

PTAC CONTROL BOARD KIT RSKP0009

INSTALLATION INSTRUCTIONS

Description

Control board installation procedures are described in detail in these instructions. Read and follow these instructions carefully before replacing the control board. Failure to do so may result in control board damage.



Important Note:

Damage to the control board can occur from failure to disconnect power supply or failure to set the master switch (located on the control board) to OFF before removing the low voltage terminal strip cover from an installed control board. Damage to this board by not following these instructions is considered misuse and not covered under either the standard unit warranty or any extended service contract.

Important Note:

All warranty replaced boards must be returned to the parts source from which they were purchased to insure proper warranty credit.

Electrostatic Discharge (ESD) Precautions

Before removing the new control board from the static wrap, it is very important to discharge any static electricity. This can be accomplished in two methods. Servicer can wear a ground strap or by touching the metal chassis before replacing the board.

Existing Control Board Removal Procedures

1. Disconnect power to the unit by unplugging the power cord at the wall outlet or subbase, or disconnect power at the fuse box or circuit breaker.
2. If the cabinet front is screwed to the chassis, remove the 1/4" screw (or screws) located behind the inlet grille. Pull the inlet grille forward from the top of the grille to access screw(s).

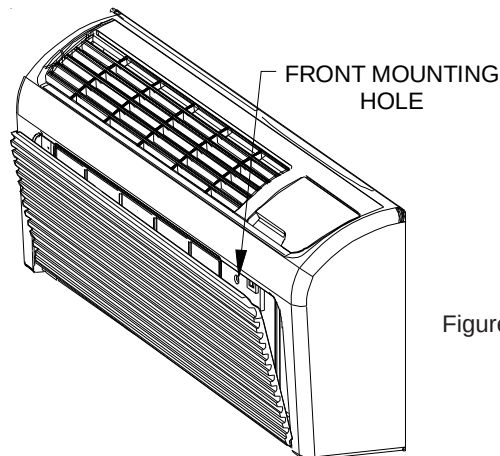


Figure 1



RECOGNIZE THIS SYMBOL AS A SAFETY PRECAUTION.

ATTENTION INSTALLING PERSONNEL

As a professional installer you have an obligation to know the product better than the customer. This includes all safety precautions and related items.

Prior to actual installation, thoroughly familiarize yourself with this Instruction Manual. Pay special attention to all safety warnings. Often during installation or repair it is possible to place yourself in a position which is more hazardous than when the unit is in operation.

Remember, it is **your** responsibility to install the product safely and to know it well enough to be able to instruct a customer in its safe use.

Safety is a matter of common sense...a matter of thinking before acting. Most dealers have a list of specific good safety practices...follow them.

The precautions listed in this Installation Manual are intended as supplemental to existing practices. However, if there is a direct conflict between existing practices and the content of this manual, the precautions listed here take precedence.



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3. Remove cabinet front from chassis by tilting the bottom of the front forward, lifting slightly up and forward.
4. If a remote thermostat or any low voltage accessory is being used, remove the low voltage pin connector from the low voltage terminal strip. If a previous version board is being replaced remove wires from the low voltage terminal strip.

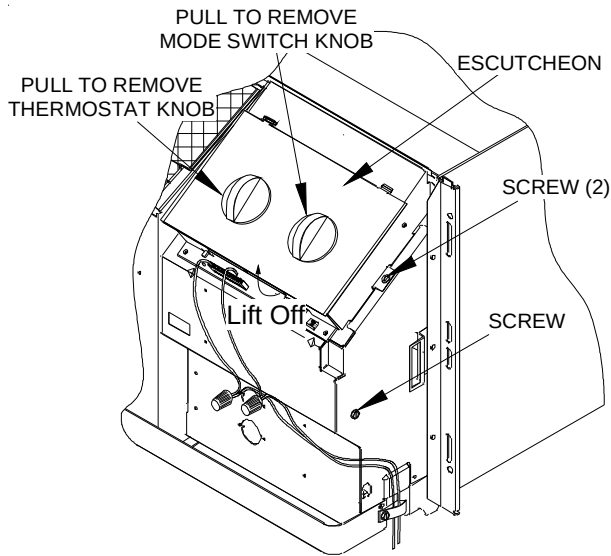


Figure 2

5. Remove knobs and escutcheon.
6. Remove the two mounting screws, one on each side of control board cover. Some models may have a screw on the lower right side of the control panel that will need to be removed. Tilt control panel out and remove cover.
7. Remove the wires from the board in the unit, including Thermistor Sensors if they plug into the board.
8. Remove the four screws holding the board and remove the old board.

New Control Board Installation Procedures

WARNING

HIGH VOLTAGE
DISCONNECT ALL POWER BEFORE SERVICING OR INSTALLING THIS UNIT. MULTIPLE POWER SOURCES MAY BE PRESENT. FAILURE TO DO SO MAY CAUSE PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.

9. If existing unit has a remote mounted "off board" transformer for board power, proceed to Step 13.
10. Lift the control panel up so the control panel is free of its hinges. Orient the control panel so there is easy access for mounting components to the inside of the control panel.
11. Using the two #8 screws that are provided, screw the transformer that was provided with the kit to the control panel in the transformer mounting holes provided in the panel. See Figure 3.

12. The external transformer will come with the Black 37 wires connected to the LOAD terminal of the transformer (LOAD terminals are the low voltage terminals) and the Gray wire connected to the COM terminal on the transformer. The additional Gray wire will need to be connected to the 230 or 265 volt tap on the transformer. Place the control panel back on its hinges.

