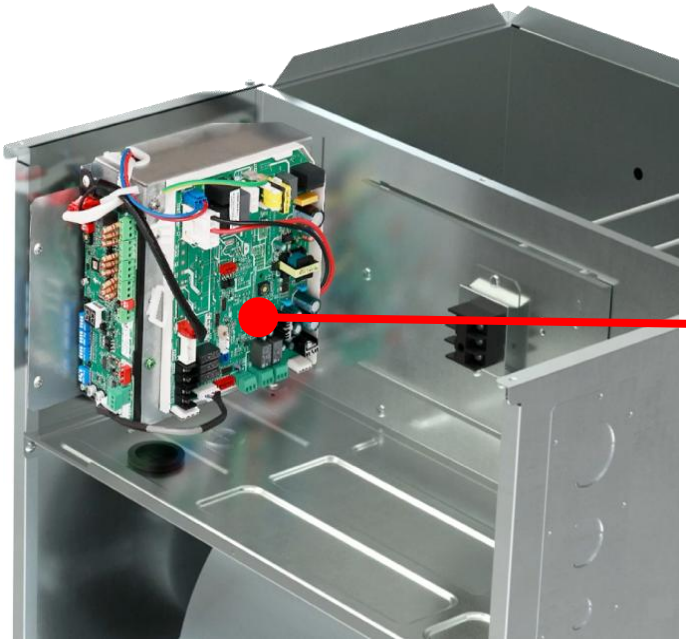
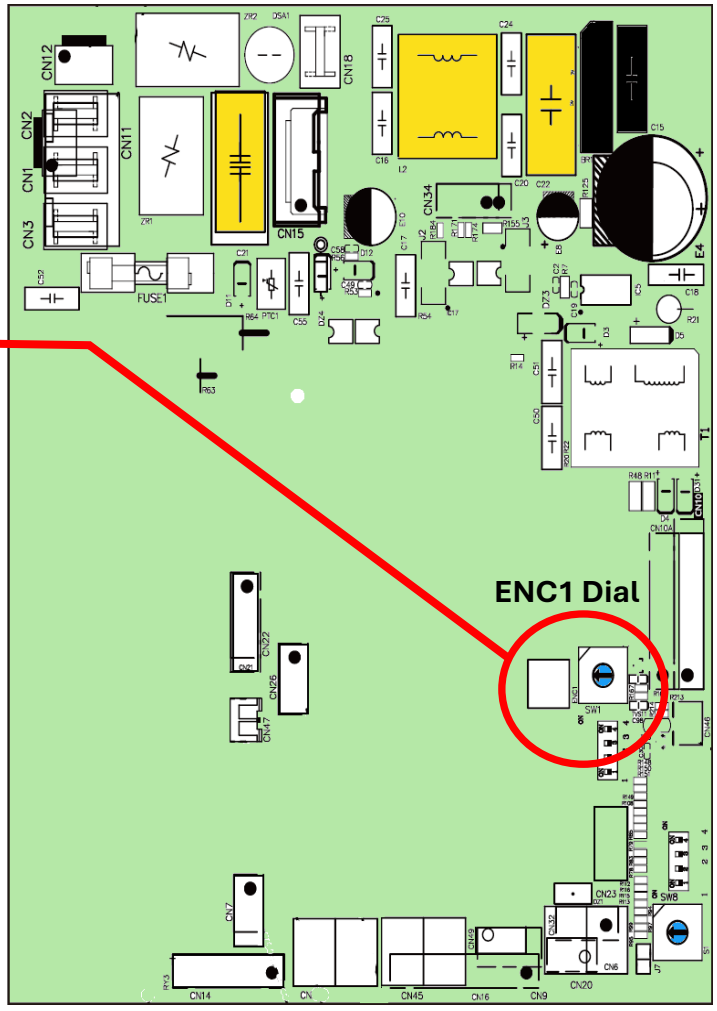
Dial Sentinel Series with Air Handler EZ-Install Guide:

All steps should be completed before applying high voltage. Read all steps before installation.

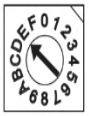
Step 1. Confirm Proper Charge, Airflow, and System Orientation:

- To reach full AHRI-Rated Efficiency, Sentinel Series inverter Heat Pumps and Air Conditioners must be properly matched with compatible indoor coils and air handlers. Mismatched equipment risks lower efficiency, premature system failure, and potential service issues. When installing without factory-matched equipment, airflow matching nominal CFM rates in IOM tables must be verified.
- Dial Sentinel systems are pre-charged for 25' of line set. For longer line sets, add 0.69oz. of refrigerant per foot beyond 25' of length. Minimum line set length is 10' with at least 15' preferred.
- Sentinel Air Handlers are factory-assembled for upflow or horizontal-left applications. For downflow or horizontal-right applications, refer to the IOM for proper steps necessary orient internal coils to ensure proper drainage and airflow.
- **Some Sentinel Air Handlers are dedicated to one capacity and airflow programming, and some are convertible for capacity and airflow programming**. Any model nomenclature containing two (2) separate nominal capacities (example: DSP**1824**M2A1) indicate the ability to choose between either airflow capacities. All convertible air handlers are *factory set to the larger of the two sizes*, and when pairing with a smaller tonnage outdoor unit, the air handler ***must be adjusted*** to that smaller capacity.
    - **To adjust air handler to smaller capacity and airflow programming**, (with power off) simply turn the **ENC1** dial on the main board to the corresponding capacity/tonnage digit:



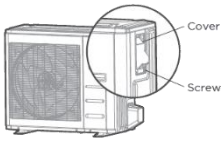


ENC1 Dial Settings for Fan

ENC1						
CODE	5	8	9	A	C	E
CAPACITY	18K	24K	30K	36K	48K	60K

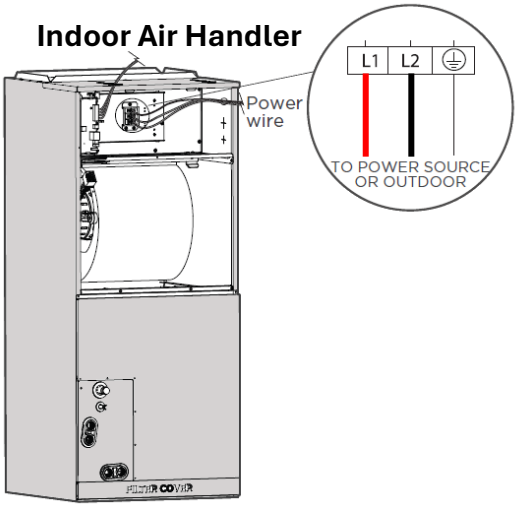
Step 2. Establish High-Voltage Supply:

- *Sentinel Series Air Handlers* require either a dedicated 208/230V or 115V single-phase circuit, and outdoor units require a dedicated 208/230V single-phase circuit; check the specifications, submittals, or IOM manual for exact minimum circuit ampacity (MCA) and maximum overcurrent protection (MOP).
- *The Sentinel Air Handler* is factory-set for a separate dedicated 208/230V single-phase circuit OR be powered with 208/230V directly through optional Auxiliary Heat Kits (sold separately).



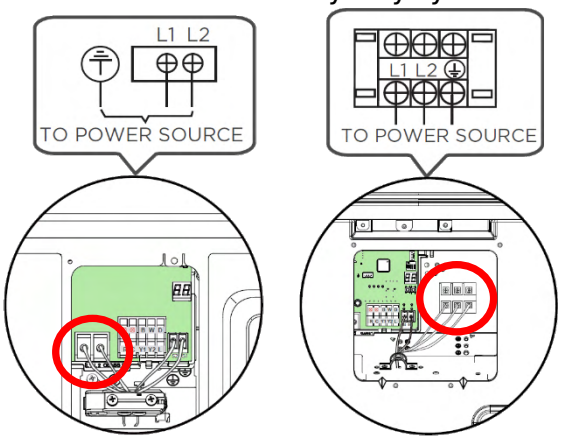
For 208/230V Air Handler and Outdoor Unit Connection (without Aux. Heat Kit):

Indoor Air Handler



Outdoor AC or HP Unit

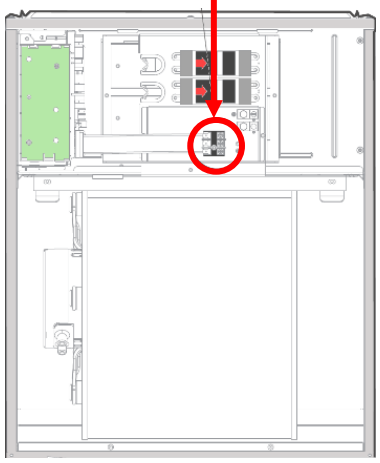
Note: Termination may vary by model.

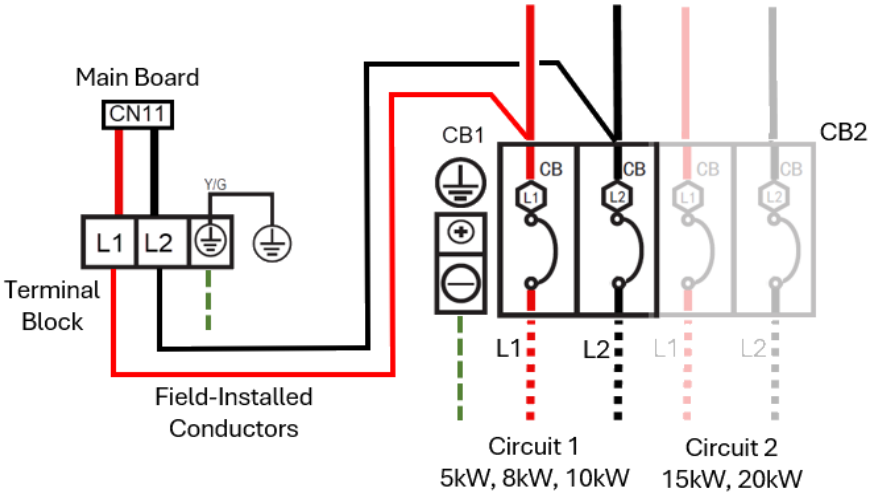


For 208/230V Air Handler Connection (with Aux. Heat Kit):

- Following the instructions for the Aux. Heat Kit
  - Remove Air Handler terminal block and attached wires (leave wire connections on block attached)
  - Remove Aux. Heat Cover Panel from Air Handler
  - Install Aux. Heater Assembly in place of cover (Assembly must lock into support holes in back of cabinet)
  - Remove existing terminal block and wiring harness from Aux. Heater, and install original Air Handler terminal block with connected wiring in its place.
  - Feed terminal block from separate circuit OR from load side of Aux. Heater Breaker using appropriate gauge conductors (reference IOM and local/NEC wiring guidelines and codes).

