

## Lutron Thermostat Controls

Lutron Thermostat Controls are the perfect complement to light and shade/drapery systems. Add Lutron Thermostat Controls to your light and shade/drapery systems for convenient control of all aspects of an environment - lights, shades/draperies, and temperature - from the touch of a button. Lutron Thermostat Controls allow heating and cooling systems to integrate seamlessly with Lutron systems and must be located within 30 ft (9 m) of an RF signal repeater.

Lutron Thermostat Controls put temperature control and measurement where it makes sense and allows the ability to adjust heating and cooling systems any time of the day - even when you're away from home.

Lutron Thermostat Controls help optimize energy savings without complicated programming. Conveniently press the "eco" button to trim HVAC settings automatically. The "eco" button trim is controlled by RadioRA® 2 systems.

Lutron Thermostat Controls are easy to use and provide superior product quality and aesthetics.

### Model Numbers

LR-HVAC-1-WH*	HVAC Controller
LRD-WST-F-XX**	seeTemp™ Wall Display (°F)
LRD-WST-C-XX**	seeTemp Wall Display (°C)
LRF2-TWRB-XX***	Wireless Temperature Sensor

\*Only available in White (WH).

\*\*Available in 26 colors. Please see page 10 for color selections.

\*\*\*Available in Snow (SW) and Midnight (MN).



HVAC Controller



seeTemp Wall Display



Wireless Temperature Sensor

## Lutron Thermostat Controls

### Specifications

<b>Model Numbers</b>	HVAC Controller: LR-HVAC-1-WH <i>seeTemp</i> <sup>TM</sup> Wall Display: LRD-WST-F-XX, LRD-WST-C-XX Wireless Temperature Sensor: LRF2-TWRB-XX
<b>Power</b>	HVAC Controller: 24 V~ NEC® Class 2/PELV <i>seeTemp</i> Wall Display: 120 V~ 50/60 Hz or 24 V~ NEC Class 2/PELV Wireless Temperature Sensor: 3 V=== (one CR2450 battery included – 5 year lifetime)
<b>Typical Power Consumption</b>	HVAC Controller: 3 W; Test conditions: one LED on <i>seeTemp</i> Wall Display: 1 W (120 V~), 0.5 W (24 V~); Test conditions: all backlights on medium intensity, two LEDs on
<b>Regulatory Approvals</b>	HVAC Controller: UL, cUL, FCC, and SCT <i>seeTemp</i> Wall Display: UL, cUL, FCC, and SCT Wireless Temperature Sensor: UL, FCC, and IC
<b>Environment</b>	HVAC Controller: Ambient operating temperature: 32 °F to 160 °F (0 °C to 71 °C), 0% to 90% humidity, non-condensing. Indoor use only. <i>seeTemp</i> Wall Display and Wireless/Wired Temperature Sensor: Ambient operating temperature: 32 °F to 104 °F (0 °C to 40 °C), 0% to 90% humidity, non-condensing. Indoor use only.
<b>Communications</b>	Thermostat controls communicate with the system through Radio Frequency (RF) and must be located within 30 ft (9 m) of a signal repeater. System devices operate on frequencies between 431.0 MHz and 437.0 MHz.
<b>ESD Protection</b>	Tested to withstand electrostatic discharge without damage or memory loss, in accordance with IEC 61000-4-2.
<b>Surge Protection</b>	Tested to withstand surge voltages without damage or loss of operation, in accordance with IEEE C62.41-1991 Recommended Practice on Surge Voltages in Low-Voltage AC Power Circuits.
<b>Power Failure</b>	Power failure memory: should power be interrupted, the thermostat controls will return to their previous state when power is restored.
<b>Mounting</b>	HVAC Controller: Mount on a wall, ceiling, or level surface using the two #6 (M3) screws included. <i>seeTemp</i> Wall Display: U.S. wallbox 3 ½ in (89 mm) deep recommended, 2 ¼ in (57 mm) deep minimum. Wireless Temperature Sensor: One 3M <sup>TM</sup> Command <sup>TM</sup> adhesive strip is provided for temporary mounting and testing. One wall anchor and screw provided for permanent mounting. Wired Temperature Sensor: Mount in return duct using the supplied screws.
<b>Wiring</b>	HVAC Controller: Requires transformer common NEC Class 2/PELV, 22 AWG (0.5 mm <sup>2</sup> ) to 18 AWG (0.75 mm <sup>2</sup> ) solid wiring. <i>seeTemp</i> Wall Display: 120 V~ requires hot and neutral wiring; 24 V~ requires transformer common NEC Class 2/PELV, 22 AWG (0.5 mm <sup>2</sup> ) to 18 AWG (0.75 mm <sup>2</sup> ) solid wiring. Wired Temperature Sensor: NEC Class 2/PELV, 22 AWG (0.5 mm <sup>2</sup> ) to 18 AWG (0.75 mm <sup>2</sup> ) solid wiring. Maximum wire length is 100 ft (30.5 m).
<b>Warranty</b>	1 Year Limited Warranty if installed by climate control specialist. <a href="http://www.lutron.com/resiinfo">http://www.lutron.com/resiinfo</a>

