRANSFORMER
B2	= H2O PROBE HIGH	EL	= ELEMENT	K42	= CONV CONTACTOR	NC X	= NO CONNECTION	UPP	= UPPER
B3	= WATER PROBE	FA	= FAN	K43	= CONV CONTACTOR	NC	= NORMAL CLOSE	VFD	= VARIABLE FREQUENCY DRIVE
B4	= BOILER PROBE	FE	= BOILER FUSE	K45	= CONV CONTACTOR	NO	= NORMAL OPEN	Y1	= STEAM VALVE
B5	= STEAM BY-PASS PROBE	FST	= CONV FUSE	K50	= MOTOR CONTACTOR LOW	OB	= OPTION BOARD	Y2	= MIXED WATER VALVE
B10	= FOOD PROBE	FSW	= FILTER SWITCH	K51	= MOTOR CONTACTOR LOW	PS	= POWER SUPPLY	Y3	= CLEAN VALVE
B11	= MULTI-POINT PROBE	FT	= X-CAP FILTER	K60	= MOTOR CONTACTOR LOW	PSW	= PRESSURE SWITCH	Y4	= CLEAN PUMP
BLWR	= GAS CONV BLOWER	FTT	= COOLING FAN THERMOSTAT	K61	= MOTOR CONTACTOR LOW	RLY	= RELAY	Y5	= HAND SHOWER
C/B	= CIRCUIT BREAKER	FU	= FUSE	K77	= MASTER CONTACTOR	RV	= STEAM RELIEF VALVE	---	= -----
CAB	= CABLE	G. PUMP	= GREASE PUMP	K78	= MASTER CONTACTOR	S7	= REED SWITCH	---	= -----
CB	= CONTROL BOARD	GND	= GROUNDING	LED	= LIGHT EMITTING DIODE	SMK	= SMOKER	---	= -----
CC	= CATALYTIC CONVERTER	GU	= HALOGEN LIGHT	LF	= LINE FILTER	SMO	= STEAM MOTOR	---	= -----
CH	= CONV HEATER	HIS	= HOT SURFACE IGNITOR	LQ. PUMP	= LIQUID PUMP	SPI	= SPARK IGNITOR	---	= -----
CV	= CONVECTION	IB	= INTERFACE BOARD	LWR	= LOWER	SSR	= SOLID STATE RELAY	---	= -----
E1	= BOILER ELEMENT SET	IM	= IGNITION MODULE	MO	= MOTOR	SV	= STEAM VALVE	---	= -----
E2	= BOILER ELEMENT SET	K1	= BOILER CONTACTOR	N6	= CAVITY PROBE				
E3	= BOILER ELEMENT SET	K2	= BOILER CONTACTOR	N7	= HIGH LIMIT				



LEGEND

77773

REVISION
4

SCHEME
8/8



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