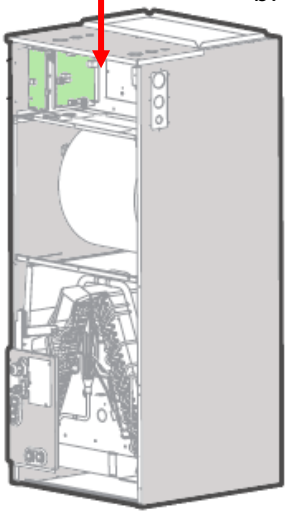


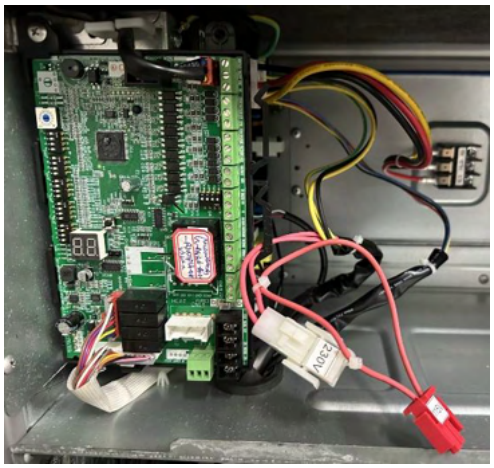


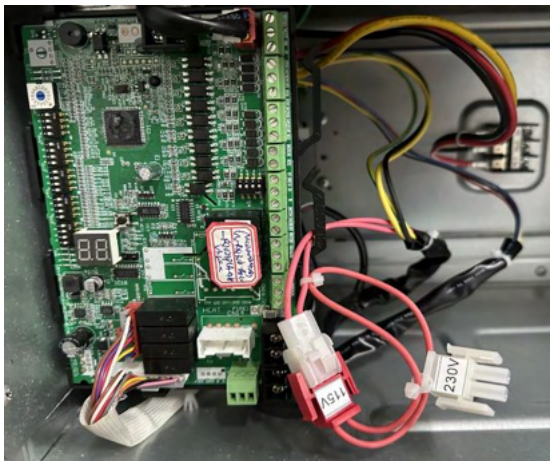


For 115V Air Handler Conversion (No Auxiliary Heat), Two (2) Steps: Convert Blower and Transformer

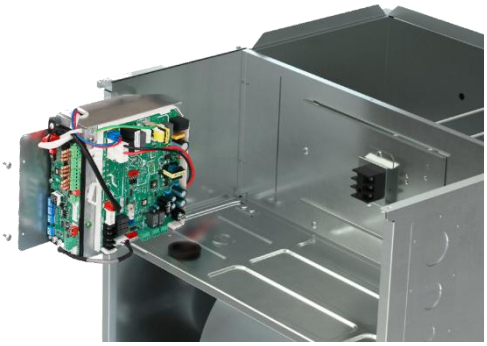
1. **Convert Blower** to 115V by accessing Blower Lead Molex in controls section.
    a. Unplug white 230V (labeled) molex lead.
    b. Plug in red 115V (labeled molex lead.



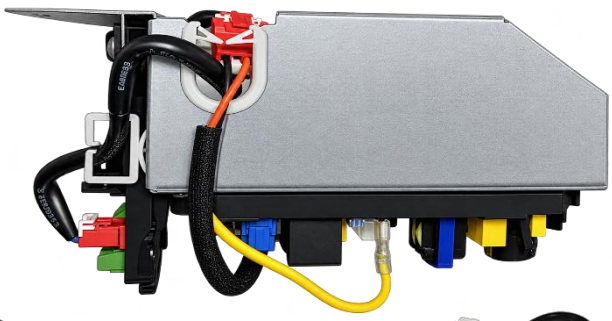


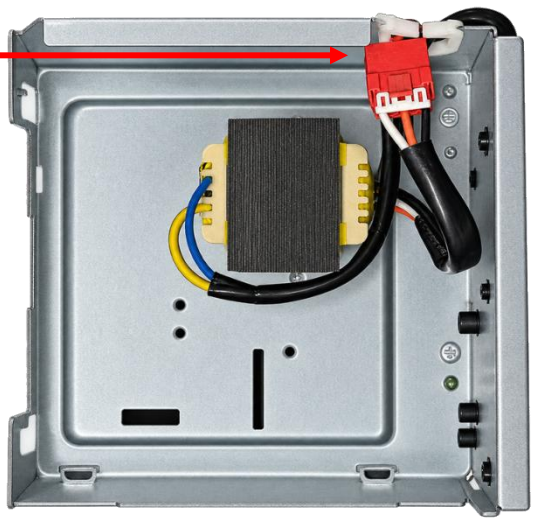


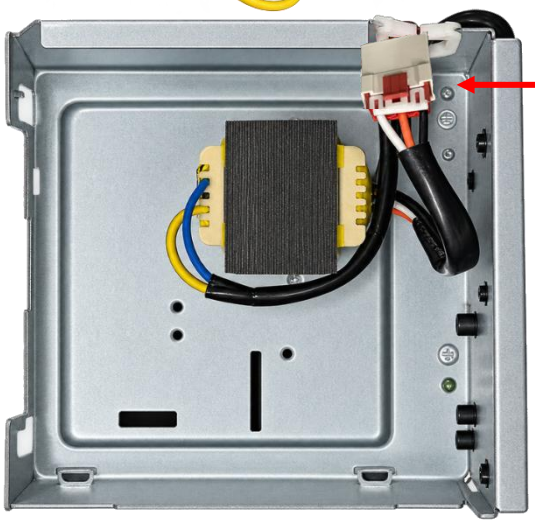
2. **Convert Transformer** to 115V by accessing control board box.
    a. Remove two screws that secure control board box in cabinet.
    b. Loosen cable ties in blower section below board box and pull box out to access the transformer behind the box assembly.
    c. Remove red 230V molex cable connecting transformer to CN12 port on main board.
    d. Replace with white 115V molex cable (Transformer Mating Cable) from accessory pack provided with air handler. Connect to CN12 port on main board.