## Lutron Thermostat Controls

### Design Features

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#### **HVAC Controller**

- Connects to mechanical HVAC equipment.
- Uses RF to communicate to the Wireless Temperature Sensors, seeTemp™ Wall Displays, and other *Lutron* wireless devices.
- Use up to 4 HVAC Controllers per RadioRA® 2 Main Repeater.
- Communicates to Wireless Temperature Sensors, seeTemp™ Wall Displays, and other *Lutron* wireless devices.
- Requires 24 V~ wiring from HVAC equipment transformer.
- Requires 1 Wired Temperature Sensor per HVAC Controller as a backup sensor. Wired Temperature Sensor is included with the HVAC Controller and should be mounted in the return air duct.

#### **seeTemp Wall Display**

- Designer style opening that can be ganged with other devices like dimmers and keypads.
- Installs in a standard wallbox for low-profile appearance.
- Celsius and Fahrenheit models available.
- Multiple *seeTemp* Wall Displays can be used to control 1 HVAC Controller from multiple locations.
- “eco” button saves energy by trimming the temperature a programmed amount (default is +/- 2 degrees.)
- 120 V~ wiring requires hot and neutral wiring.
- 24 V~ wiring requires 24 V~ and common wiring from HVAC equipment transformer or other 24 V~ NEC® Class 2/ PELV transformer.

#### **Wireless Temperature Sensor**

- Flexible mounting options require no wiring.
- 5 year battery life.
- Use up to 4 Wireless Temperature Sensors per HVAC Controller.
- Multiple sensor averaging possible.

## Lutron Thermostat Controls

### Compatibility

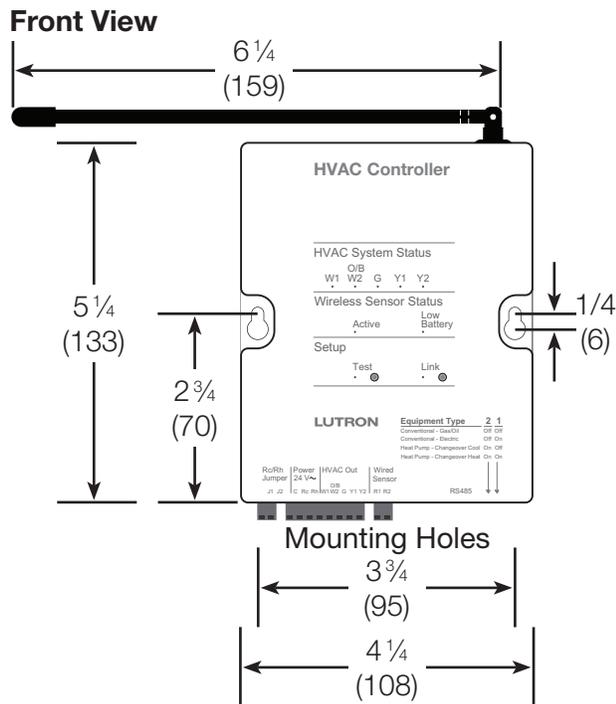
HVAC Type	Compatible?
Single Stage Cool	Yes
Two Stage Cool	Yes
Single Stage Heat	Yes
Two Stage Heat	Yes
Packaged Roof Top Units	Yes
Heat Pump with Changeover to Cool	Yes
Heat Pump with Changeover to Heat	Yes
Geothermal Heat Pump	Yes
Heat Pump with Auxiliary Heat	Yes
Typical Variable Speed Fan (Equipment Controlled)	Yes
Multi-Zone Systems (Controllable Dampers)	Yes - Requires a separate Zone Controller (not sold by Lutron)
In-Floor Radiant Heat	Yes
Line Voltage Electric Baseboard	No
Mili-Volt System	No
Proprietary Control systems	No
Variable Speed Fan (Independent Relays)	No
Humidity Control	No
Humidity Sensing	No
Outdoor Temperature Sensing	No

