



S-BMS/Air Handler Switch

INSTALLATION INSTRUCTIONS

Part Number : REU-OPU3

! Identify Your Rinnai Product Model Number

The product model number is located on the rating plate on the side of the unit. Use the table below to identify the appropriate page number for the instructions specific to your model number.

Rinnai Tankless Water Heater Models:	Page Number
RU199i/e, RU180i/e, RU160i/e, RU130i/e, RUR199i/e, RUR160i/e, RSC199i/e, RSC160i/e, CU199i/e, CU160i/e, CE199i, RE199i/e, RE180i/e	2-3
RL94i/e, RL75i/e, RUC80i, RUC90i, RUC98i, RU80e, RU90e, RU98e, RUR98i/e, C199i/e, RUCS65i, RUCS75i, RUS65e, RUS75e	4-6
Rinnai Boiler Models:	
i060C, i090C, i120C, i060S, i090S, i120S, i150S	9-10

General Information

The REU-OPU3 is a normally Open (NO) or Normally Closed (NC) switch. This switch connects to the PC Board in the Rinnai Tankless Water Heater or Boiler to act as:

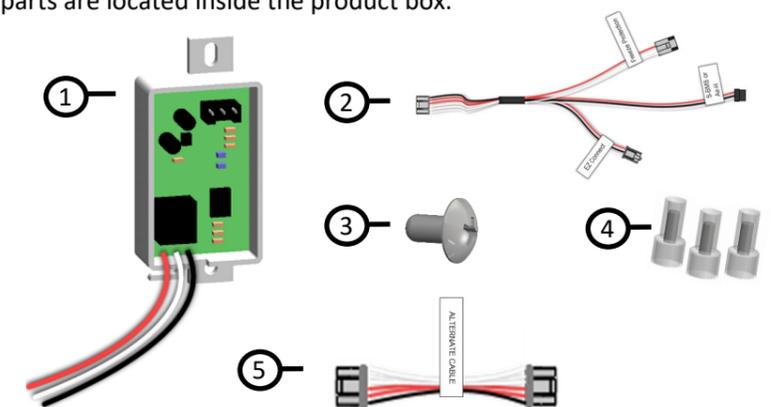
- Domestic priority control for combination domestic hot water / hydronic air handler applications.
- Maintenance indicator to work in conjunction with a Building Management System (BMS) to provide system monitoring.

Switch Rating: 24 Volts (AC or DC), 1 Amp. Systems requiring loads greater than this should be configured via an external relay.

Items Inside Product Box

Before installation, please make sure all parts are located inside the product box.

Item	Description	Qty
1	S-BMS/Air Handler switch	1
2	Accessory Cable	1
3	Mounting Screw	1
4	Crimp Connectors	3
5	Alternate Cable	1



You Will Need

- Philips Head Screwdriver (for removal of water heater or boiler front cover)
- Double Sided Tape (for boiler models)

Installation Instructions for Tankless Water Heater Models: RU199i/e, RU180i/e, RU160i/e, RU130i/e, RUR199i/e, RUR160i/e, RSC199i/e, RSC160i/e, CU199i/e, CU160i/e, CE199i, RE199i/e, RE180i/e

Notes

WARNING Ensure the power supply to the water heater and hydronic air handler is disconnected before starting installation. Removing the front cover will expose live mains voltage connections.

Install Switch Circuit Board

1. Power off the water heater by unplugging the power cord or turning off the circuit breaker. The controller on the water heater does not control the electrical power.
2. Remove the front panel of the water heater by removing the four screws that secure the panel in place. For CE and RE models, remove the latches as well.
3. Locate the PC Board in the bottom, right corner of the water heater (Figure 1).

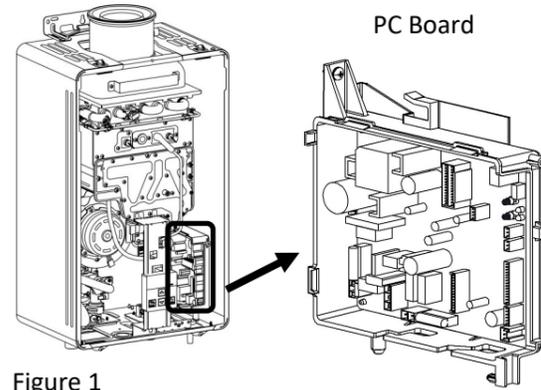


Figure 1

4. Connect one end of the accessory cable or alternative cable to the accessory port on the PC Board. Connect the other end of the cable to the **switch circuit board** accessory port (Figure 2). The accessory port position for CE and RE models is different from CU and RU models.