Top View







Step 3. Choose Application and Control: There are two (2) main strategies

A. Wired Programmable Controller + Sentinel Air Handler + Sentinel Outdoor Unit
B. 24VAC Thermostat + Sentinel Air Handler + Sentinel Outdoor Unit

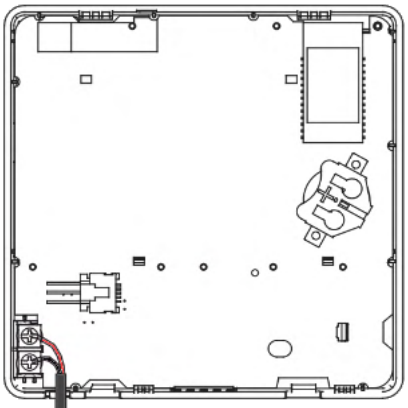
Note: for applications with Sentinel Cased Coil, refer to Cased Coil EZ-Install Guide

SCENARIO A (2-Wire): Dial Programmable Wired Controller + Sentinel Air Handler + Sentinel Outdoor Unit
Using either 2-Wire 18ga Solid Conductor, or Shielded Stranded Cable (preferred) – all power removed

- Connect HA/HB Terminals on Wired controller to HA/HB Terminals on Air Handler control board.
- Connect S1/S2 Terminals on Air Handler control board to Outdoor Unit Control Board