# Lutron Thermostat Controls

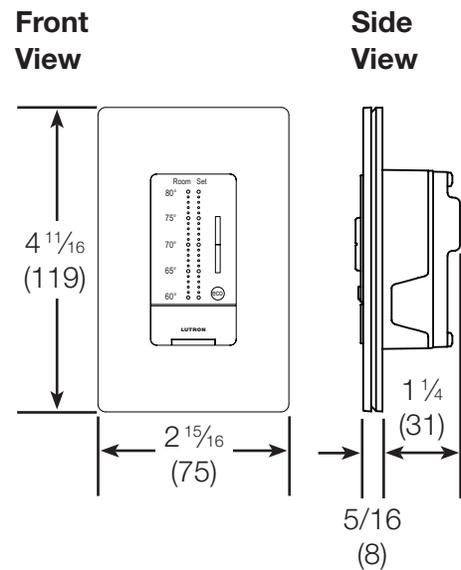
## Dimensions

All dimensions are shown as  $\frac{\text{in}}$  (mm) unless otherwise noted.

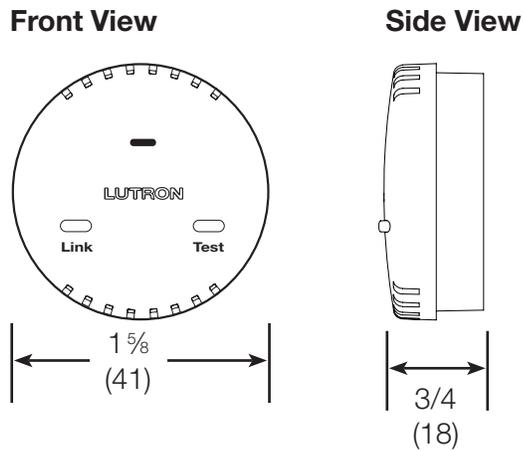
### HVAC Controller



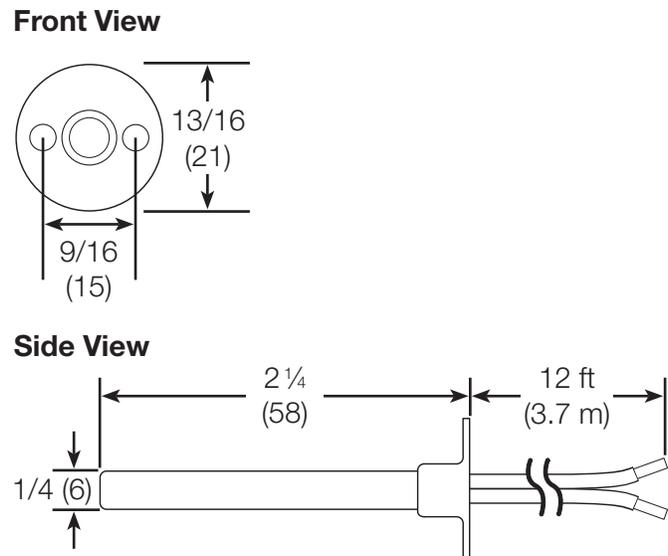
### seeTemp™ Wall Display



### Wireless Temperature Sensor



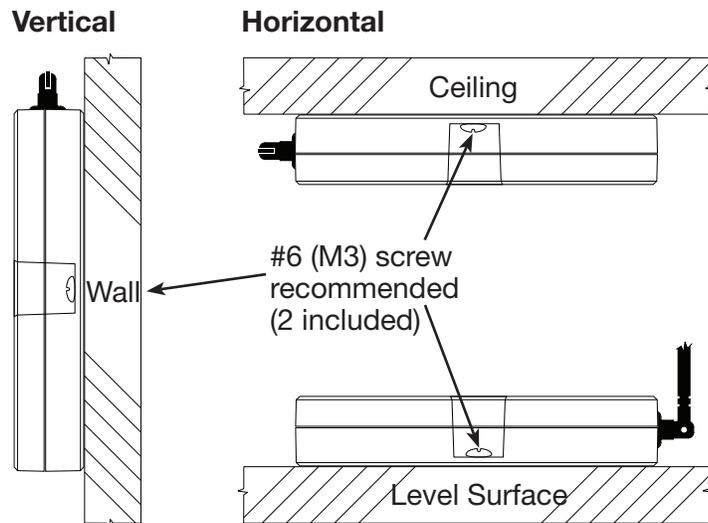
### Wired Temperature Sensor



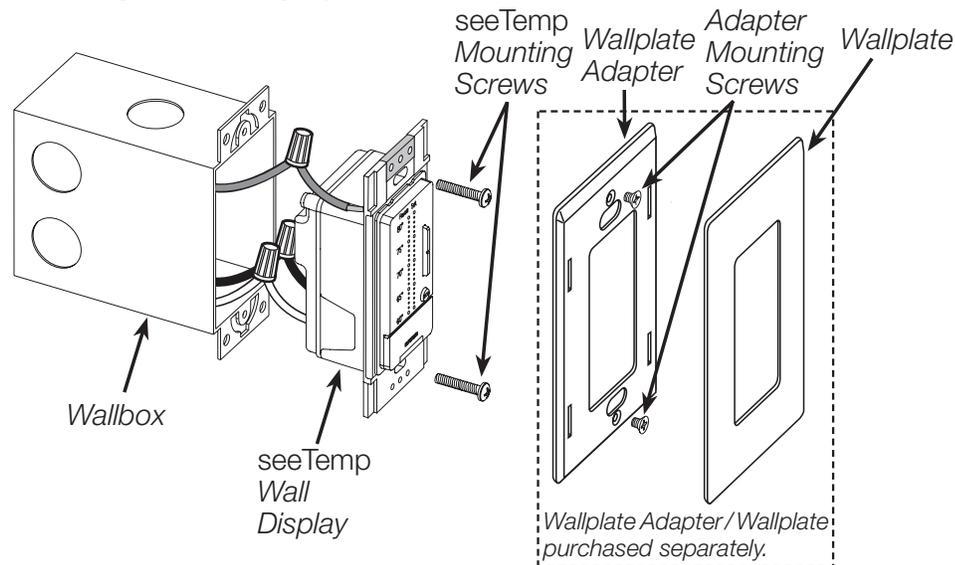
# Lutron Thermostat Controls

## Mounting and Parts Identification

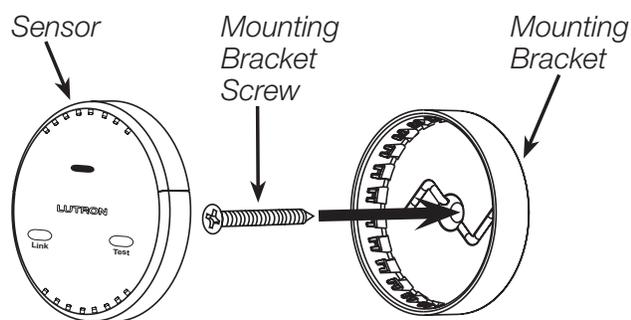