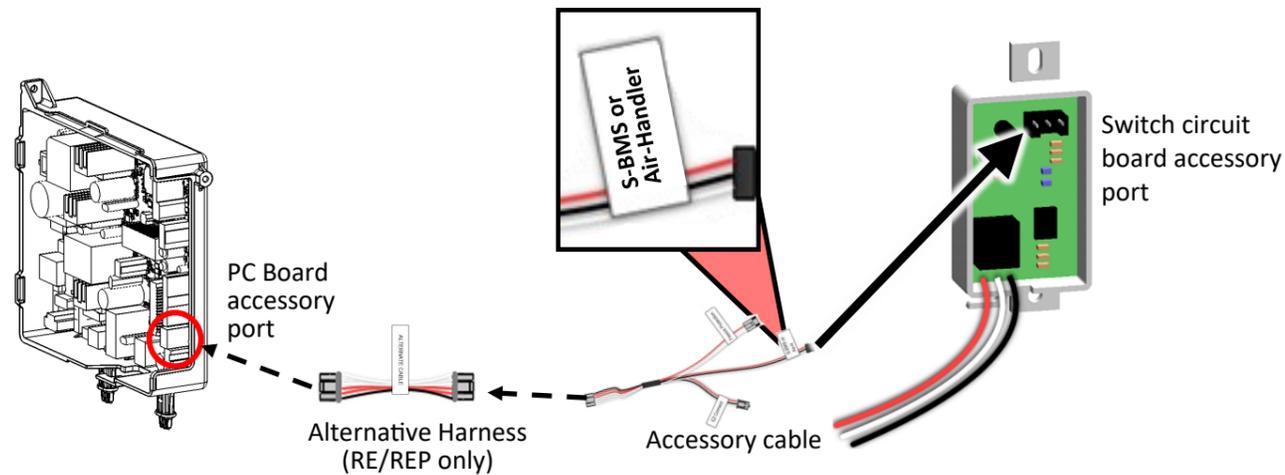
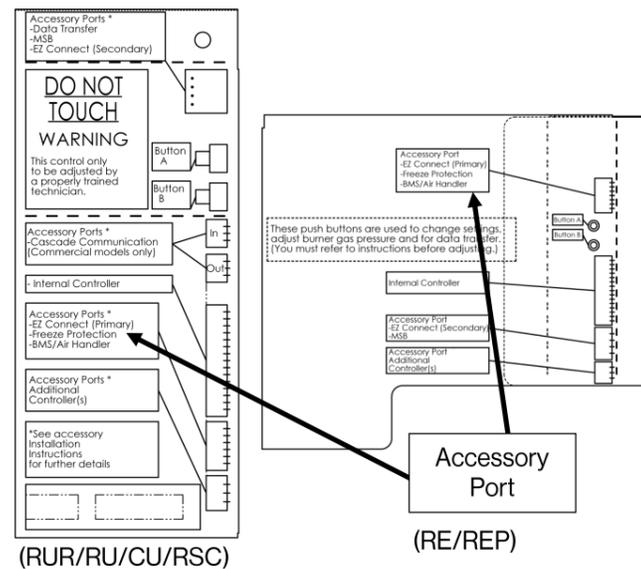


Figure 2: PC Board Assembly



Some models require the switch to be flipped. Refer to figure 4 and 5 for the appropriate switch orientation for your model.



Figure 3: Switch Circuit Board

Wiring Instructions

- Attach the harness plug from the S-BMS/Air Handler switch (black, white, and red) as described in Table 2.
- Check all wiring and reattach the front cover.
- Reconnect power.

Table 2: Domestic Priority Configuration		
Switch Configuration	Required Leads/Wires	Function
Generic Air Handler	White/Black	Normally Closed
Rinnai Hydronic Furnace	Red/Black	Normally Open