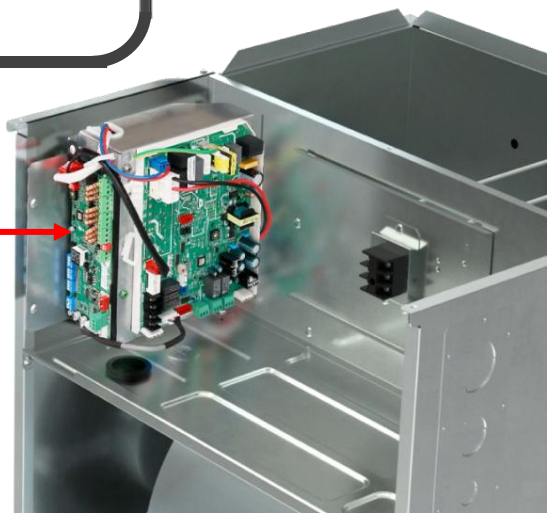




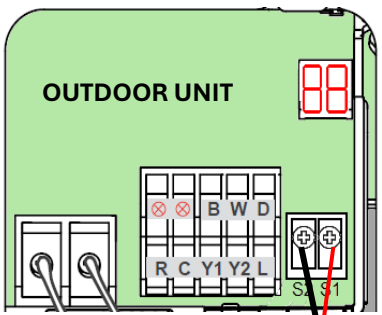




Control Board



HA
HB
S1
S2



S2 S1

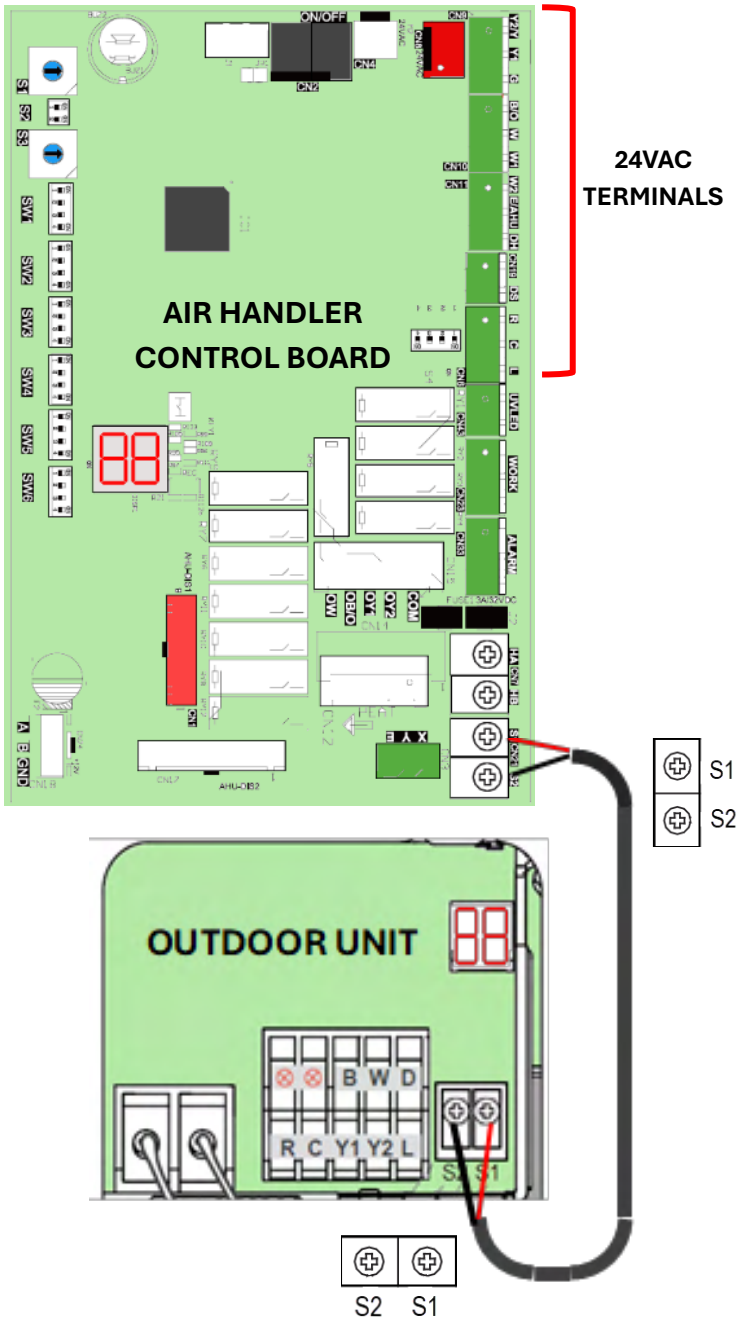


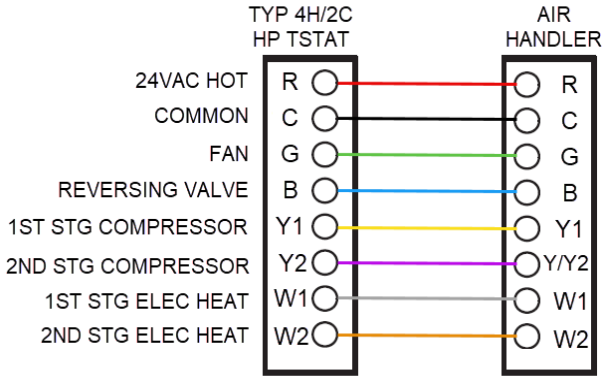
SCENARIO B (Multi-Wire): 24V Thermostat + Sentinel Air Handler + Sentinel Outdoor Unit

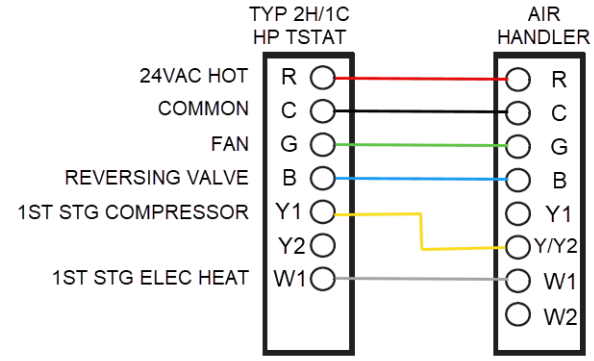
Using 8-to-10 Wire 18ga solid conductor for Tstat – all power removed

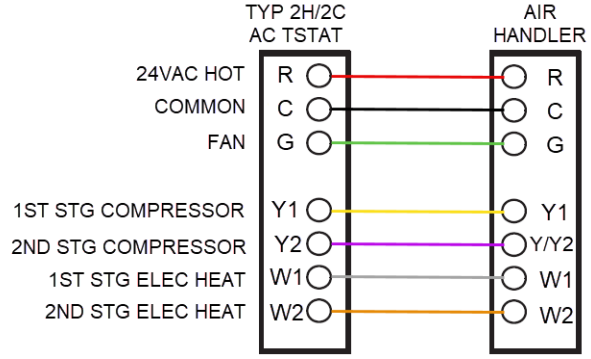
- Connect thermostat terminals to corresponding Air Handler 24VAC terminals on Control Board
- Connect S1/S2 Terminals on Air Handler control board to Outdoor Unit Control Board

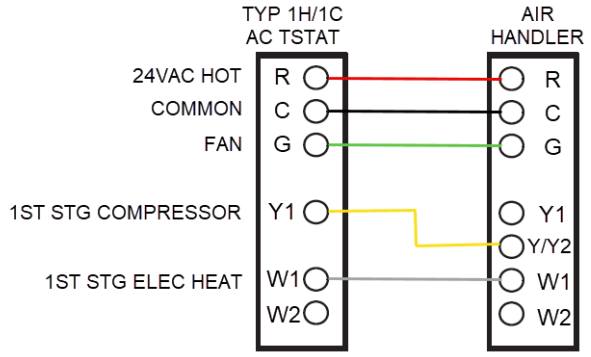
Heat Pump & Cooling Only 24VAC Connections:







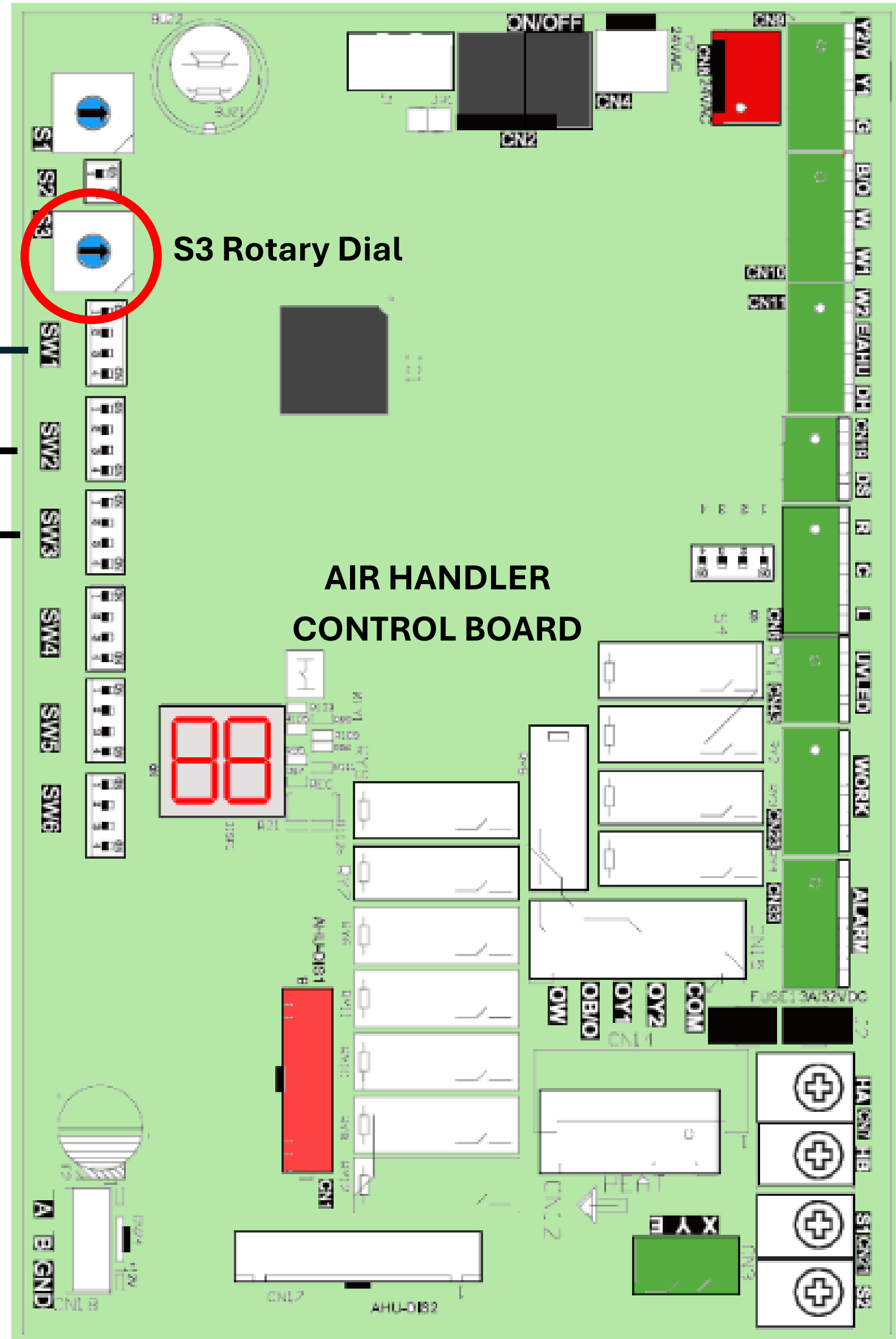




NOTES:

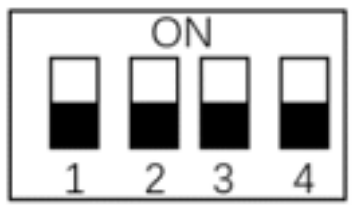
1. Not all 24V thermostats work with inverter systems, Some bleed voltage causing erratic behavior.
2. Sentinel Air Handler is factory enabled to bring all stages of electric heat on simultaneously. To stage W1/W2 heat, see S4 dipswitch settings on page 6.

Step 4. Verify Application/Operation Dipswitch Settings on Indoor and Outdoor:



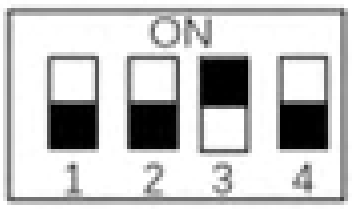
SW1 Dipswitches (Default: All Off)

Controller + HP (Scenario A)



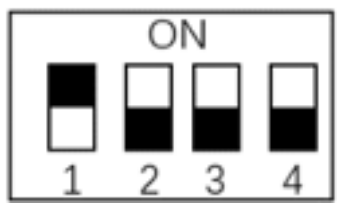
All Off (Default)

Controller + AC (Scenario A)



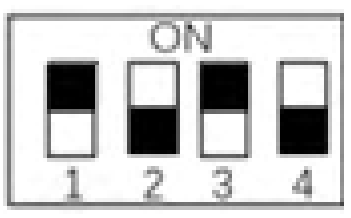
3 On (1,2,4 Off)

24V Tstat + HP (Scenario B)



1 On (2,3,4 Off)

24V Tstat + AC (Scenario B)

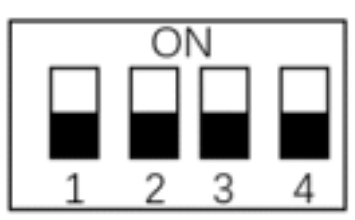


1,3 On (2,4 Off)

SW2 Dipswitches (Default: All Off)

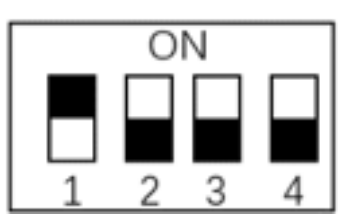
All SW2 switches are used *ONLY for Operational characteristics of the Programmable Control*. For 24V Tstat use, leave in default (all off).

24V Tstat + HP or AC



All Off (Default)

Controller + HP or AC



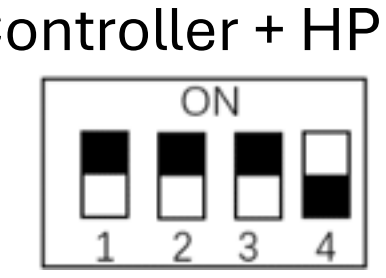
1 On (2,3,4 Off)

*NOTE: SW2-2 and SW-3 allow user to set delays for aux. heat, with a choice of 15 or 30 minutes if enabled. Review dipswitch table in IOM to enable. SW2-4 allows user to either choose compressor lockout (low temp), OR aux. heat lockout (high temp). Both settings work in conjunction with **S3 Rotary Dial** on Control Board. Review Dipswitch selection and Temperature Table in IOM for use.

SW3 Dipswitches (Default: All Off)

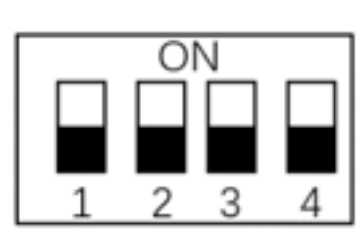
SW3-1,2,3 only relate to the wired control.
SW3-1,2,3 are recommended to be in the On position for comfort settings. In the Off position, efficiency is gained by having larger temperature swings indoors.
SW3-4 is only used for 24V Tstat control – enabling Turbo Speed (approx. 10% more) air flow in cooling.

Controller + HP or AC



1,2,3 On (4 Off)

24V Tstat + HP or AC



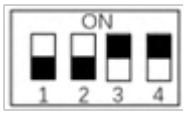
All Off (Default)

SW4 Dipswitches (Default: All Off)

SW4-1,2,3 relate to fan speed for aux. heat. If all three (3) switches are in the OFF position, fan speed for the electric heating is adjusted for the highest kW for that model. For smaller kW kits, refer to the Fan Volume Table at bottom of page to adjust for actual installed kit.