NOTE: Refer to the serial plate for voltage information.

13. Install the new board and reinstall the screws removed in step # 8.
14. Using the insulated terminals connect the two (2) Black 37 wires from the Load terminals on the transformer to the "24VAC Transformer" terminals on the control board. See Figure 4.
15. Connect the Gray wire from the COM terminal on the transformer to line 2 on the control board. Connect the additional Gray wire from the 230 or 265 volt tap on the transformer to line 1 on the control board.

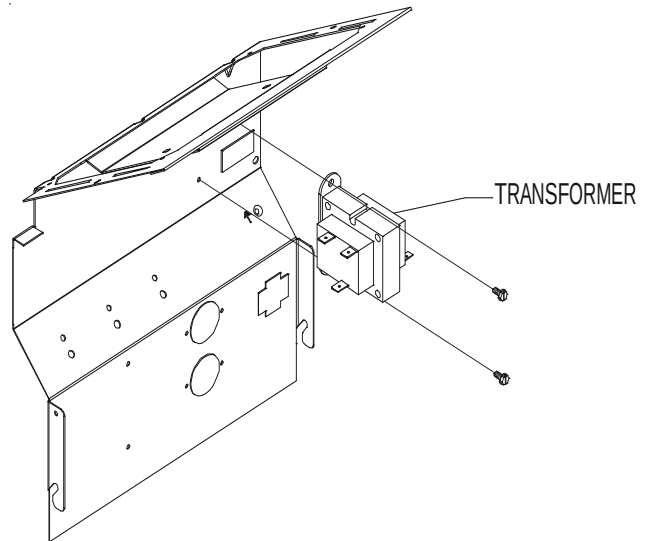


Figure 3

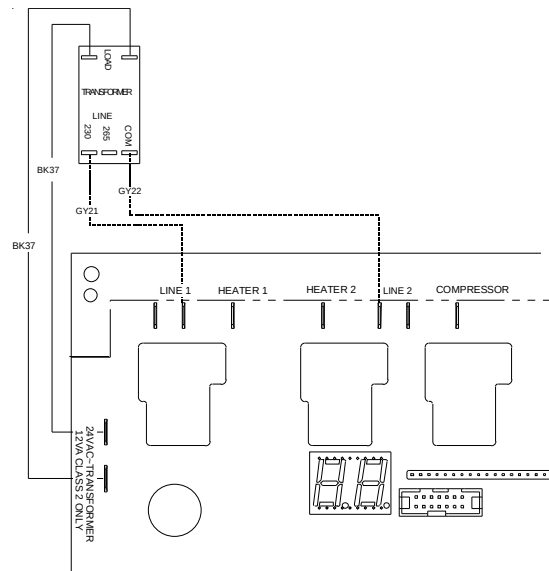


Figure 4

16. Thermistor Temperature Sensors Installation

- A. It is recommended that the **Indoor Discharge Thermistor** (with the **YELLOW** wires) be installed but it is optional. If you choose not to install this sensor, the green status light will remain illuminated continuously. For status light functionality, the **YELLOW** thermistor **MUST** be installed. Instructions are as follows:

A1. Carefully cut and remove the gasket on the left and right sides of discharge screen. Remove the two (2) 5/16" screws holding the indoor exhaust screen above the indoor coil. Remove the indoor exhaust screen.

Remove the two (2) 1/4" screws connecting the heater panel to the evaporator coil.

Remove the two (2) screws mounting the air baffle to the top of the heater panel and remove and discard the air baffle.

- A2. Install the new air baffle. Route the yellow thermistor probe from right to left through the wiring tube enclosure. Mount the black tip of the yellow thermistor probe in the plastic clip provided. Hold the plastic clamp in place and secure the clamp to the left end of heater panel using one of the original screws. Replace the screw on the right end of the air baffle being careful not to damage the wiring insulation on the probe.

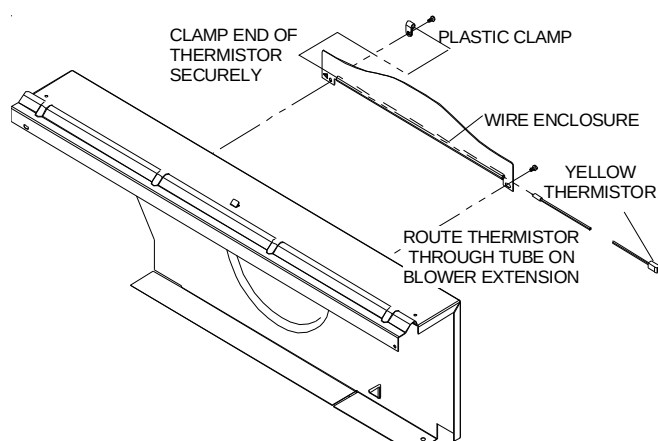


Figure 5

- A3. Replace the heater panel, routing the yellow wire around the right end of the heater panel and into the control panel pulling snug to prevent the wire from being entangled in the blower wheel or being visible from above. Replace the two screws mounting the heater panel to the evaporator coil.
- A4. Replace the exhaust grille and two mounting screws.
- A5. Connect the yellow wire using the plug-on connector to the new board on the **IDT** (yellow) terminals.