### HVAC Controller



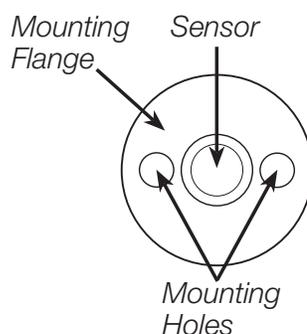
### seeTemp™ Wall Display



### Wireless Temperature Sensor



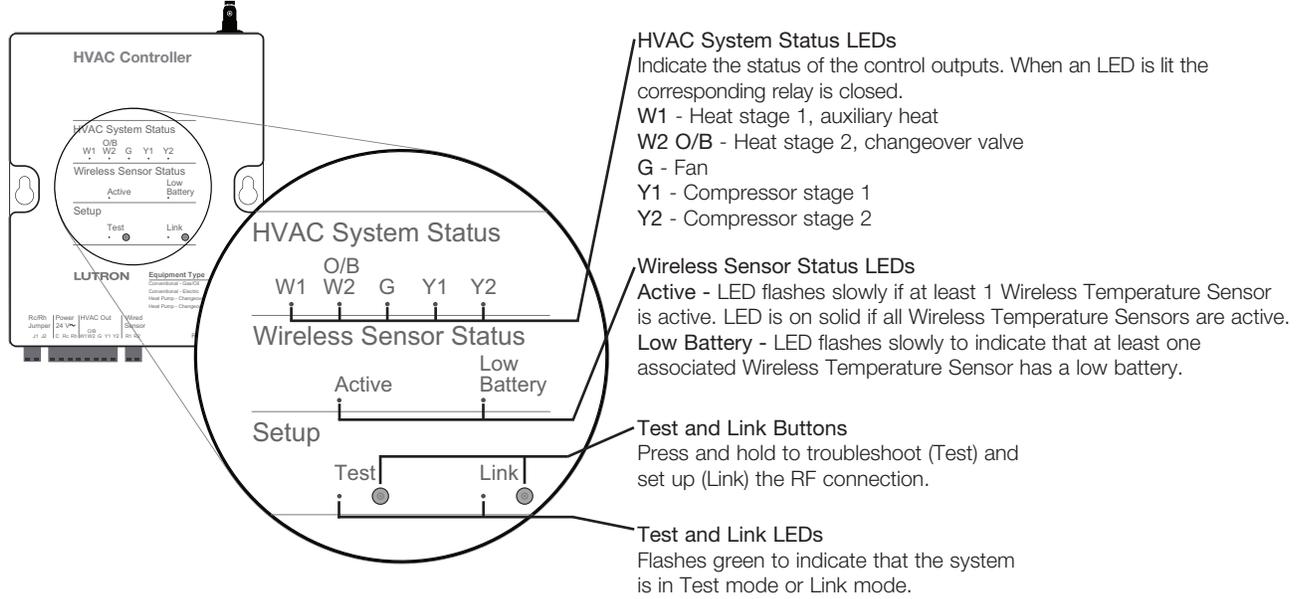
### Wired Temperature Sensor



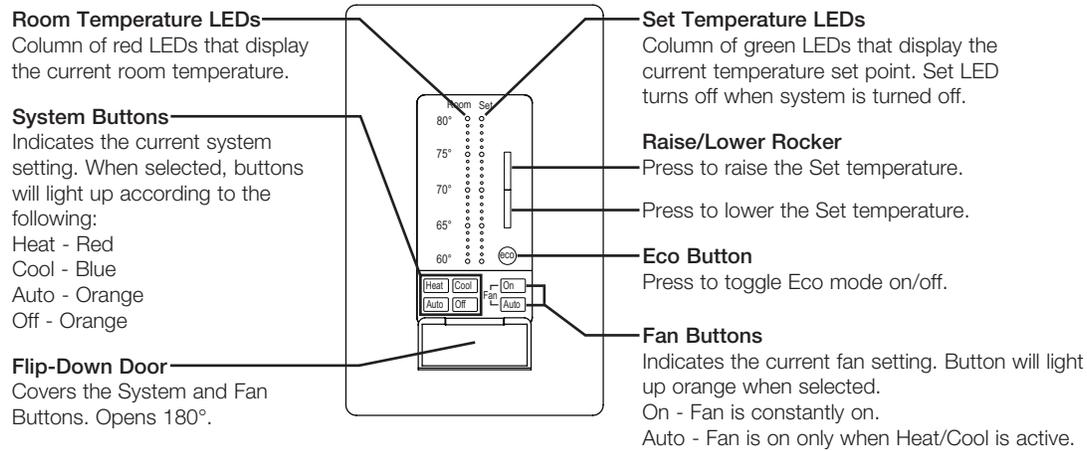
# Lutron Thermostat Controls

## Operation

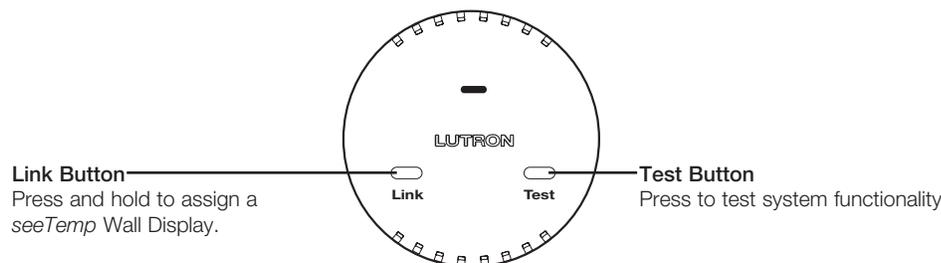
### HVAC Controller



### seeTemp™ Wall Display



### Wireless Temperature Sensor



# Lutron Thermostat Controls

## Wiring Diagrams

### HVAC