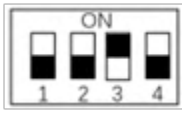
SW4-4 controls 3rd Stage Heat differential (Stg. 1 Comp. + Stg. 2 Comp. + Elec) for *wired controller ONLY*. Turn ON for comfort (6°F), OFF for efficiency (8°F).

Controller + 3T Air Handler w/ 15kW



3,4 ON (1,2 OFF)

24V Tstat + 3T Air Handler w/ 15kW



3 ON (1,2,4 OFF)

SW5 Dipswitches (Default: All Off)

SW5-1,2 are not used, leave OFF

SW5-3 controls Alarm Contact / L Terminal

ON: Active on A2L Leak Only

OFF: Active for all codes (default)

SW5-4 controls R terminal output if Leak

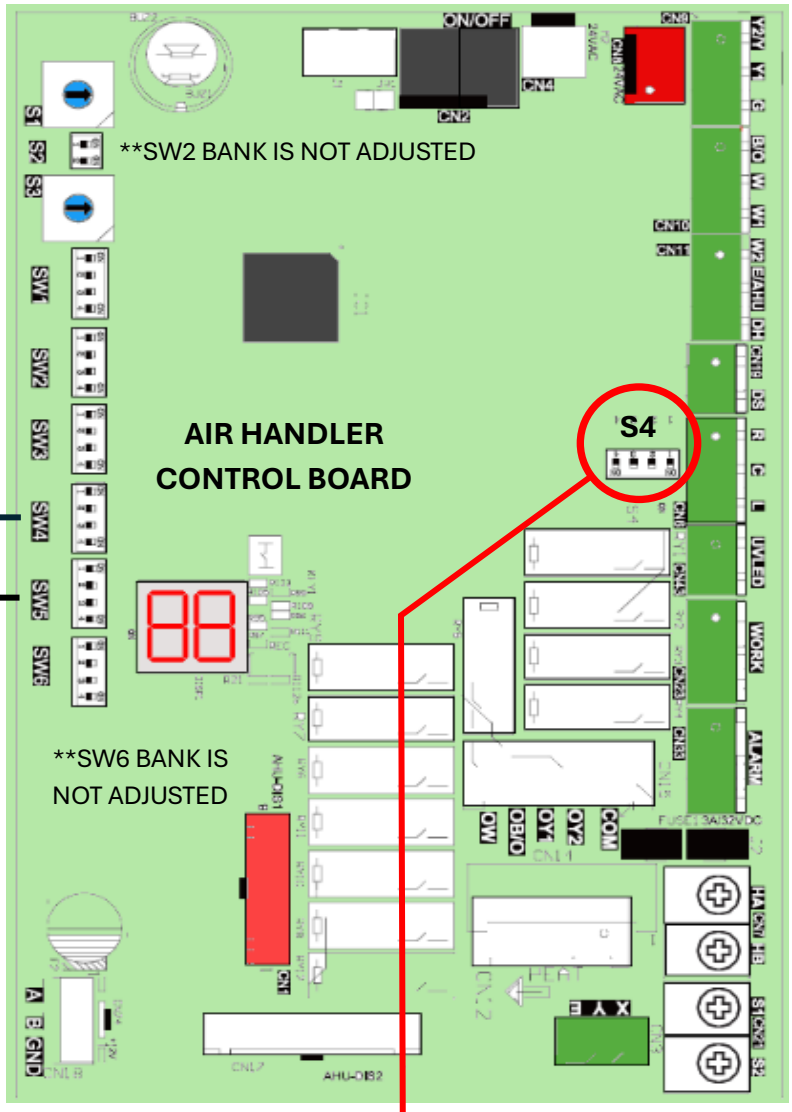
ON: Deactivate R output when A2L leak

OFF: Keep R output when A2L leak

Recommended for all applications



ALL OFF (Default)



S4 Dipswitches (Default: **All ON**)

S4-1,3 are not used, leave in ON position.

S4-2 is used for dehumidification (ON inactive, OFF active)

for more dehum info, see Special Applications, Pg. 8

S4-4 controls aux heat banks (simultaneous or separate)

ON = W1/W2 connected, only one W1 signal required

OFF = W1 and W2 signals control banks separately

18 AIR HANDLER				
HEAT KIT	5kW	8kW	8kW / 10kW	10kW
CFM	565	594	624	653
SW4-1	OFF	OFF	OFF	OFF
SW4-2	ON	ON	OFF	OFF
SW4-3	ON	OFF	ON	OFF

24 AIR HANDLER			
5kW	8kW / 10kW	10kW / 15kW	15kW
788	818	841	871
OFF	OFF	OFF	OFF
ON	ON	OFF	OFF
ON	OFF	ON	OFF

30 AIR HANDLER			
5kW	8kW / 10kW	10kW / 15kW	15kW
918	976	1029	1088
OFF	OFF	OFF	OFF
ON	ON	OFF	OFF
ON	OFF	ON	OFF

36 AIR HANDLER				
HEAT KIT	5kW / 8kW	8kW / 10kW	15kW	20kW
CFM	1112	1176	1241	1306
SW4-1	OFF	OFF	OFF	OFF
SW4-2	ON	ON	OFF	OFF
SW4-3	ON	OFF	ON	OFF