- B. If the existing **Indoor Ambient Thermistor** (with the **BLACK** wires) was connected to the board by a plug-on connector, reconnect it to the new board on the **IAT** (black) terminals. If the existing Indoor Coil Thermistor was soldered to the previous board, install the new black thermistor per Figure 6 and connect as above.

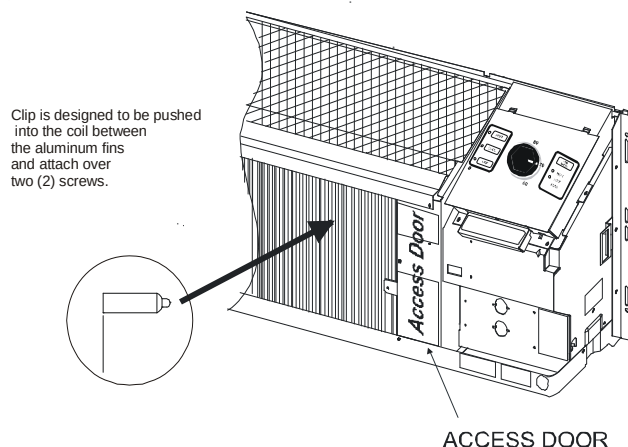


Figure 6

- C. If the existing **Indoor Coil Thermistor** (with the **RED** wires) was connected to the board by a plug-on connector, reconnect it to the new board on the **ICT** (red) terminals. If the previous board used indoor coil bi-metals, remove and discard the bi-metal devices. The access door will need to be removed on the indoor coil to gain access to the bi-metal. See Figure 6. The Indoor Coil Thermistor will need to clip on the vertical section of the 90-degree bend of the inlet line to the indoor coil. See Figure 7. Connect the Indoor Coil Thermistor to the board as noted above.

- D. If the existing **Outdoor Coil Thermistor** (with the **BLUE** wires) was connected to the board by a plug-on connector, reconnect it to the new board on the **OCT** (blue) terminals. If the previous board used indoor coil bi-metals, remove and discard the bi-metal devices. The Indoor Coil Thermistor will need to clip on the crossover tube shown in Figure 8. There will be two clips supplied in the kit for the Blue Thermistor. One clip as supplied on the sensor will fit 5/16" tubing used on the bent coil, and an additional clip (loose in the bag) will fit 3/8" tubing used on the flat slab coil. If you have a slab coil, you will need to remove the 5/16" clip from the sensor and replace it with the 3/8" tube clip. Connect the Outdoor Coil Thermistor to the board as noted above. Outdoor Coil Thermistors are only used on Heat Pump models; **DO NOT INSTALL THIS SENSOR IF THE UNIT IS NOT A HEAT PUMP.**

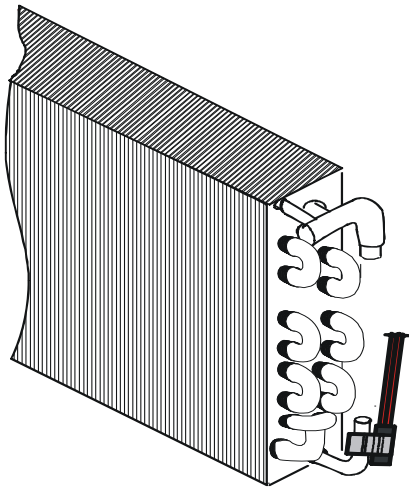


Figure 7
INDOOR COIL THERMISTOR - RED
All Units
Connect to ICT on Control Board

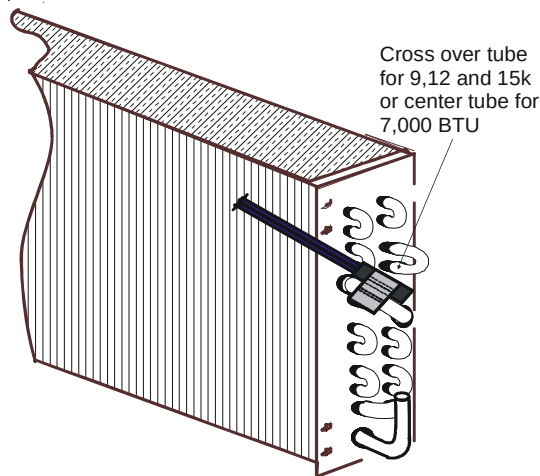


Figure 8
OUTDOOR COIL THERMISTOR - Blue
Heat Pumps Only
Connect to OCT on Control Board

17. If the unit has a condensate pump, go to step 18. If the unit has a power vent or power door, go to step 19. Otherwise proceed with step 20. Refer to wiring diagrams in back of manual.

18. *Condensate Pump Units Only*
(See Wiring Diagram Page 12)

Reconnect the wires across the top terminals of the control board. Connect as follows:

- Red 33 to Line 1
- Brown 34 to Heater 1
- Brown 34 to Heater 2
- Power cord (or black 18) to Line 2
- Violet 12 and Yellow 3 to Compressor
- Black 16 to Fan High
- Red 17 to Fan Low
- 19 from reversing valve and Yellow 1 to Rev. Valve.

Connect the yellow 5 wire to the 230 or 265-volt terminal as applicable using the piggyback terminal on the yellow 5 wire. Go to step 21.