Controller

**Note:** HVAC Controller must be wired by a qualified HVAC climate control specialist.

#### Relay Contact Ratings

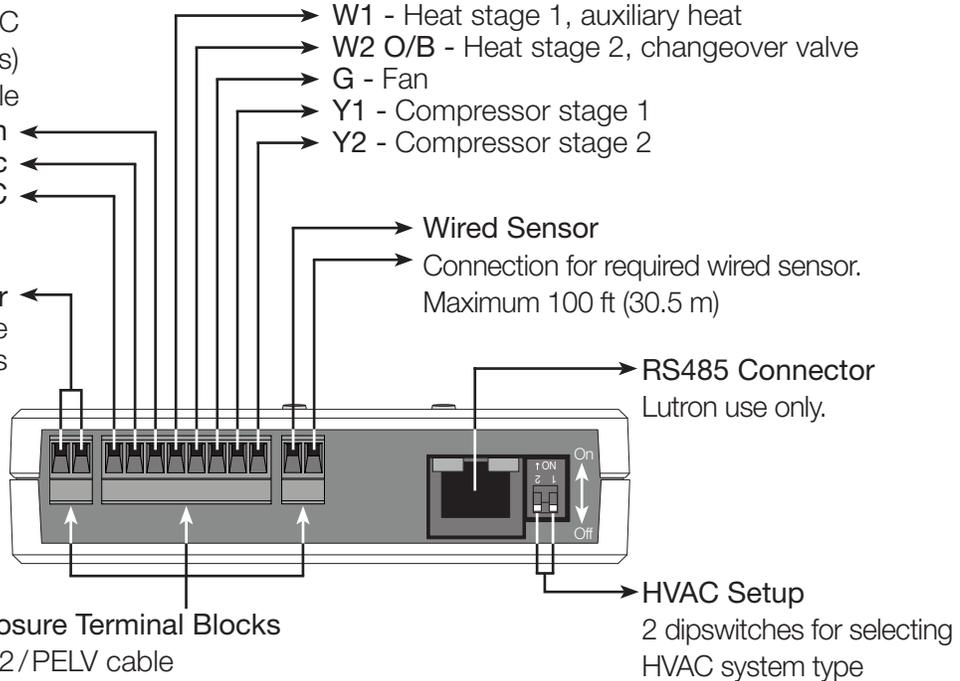
Voltage	Resistive Load	Inductive Load
Up to 24 V~	1 A	0.1 A

#### HVAC Out

Terminal connections for connecting to the HVAC system

Power 24 V~ (from HVAC system transformers)  
 NEC® Class 2/PELV cable  
 Heat Transformer - Rh  
 Cool Transformer - Rc  
 Common - C

Rc/Rh Jumper  
 Required in single transformer systems