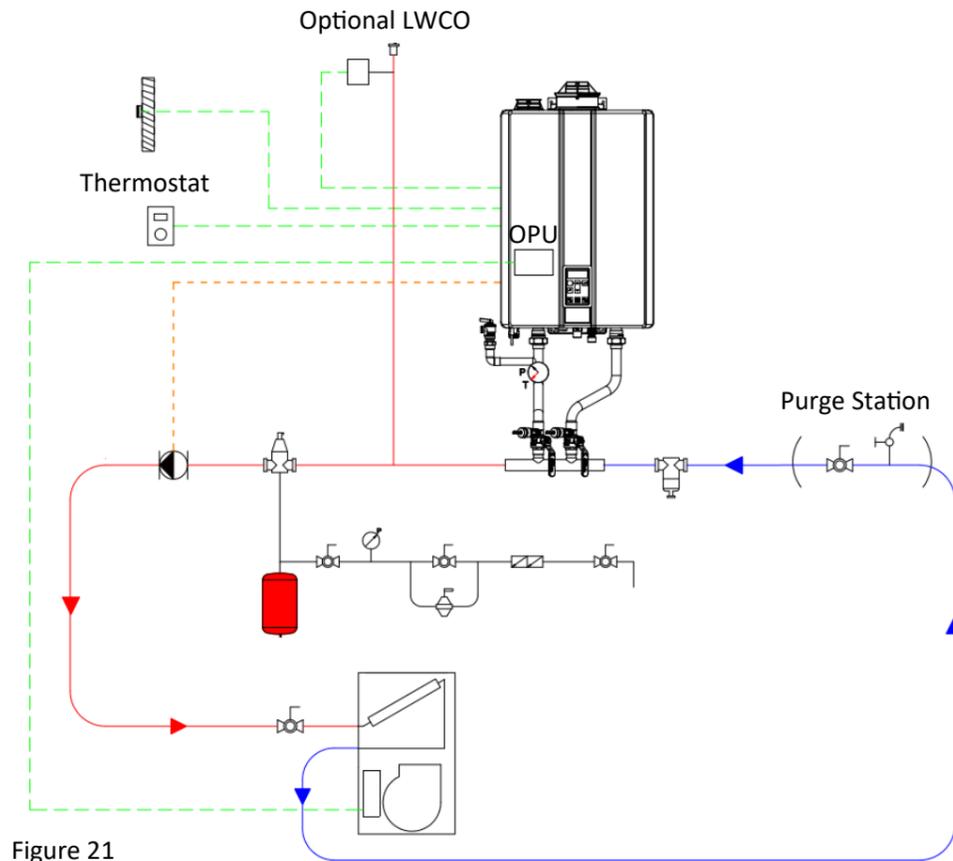


Figure 21

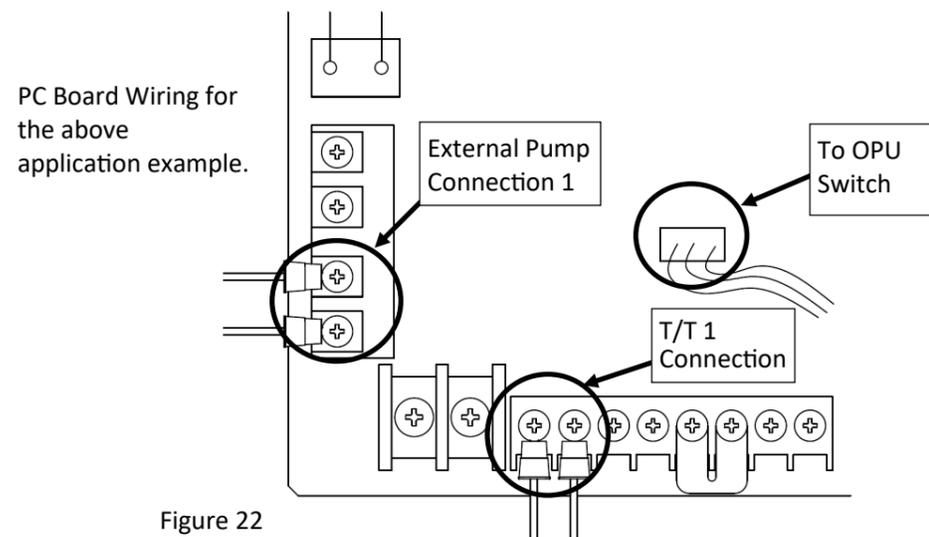


Figure 22

- Install the **switch circuit board** to the controller bracket using the hooks at the top of the controller bracket (Figure 4 & 5).

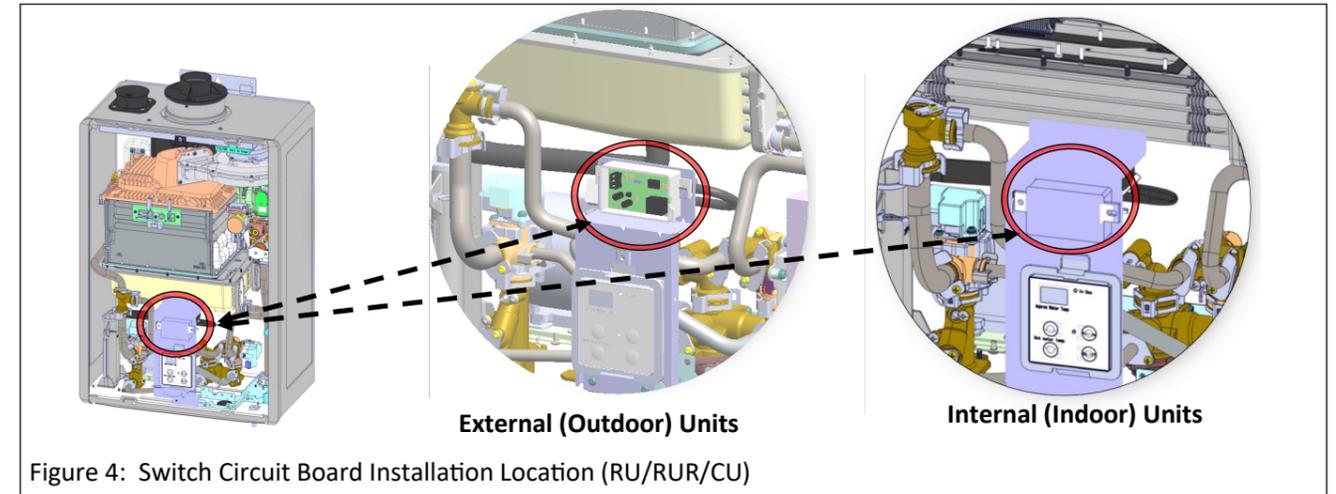


Figure 4: Switch Circuit Board Installation Location (RU/RUR/CU)