19. *Power Vent/Power Door Units Only*
(See Wiring Diagram Page 11)

Reconnect the wires across the top terminals of the control board. Connect as follows:

- Red 33 to Line 1
- Brown 34 to heater 1
- Brown 34 to Heater 2
- Power cord (or black 18) to Line 2
- Violet 12 to Compressor
- Blue 4 to Fan high
- Blue 15 and Blue 10 to Fan Low
- 19 from reversing valve to Rev. Valve

Connect the white 7 wire to the 230 or 265-volt terminal as applicable using the piggyback terminal on the white 7 wire. Go to step 21.

20. Reconnect the wires across the top terminals of the control board. Connect as follows:

(See Wiring Diagram Page 10)

- Red 33 to line 1
- Brown 34 to heater 1
- Brown 34 to heater 2
- Power cord or black 18 to line 2
- Violet 12 to compressor
- Black 16 to Fan High
- Red 17 to Fan Low
- 19 from reversing valve to Rev. Valve.

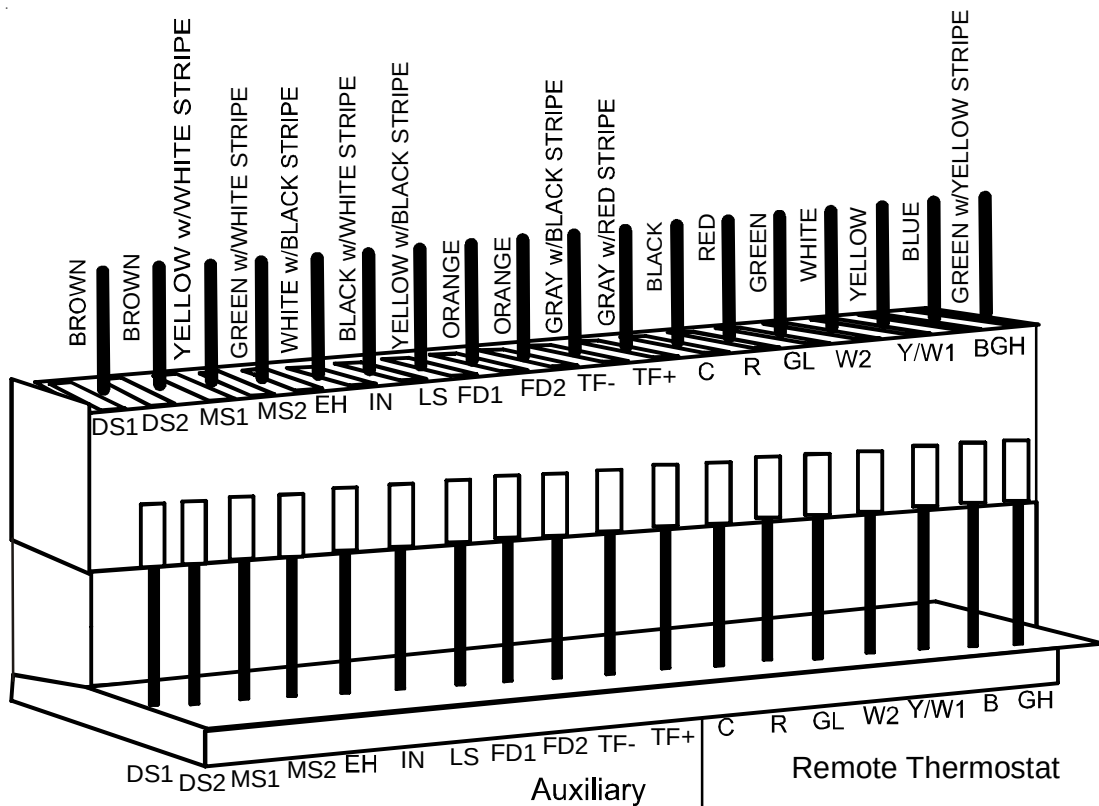
21. The control board cover is now ready to be installed. The ribbon for the touch pad will need to be connected to the control board. **Take caution not to bend or fold the ribbon** (See Figure 10 for ribbon connection).

Ensure that no wires are pinched or caught between the cover and the panel and then reinstall the screws removed in Step 5.

22. If a remote thermostat or any low voltage accessory is being used connect the low voltage pin connector to low voltage terminal strip.

If replacing a previous version board you will need to use the 18 pin connector supplied with the board for low voltage accessories. Wires supplied with this kit have terminal ends on the wires. Insert the terminal end into the correctly labeled slot, push in and it will lock in place. After loading pin connector use the wire nuts supplied with the kit to wire nut the new wires onto the existing wires supplied for low voltage accessories. See Figure 9 on page 5.

23. Set the master switch to ON. Restore electrical power and verify unit functionality.



*Only load wires needed for accessories attached to unit.