48 AIR HANDLER			
8kW	8kW / 10kW	15kW	20kW
1471	1559	1653	1741
OFF	OFF	OFF	OFF
ON	ON	OFF	OFF
ON	OFF	ON	OFF

60 AIR HANDLER			
10kW	10kW / 15kW	15kW / 20kW	25kW
1753	1894	2029	2171
OFF	OFF	OFF	OFF
ON	ON	OFF	OFF
ON	OFF	ON	OFF

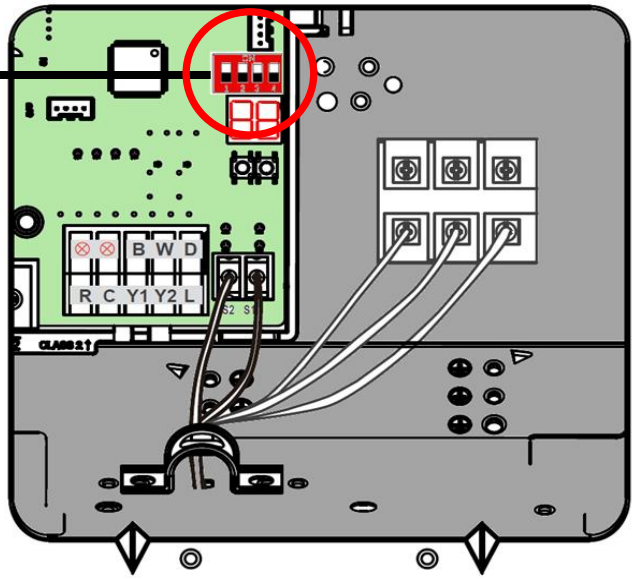
OUTDOOR Dipswitches (Default: All Off)

SW-1: Not used

SW-2: ON for 3rd Party Air Handler or Coil
OFF for standard 2-Wire Control

SW-3: ON for Enhanced performance when Single-stage thermostat is used.
OFF for any other type of Tstat or control.

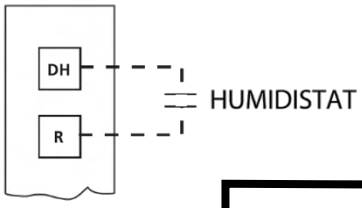
SW-4: ON for Enhanced defrost – for extreme climate locations
OFF for other mild or moderate climates



Step 5. Special Applications:

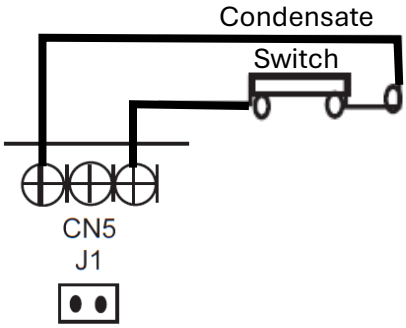
Dehumidication:

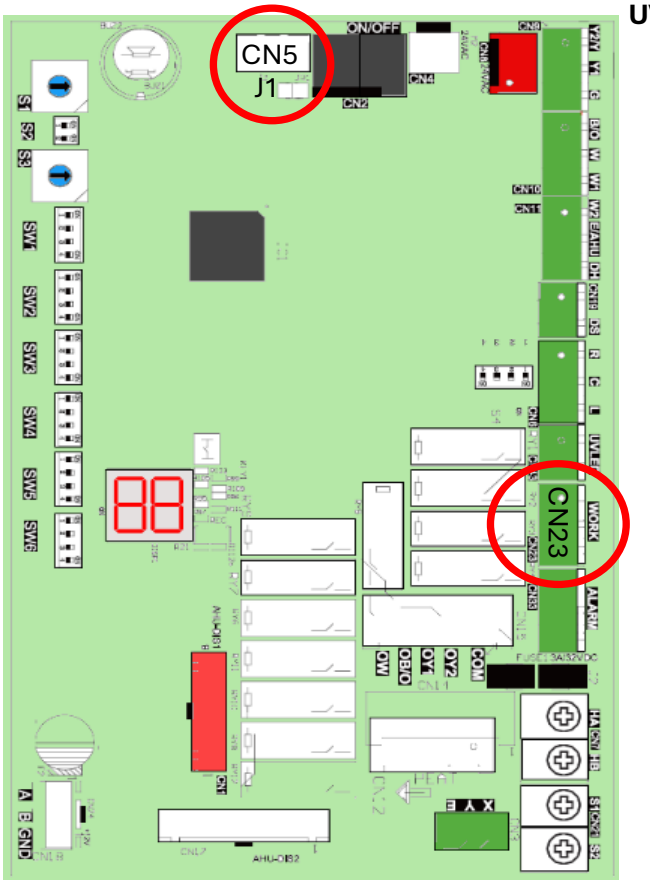
- S4-2 dipswitch set to OFF (Default is ON)
- Connect R Terminal to DH Terminal through open-on-rise humidistat. Once humidity exceeds setting, humidistat will open (removing 24V), and blower will run at 80% during cooling.



Condensate Overflow Switch:

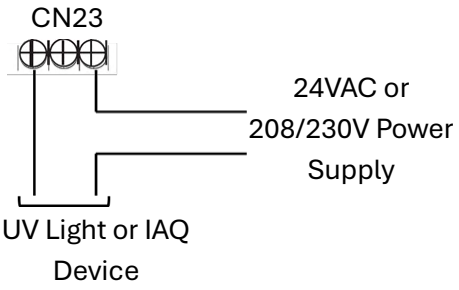
- Install Normally-Closed Condensate Switch wires to CN5 Terminals as shown (switch should open connection when overflow is present).
- Remove J1 Jumper directly below CN5 Terminals to enable.
- Open contacts will create EH0E error code





UV, Fresh Air, IAQ Devices

- CN23 Work terminals close with fan activation.
- Apply 24V or 208/230V as shown to activate during fan operation.



Humidifier

- CN23 Work terminals close with fan activation.
- Apply 24V or 208/230V as shown to activate during fan operation.
- Open-on-rise humidistat makes/breaks signal