Contact Closure Terminal Blocks  
 NEC Class 2/PELV cable  
 Maximum 1000 ft (305 m)  
 Each terminal holds one 22 AWG (0.5 mm<sup>2</sup>) to 18 AWG (0.75 mm<sup>2</sup>) wire.

Equipment Type	2	1
Conventional - Gas/Oil	Off	Off
Conventional - Electric	Off	On
Heat Pump - Changeover Cool	On	Off
Heat Pump - Changeover Heat	On	On

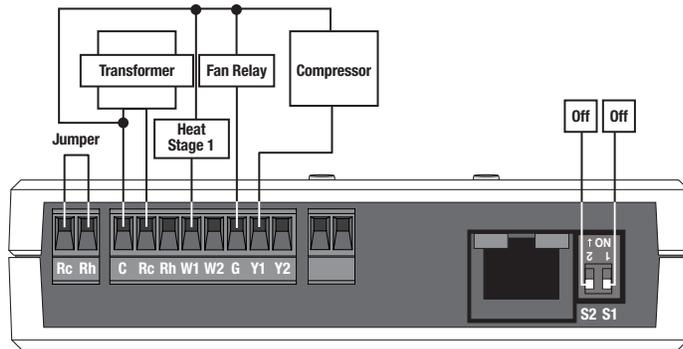
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# Lutron Thermostat Controls

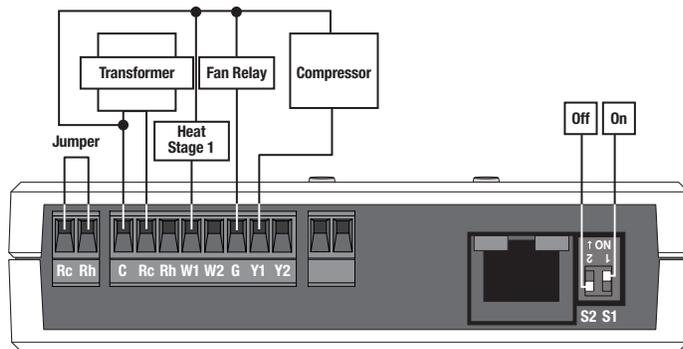
## Wiring Diagrams (continued)