Figure 9

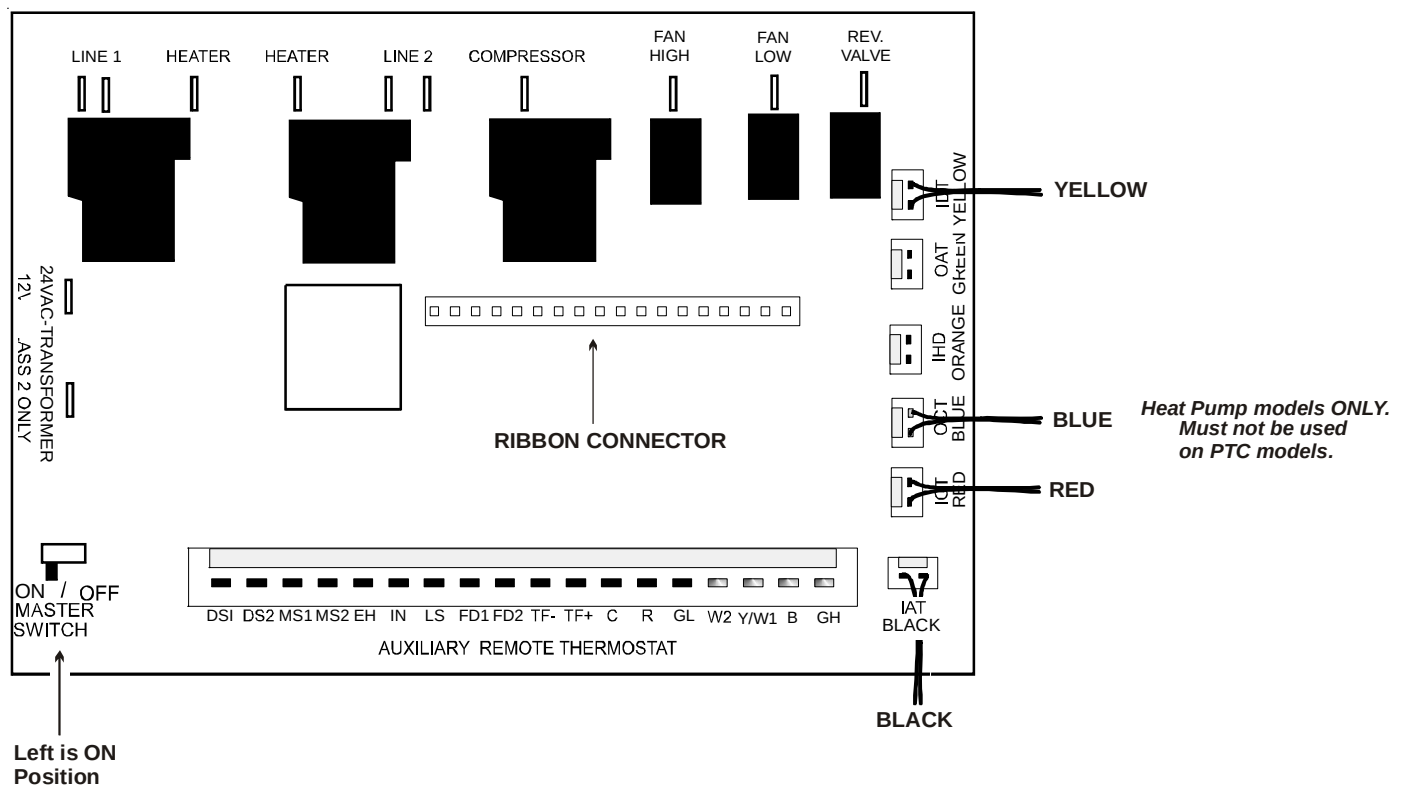


Figure 10

CRITICAL STEP

This service control **will not operate** until it has been configured to control a heat pump or cooler. As long as the display shows **Eo**, the unit **will not operate**.

Follow directions below and set feature code **C3** to option **H** if the unit is a heat pump, or option **C** if the unit is a cooler with or without electric heat.

24. Replace the front in reverse order as removed in Steps 2 and 3.

Initial Board Programming

Press and **continue to hold down** the plus (+) and minus (-) keys at the same time. While holding the keys down, push the **OFF** button **two (2) times, within a two (2) second time frame**. The display will show two (2) dash lines and a flashing dot (- - .).

Release the plus (+) and minus (-) keys and press the **HEAT** button three (3) times. The display will alternate between **C3** and **O**.

Press the plus (+) or minus (-) key until the display reads **H** (for models PTH*) or **C** (for models PTC*). Please check the serial plate of the PTAC to make sure you select the correct code. Once **H** or **C** is selected, press the **OFF** key to exit the programming.

Configuration Settings

The control can be configured to operate a wide range of options. The options listed below with the * are the factory default settings. If these are acceptable, then the unit does not require any additional configuration and is fully operable. To configure the unit, first select the configuration feature code setting and then an option code to change from the factory default setting.

To **enter configuration feature mode**:

1. **Press** and **continue to hold** the up and down arrow keys and quickly **press** the **OFF** key **twice within a two (2) second time frame**. The display will show two (2) dash lines and a flashing dot (- - .).

Release the plus (+) and minus (-) keys and press the **HEAT** button one (1) time to get to the first setting, **C1**.

To select a configuration **feature code**, press the **HEAT** key until the desired configuration comes up. To scroll to a previously viewed configuration codes press the **COOL** key.

Once you have scrolled to the correct feature, then to select the **option code** for your desired configuration, press either the up or down key to scroll through the options of the selected feature code.

To **exit configuration mode**:

1. **Press** the **OFF** key. Configuration feature mode will also exit **if no keys are pressed** for a period of **two (2) minutes**.

Configuration Settings (cont.)