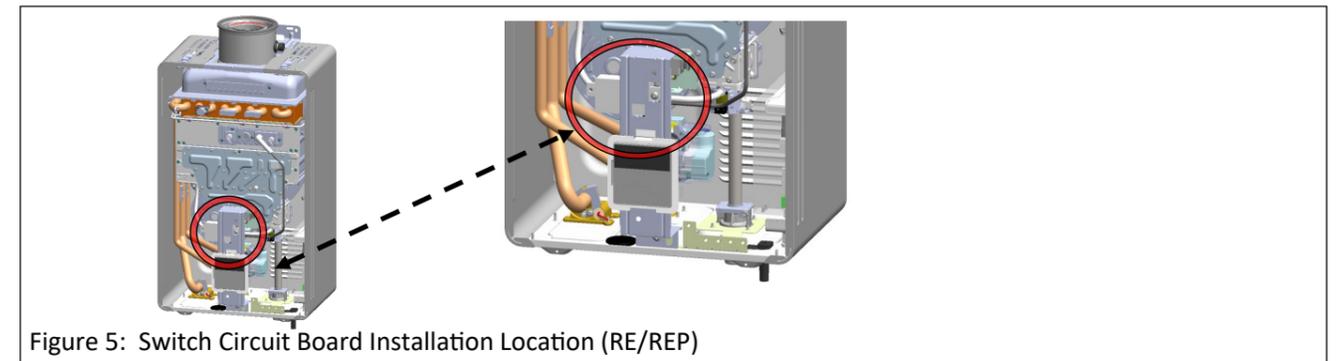


Figure 5: Switch Circuit Board Installation Location (RE/REP)

Wiring Instructions

Attach the harness plug from the S-BMS/Air Handler switch (black, white, and red) as described in Table 1.

Set Parameter Settings

WARNING Adjust only the parameter settings listed below. Do not adjust any other parameter settings unless specifically instructed to do so.

- Locate the two push buttons (A and B) on the PC Board (Figure 6).
- Press the **A** button for 1 second. **01A** appears on the controller display (Figure 7).
- Press the **▲ (Up)** button until **06A** appears on the display.
- Press the **On/Off** button to change the selection between **06A** for BMS and **06b** for Air Handler (AH).
- Selecting the primary water heater is complete. Press the **A** button to exit. Note: CE199i does not use the Air Handler.

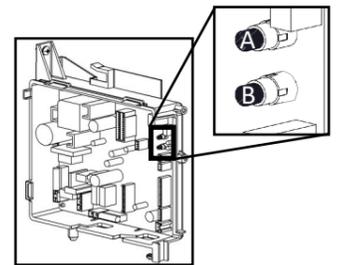


Figure 6: A and B Push Buttons

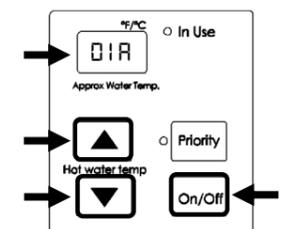


Figure 7: Controller Display

Installation Instructions for Tankless Water Heater Models: RL94i/e, RL75i/e, RUC80i, RUC90i, RUC98i, RU80e, RU90e, RU98e, RUR98i/e, RSC199i/e, RSC160i/e, CU199i/e, RUCS65i, RUCS75i, RUS65e, RUS75e

WARNING Ensure the power supply to the water heater and hydronic air handler is disconnected before starting installation. Removing the front cover will expose live mains voltage connections.

Install Switch Circuit Board

The Installation Instructions below apply for both Air Handler (Air-H) and Simple Building Management Switch (S-BMS) Configurations.

1. Power OFF the water heater by unplugging the power cord or turning off the circuit breaker. The controller on the water heater does not control the electrical power.
2. Remove the front panel of the water heater by removing the four screws that secure the panel in place.
3. Locate the wiring bundle and find the wiring tagged "S-BMS" or "Air-H." Temporarily remove the cable tie and separate this connector from the main bundle. Fasten the cable tie around the remaining bundle.
4. Attach the switch circuit board using the mounting screw provided (A). If required, adjust the position of the main wiring bundle to provide enough room.
5. Attach the harness plug labeled "S-BMS" or "Air-H" to the matching socket on the S-BMS/Air Handler Switch (C).
6. **For Air-H — Thermostat Wiring:** Using the provided crimp connectors (B), connect the white and black leads of the switch circuit board to the "W" contact on the indoor thermostat and fan coil (polarity is not important). See Table 1 and Figures 9 through 14 for additional details. Final crimp connector should be connected to the unused red wire lead on the switch circuit board.