### Conventional Systems

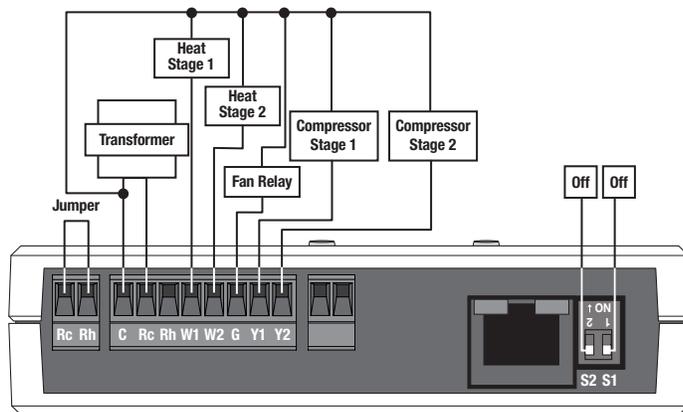
Conventional Gas/Oil Heat System • 1 Stage Heat / 1 Stage Cool



Conventional Electric Heat System • 1 Stage Heat / 1 Stage Cool



Conventional Gas/Oil Heat System • 2 Stage Heat / 2 Stage Cool



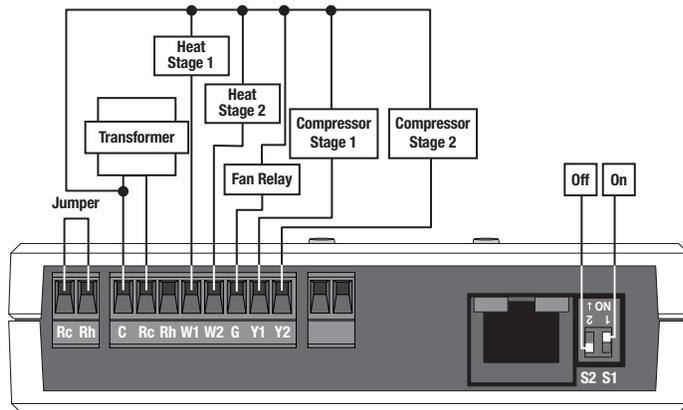
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# Lutron Thermostat Controls

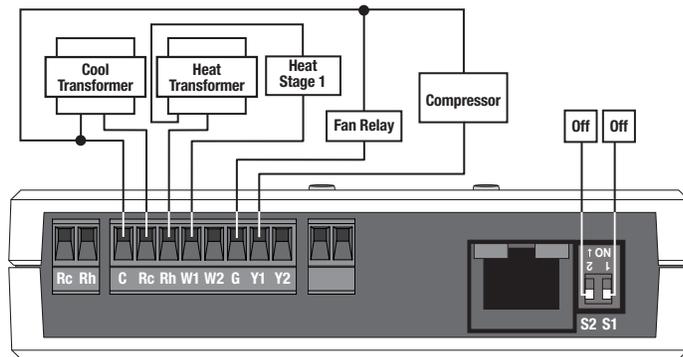
## Wiring Diagrams (continued)

### Conventional Systems (continued)

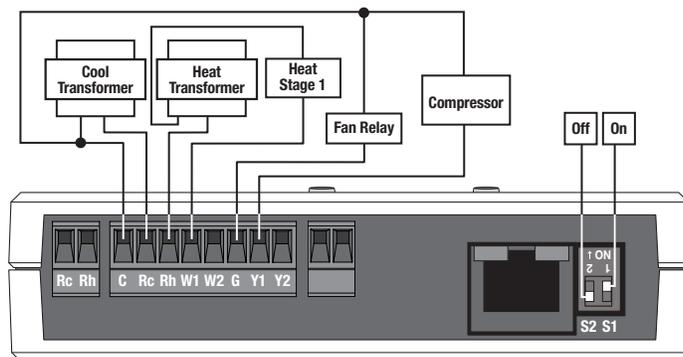
Conventional Electric Heat System • 2 Stage Heat / 2 Stage Cool