Configuration Code	Description	Option Code	Description
C1	Interface	0*	Chassis Membrane*
		rE	Wireless Remote
		L5	Wired Thermostat
C2	Fan Operation	bP	Button present
		bA*	7-Button, reverts to Cyclic
		A	Always run fan (even in Off)
		bC	7-Button, reverts to Continuous
C3	Reverse Cycle Operation	C	Cooler Only
		H*	Heat Pump*
		0	Service No Operation "Eo"
C4	Room I.D. Digit 1 & 2	00* - 99	00* - 99
C5	Room I.D. Digit 3 & 4	00* - 99	00* - 99
C6	Wired or Wireless Occupancy	0*	Off*
		1	On
		18	18 Hour Automatic Entry
C8	Temp. Limiting Cool	60* - 72	60* - 72
C9	Temp. Limiting Heat	68 - 90, 80*	68 - 90, 80*
Cd	English / Metric Temp	F*	Fahrenheit Scale*
		C	Celsius Scale
d6	Sensorless Un-Occ. Time	1 - 32, 18*	1 - 32, 18*
d7	1st Un-Occ. Set Back Temp.	1 - 16, 2*	1 - 16, 2*
d8	1st Un-Occ. Set Back Time	.1, .5*, 1 - 24	.1, .5, 1 - 24, .5*
d9	2nd Un-Occ. Set Back Temp.	1 - 16, 3*	1 - 16, 3*
dA	2nd Un-Occ. Set Back Time	.1, .5, 1* - 24	(d8) - 24, 1*
db	3rd Un-Occ. Set Back Temp.	1 - 16, 6*	1 - 16, 6*
dC	3rd Un-Occ. Set Back Time	.1, .5, 1 - 24, 3*	(dA) - 24, 3*
dF	Jace Group Code	00* - 99	00* - 99
r4	Room Prefix	00* - 99	00* - 99
r5	Room Suffix	00* - 99	00* - 99

*Indicates factory default

See manufacturer for additional configuration options.

Diagnostic Maintenance & Status Report

The Diagnostic Maintenance & Status Report provides detailed information on PTAC control operation and operational status including present modes, failures, airflow restriction warnings, operating temperatures, and past failures. The lower right hand dot on the center display flashes in this mode. In some cases the green LED located in the lower left hand corner of the touchpad below the OFF key will also be lit. This Green LED "Status Light" only illuminates if there is an status code that has been activated and should be reviewed. In most cases, this light indicates that the indoor room filter is dirty should be cleaned or replaced. **NOTE:** Dirty filters cause the unit to consume more energy than normally needed to condition a room. Once the filter has been cleaned or replaced, the LED should go out. If the LED is still illuminated after the filter has been cleaned, activate the Diagnostic and Status mode to view any active codes. The unit may need additional cleaning or maintenance of the evaporator or condenser coils. Please perform this step before calling a servicer. **A servicer should be called only if cleaning the filter or coils does not clear the status code or the code indicates that servicer should be called.**

DIAGNOSTIC STATUS REPORT MODE.

To enter **Diagnostic Status Report mode**, press and hold the up and down  arrows and, while holding, quickly press the COOL key  twice.

Active Failures.

- If there are no active failures or lockouts, the display will show a double dash, "- -". If there is a code listed, see the unit "Diagnostic Codes" chart for a list of definitions.

Operating Temperatures.

- If not in Diagnostic Status Report Mode, enter as instructed above and press the Fan Speed  key.
- If already in Diagnostic Status Report mode, press the Fan Speed  key. The display will show the temperature of the desired set point, **SP**; the temperature at the wireless thermostat, **rL**; the indoor ambient temperature behind the filter, **IA**; the indoor coil temperature, **IC**; the indoor discharge air temperature, **Id**; the outdoor coil temperature, **OC**; the outdoor ambient temperature, **OA**; and the spare probe temperature, **IH**. If any of the probes are not populated the display will show the corresponding failure code.

Past Failure Log

- If not in Diagnostic Status Report Mode, enter as instructed above and press the Fan Speed  key twice.
- If already in Diagnostic Status Report mode, press the Fan Speed  key. While the display is showing operating temperatures, the last 10 failure codes active or past can be requested by pressing the Fan Speed  key again. The codes are displayed last entry first followed subsequently by each preceding code.

Note that modes F1 and Fd are also displayed in the normal control operation (see "Diagnostic Codes" chart).

To exit **Diagnostic Status Report mode**, press the OFF  key.