For S-BMS: Using the provided crimp connectors, use the red and black leads as a Normally Open (NO) connection for Building Management System (BMS). Final crimp connector should be connected to the unused white wire lead on the switch circuit board. **DIP Switch 4 on bank one must be in the OFF position. Refer to Table 1 in the next section for more information.**

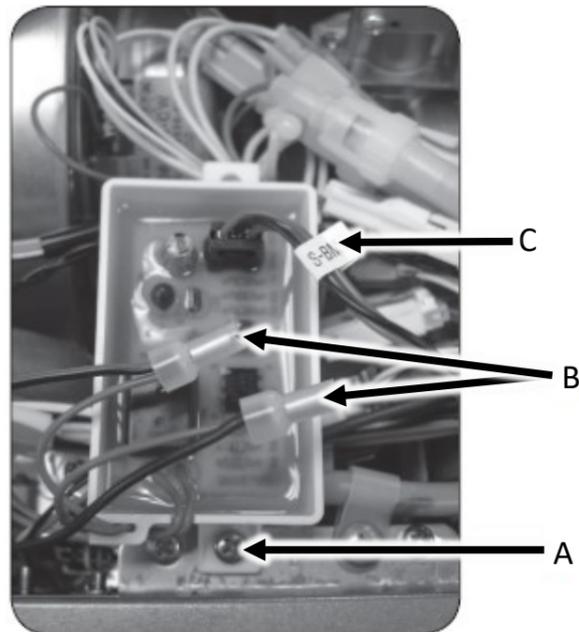


Figure 8

Installation Instructions for Boiler Models: i060C, i090C, i120C, i060S, i090S, i120S, i150S

WARNING Ensure the power supply to the boiler and hydronic air handler is disconnected before starting installation. Removing the front cover will expose live mains voltage connections.

Note: This accessory is to only be used with an air handler for boiler installations. It is not intended to be used for S-BMS. This accessory is only to be used when Thermostat Mode is active (DIP Switch 2 in the Off (default) position). To prevent cold air from being produced, it is recommended to set Parameter 42 to "A - Continuous Run". See the "Rinnai I-Series Boiler Installation and Operation Manual" for more information.

Install Switch Circuit Board

1. Power OFF the boiler by unplugging the power cord or turning off the circuit breaker. The controller on the boiler does not control the electrical power.
2. Remove the front panel of the boiler by removing the four screws that secure the panel in place.
3. Locate the PC Board in the bottom, left corner of the boiler (Figure 16).

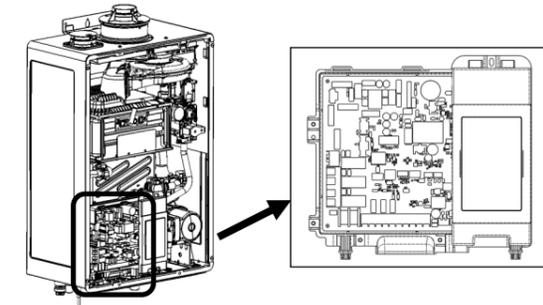


Figure 17: PC Board

4. Connect one end of the boiler air handler cable to the accessory port on the PC Board. Connect the other end of the cable to the **switch circuit board** accessory port (Figure 17).

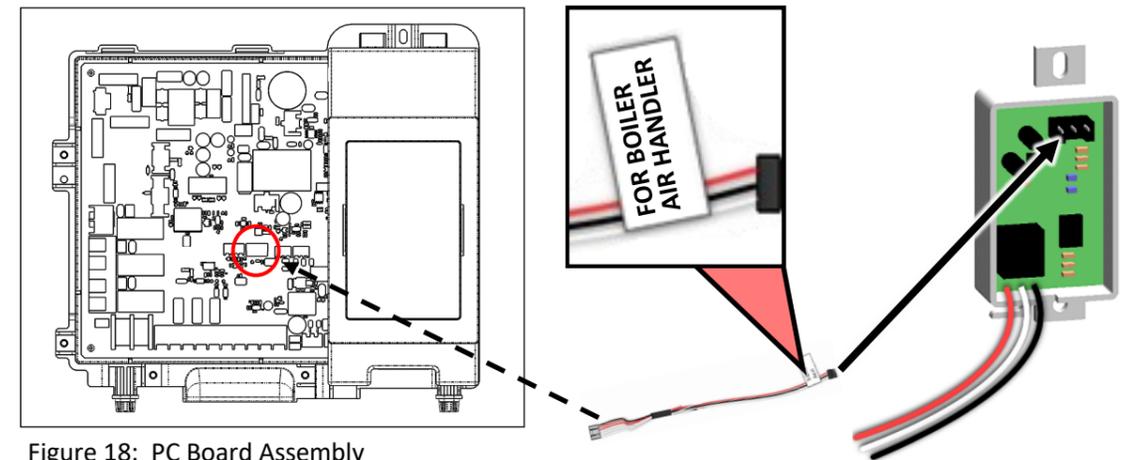


Figure 18: PC Board Assembly

5. Attach the OPU circuit board to the PC Board via double sided tape. Ensure the circuit board does not make contact with the heat exchanger.