Diagnostic Codes

CODE		STATUS	DISPLAY	ERROR LIGHT	SUGGESTED ACTION
MODES	FP	Freeze Protection Engaged. The room temperature measured by the wireless remote thermostat or indoor ambient thermistor active sensor falls below 40°F.	Y	N	No Action required. This setting will disengage when the room temperature rises above 43°F.
	Fd	Front Desk switch is closed. All outputs are switched off.	Y	N	Open front desk switch to allow occupant unit operation.
	Eo	Un-Configured Service Board - All operation held awaiting configuration	Y	Y	Enter Configuration Menu and set "C3" to "C" for coolers with electric heat or "H" for heat pumps.
	EH	Emergency Hydronic Engaged. The EHH switch is closed. Compressor is switched off.	Y	N	Open front emergency hydronic switch to allow occupant unit operation.
	LS	Load Shedding Engaged. The LS switch is closed. Compressor and Electric heat is switched off.	Y	N	Open load shedding switch to allow occupant unit operation.
	On	Control is configured to respond to a wired thermostat	Y	N	No action if a wired thermostat is being used. Otherwise, see Configuration Settings.
	oP	Open Door Lockout (DS1 & DS2 open; wireless)	Y	Y	Close Room Door. Unit will not condition space with door open.
	nP	Window Switch Lockout - (LS & INN open)	Y	Y	Close Room Door or Window. Unit will not condition space with door or window open.
	HP	Heat Sentinel - (WIAT > u3)	Y	N	No action required. This setting will disengage when the room temperature falls.
	Ur	Un-Rented Status (EHH & INN or wireless)	Y	N	Front Desk needs to set to Rented mode (if applicable).
FAILURES	F1	Indoor Ambient Thermistor reads outside the range -20°F to 200°F & the wireless thermostat is not communicating to the unit control or	Y	Y	Replace black Indoor Ambient Thermistor or Wireless Remote Thermostat.
		Indoor Ambient Thermistor (IAT) without a wireless remote thermostat reads outside the range -20°F to 200°F.			
	F2	Wireless Remote Thermostat failure	N	N	Replace Wireless Thermostat.
	F3	Indoor Ambient Thermistor reads outside the range -20°F to 200°F	Y	N	Replace black Indoor Ambient Thermistor.
	F4	Indoor Coil Thermistor either above or below operating tolerances.	N	Y	Replace Red Indoor Coil Thermistor .
	F5	Wireless Thermostat failure.	N	Y	Attempt to rebind Wireless Thermostat or Replace Wireless Thermostat.
	F6	Indoor Discharge Thermistor either above or below operating tolerances.	N	Y	Replace Yellow Indoor Discharge Thermistor.
	Fb	Low Remote Battery Warning.	N	Y	Replace Batteries in Wireless Devices.
	H1	High Voltage Protection engaged. Power supply voltage is to high.	Y	N	Check for incoming power at correct voltage.
	br	Brown Out Protection engaged. Power was lost or voltage is low.	N	N	Check for incoming power at correct voltage.
AIRFLOW ALERTS	L6	Discharge Air Too Hot.	N	Y	Clean Filter or Remove Air Blockage.
	LC	Outdoor Coil Thermistor temperature high.	N	Y	Clean Condenser Coils, Check Fan for fault. Code will reset after cleaning.
	C2	Indoor Air Recirculation. Large delta between thermostat and return.	N	Y	Clean Filter or Remove Air Blockage or Close Vent Door or Improve indoor to outdoor seal.
	C5	Outdoor Coil temperature too high for outdoor ambient temperature.	N	Y	Check for Blocked Outdoor Air or Clean Coil.
REFRIGERATION ALERTS	C1	Indoor Coil is freezing up.	N	Y	Clean filter, Check for fan and blower operation, Check for Refrigerant loss or Restricted capillary tube.
	C3	Indoor Coil is freezing up.	N	Y	Clean filter, Check for fan and blower operation, Check for Refrigerant loss or Restricted capillary tube.
	C4	Indoor Coil froze up.	N	Y	Clean filter, Check for fan and blower operation, Check for Refrigerant loss or Restricted capillary tube.
	C6	Poor Unit Performance.	N	Y	Check for blower motor, compressor, or electric heat operation.
	C7	Indoor Freezing Lockout (ICT - IAT > 20) +10 Min	N	Y	Clean filter, Check for fan and blower operation, Check for Refrigerant loss or Restricted capillary tube.