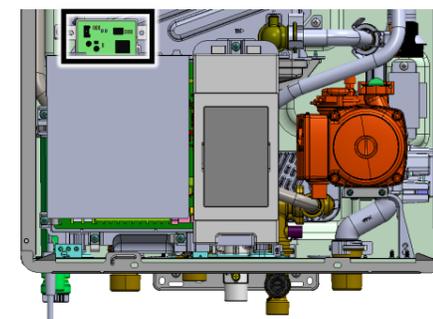


Figure 19

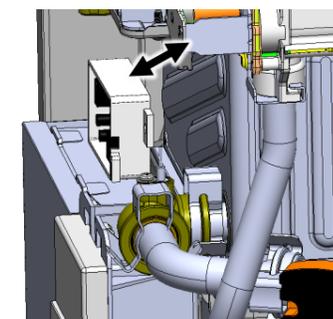


Figure 20

Simple Building Maintenance Switch (S-BMS) Instructions

Schematic Layout

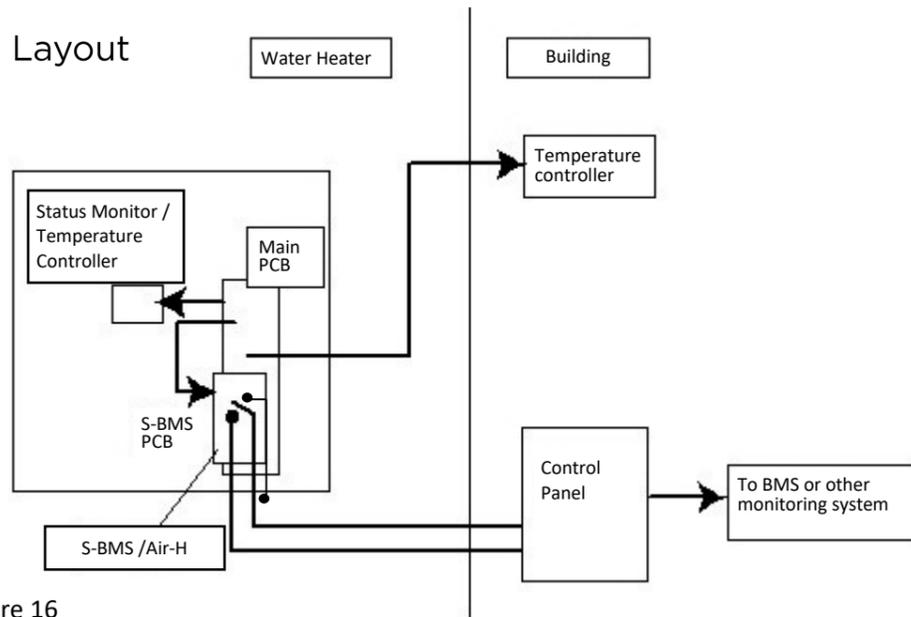
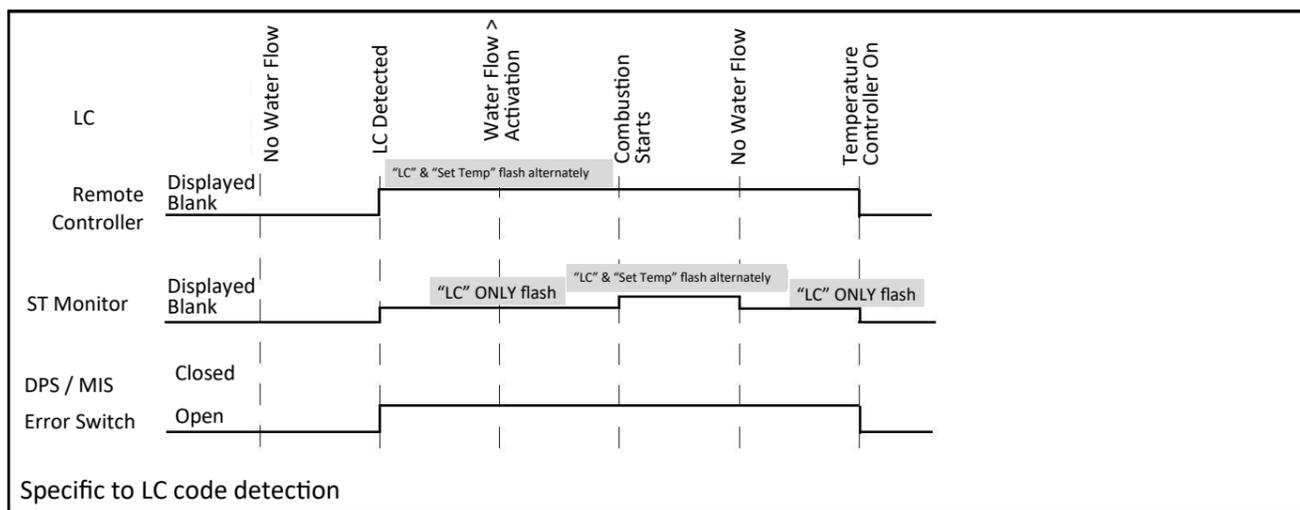
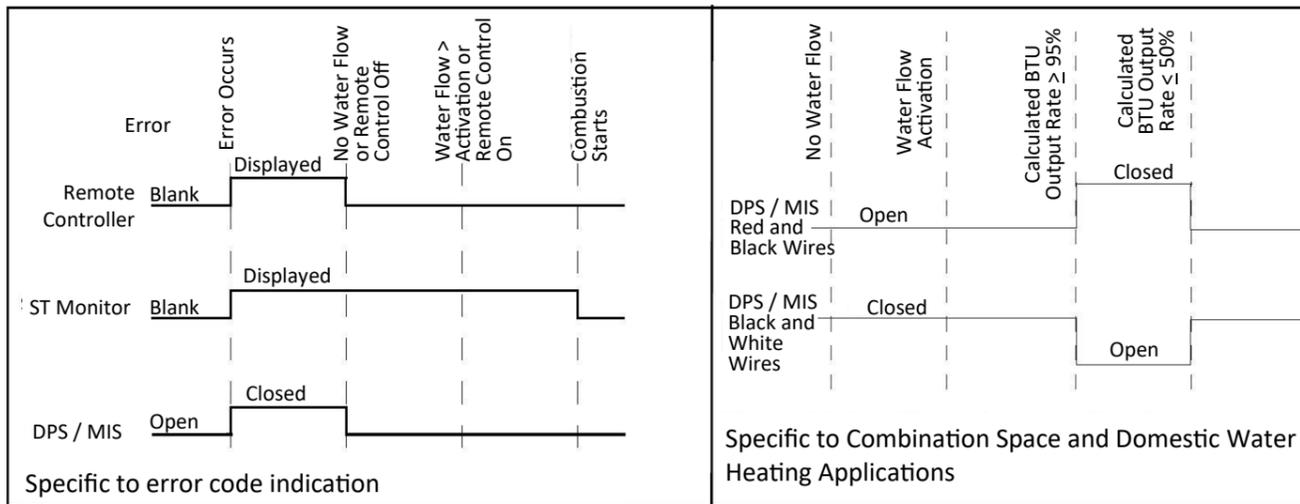


Figure 16

Operation Time Charts



Set Parameter Settings

Table 1: Domestic Priority/Maintenance Indication with (DPS/MIS)					
Switch Configuration	Required Leads (wires)	Connection	Function	DIP Switch configuration	
				ID	Position
Air Handler (AH) - Generic	White and Black	In series with thermostat. "W" wire	N.C.	Bank 1 (Yellow); #4	ON
Air Handler (AH) - Hydronic Furnace	Red and Black	Connect to HF PCB with shunt on "WH" Spade port labeled WH/FS	N.O.		
Simple Building Maintenance		Connect to BMS			OFF

Key: N.O. = Normally Open; N.C. = Normally Closed

Domestic Priority Switch Instructions for All Models After Installation

Testing

The domestic priority switch allows the tankless water heater or boiler to give priority to domestic hot water by shutting off the air handler when necessary.

When used with a hydronic air handler, the switch gives priority to domestic hot water. When domestic hot water demand exceeds a certain point (refer to Figure 15), the air handler will turn off to ensure the demand is met. To test this function, turn on the water heater and air handler. Open the hot water taps until the air handler turns off. Close the hot water taps and the air handler should turn back on if the thermostat is calling for heat.

Schematic Layout

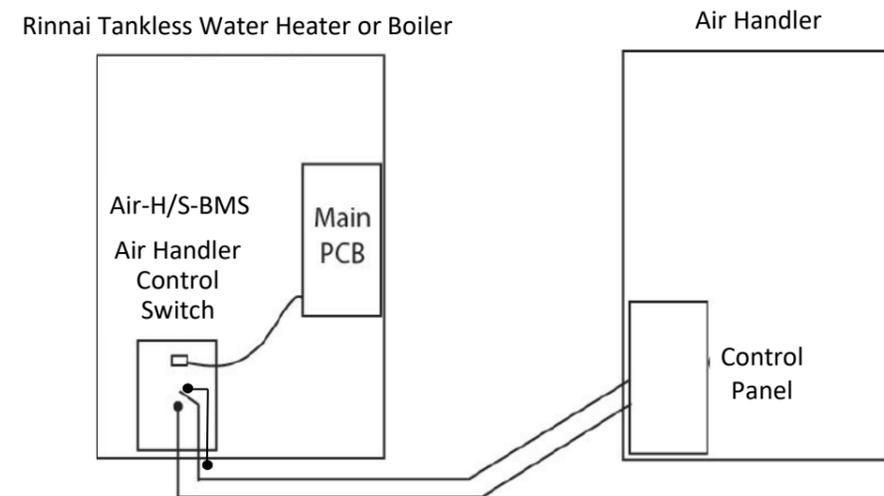


Figure 9

Simple Building Maintenance Switch (S-BMS) Instructions for All Models After Installation:

Testing

- The operation can be quickly tested by passing water through the water heater with the gas supply shut off.
- After several ignition attempts, you should hear the combustion fan stop and the temperature controller should display 11. Within 15 seconds of the display of 11, the error switch should close. This can be verified with a multimeter. The switch should remain in the closed position.
- Turn off the water flow or temperature controller. The error switch should return to the open position.