WIRING DIAGRAMS

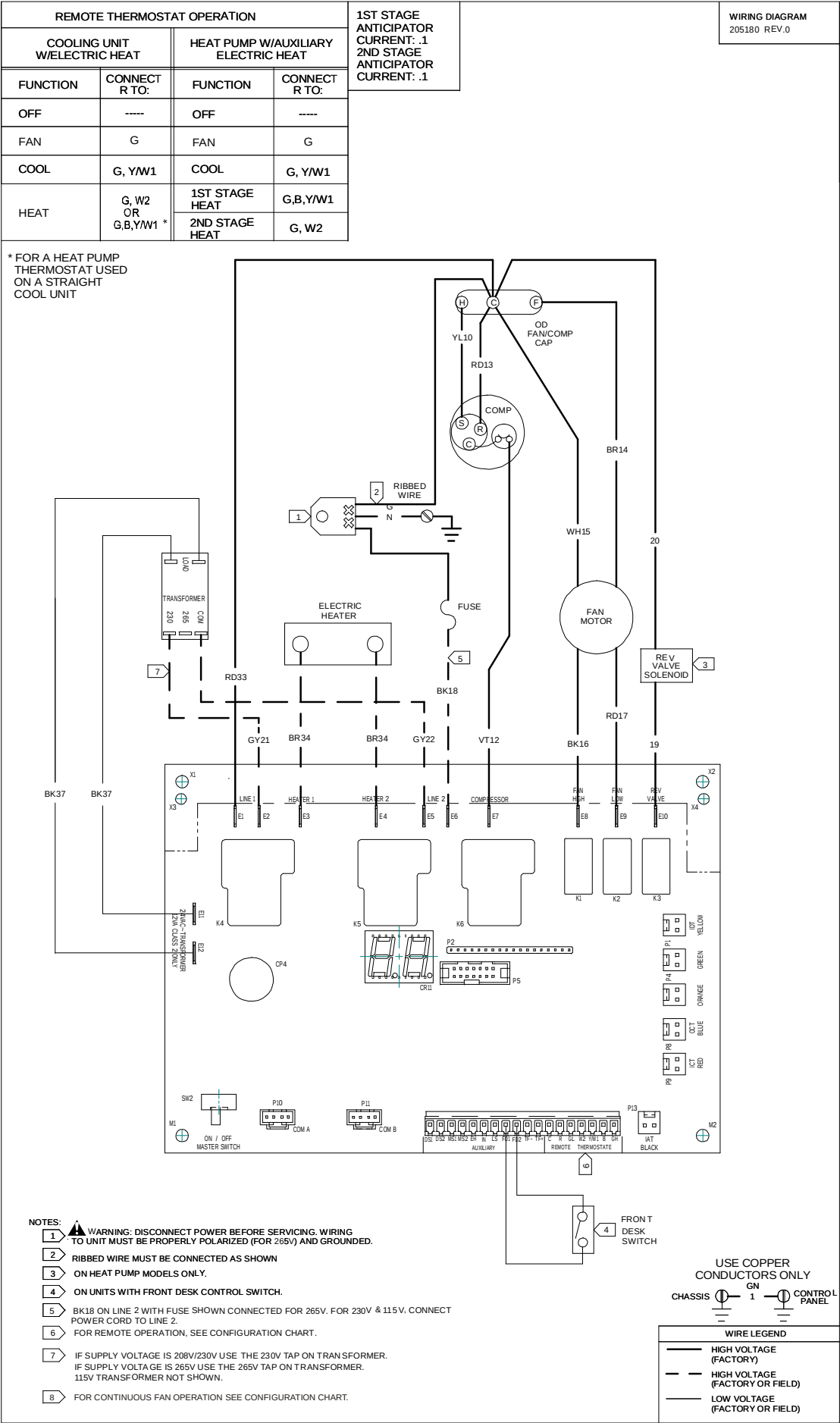


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WARNING

Wiring is subject to change.

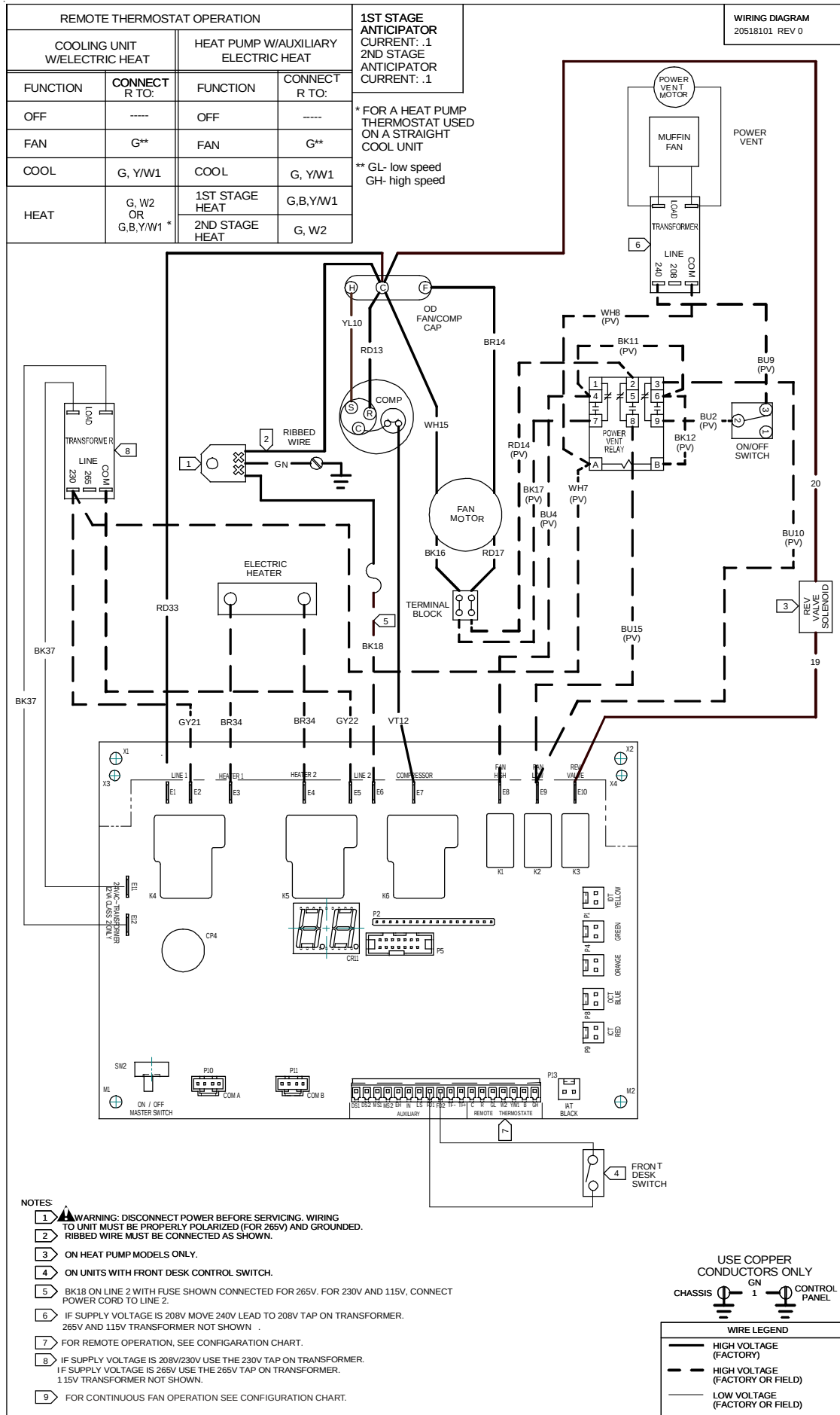


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