Error Codes

- When an error occurs, the water heater will shut down.
- Most errors will reset when the water flow stops, either by taps being turned off, circulating pump stopping, and/or the power being switched off and on.

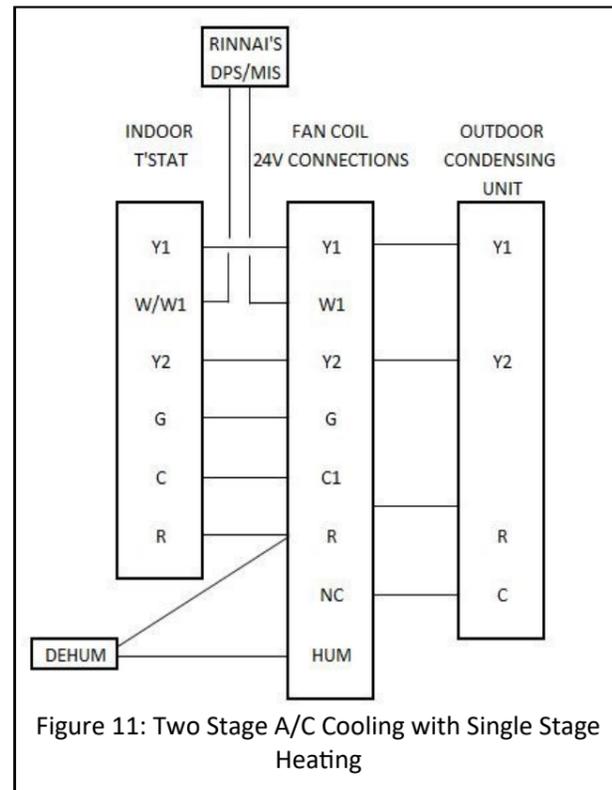
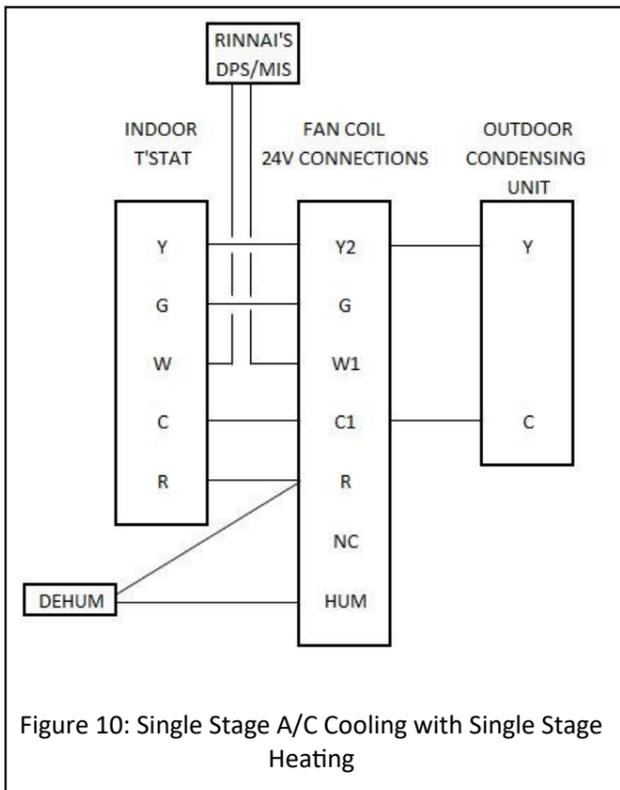
LC Error Code (For units equipped with Lime Check feature):

- In hard water areas, calcium is deposited within the tubes of the heat exchanger. This reduces the heat transfer within the water heater. The water heater detects this and displays an LC error code. This will not prevent the operation of the unit, but initially provides an indication to the customer that maintenance is required. (Depending on the model, an LC code may lockout the unit.)
- Where an LC condition is present, the error switch will remain in the closed position at all times except where a temperature controller is switched off.
- The time charts show the relationship between errors indicated by the error switch and the outputs shown on the temperature controller.

NOTE: If an error code occurs for models RU199i/e, RU180i/e, RU160i/e, RU130i/e, RUR199i/e, RUR160i/e, RSC199i/e, RSC160i/e, CU199i/e, or CU160i/e:

- The primary water heater controller flashes between **5E** and the selected set temperature.
- The secondary water heater controller flashes the error code for the respective water heater.

Air Handler (Air-H) and Thermostat Wiring



Air Handler (Air-H) and Thermostat Wiring (continued)