Conventional Gas/Oil Heat System • 1 Stage Heat / 1 Stage Cool, 2 Transformers



Conventional Electric Heat System • 1 Stage Heat / 1 Stage Cool, 2 Transformers



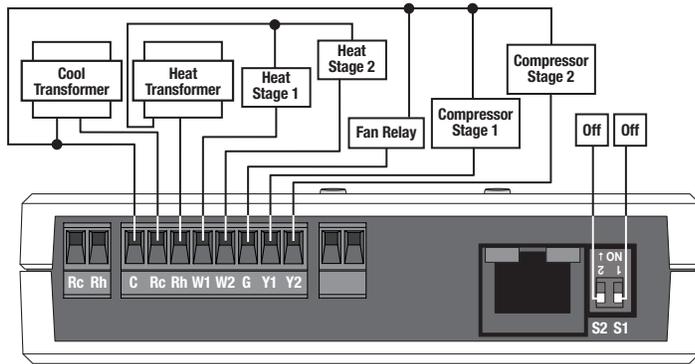
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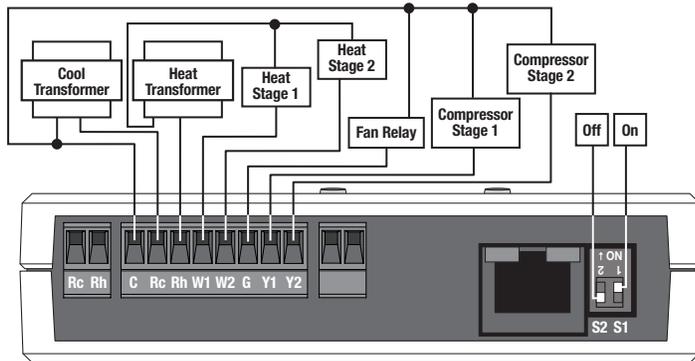
## Wiring Diagrams (continued)

### Conventional Systems (continued)

Conventional Gas/Oil Heat System • 2 Stage Heat / 2 Stage Cool, 2 Transformers



Conventional Electric Heat System • 2 Stage Heat / 2 Stage Cool, 2 Transformers



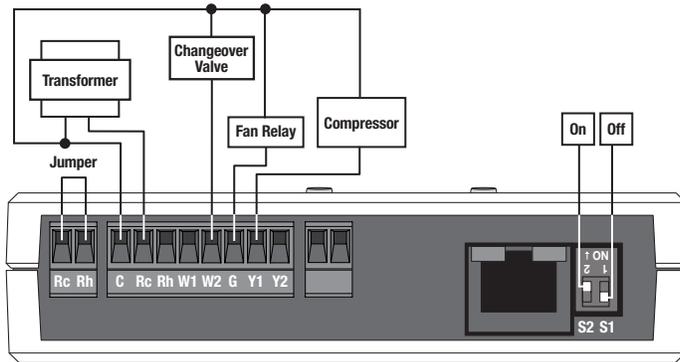
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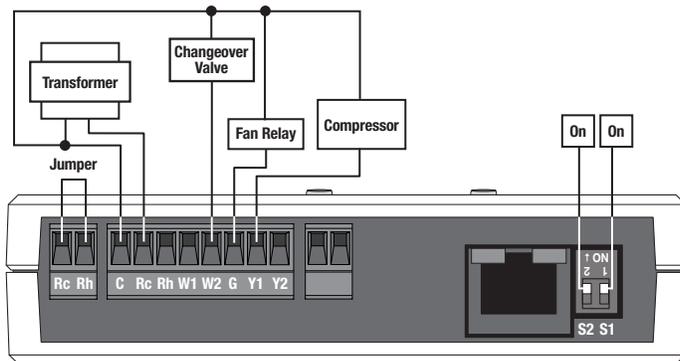
## Wiring Diagrams (continued)

### Heat Pump Systems

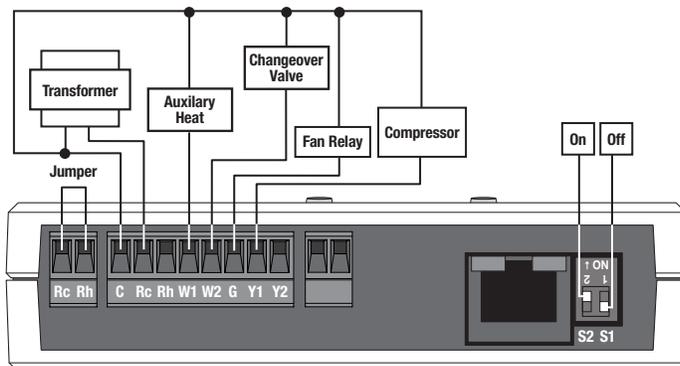
Single Stage Heat Pump (Changeover = Cool)



Single Stage Heat Pump (Changeover = Heat)



Single Stage Heat Pump w/ Auxiliary Heat (Changeover = Cool)



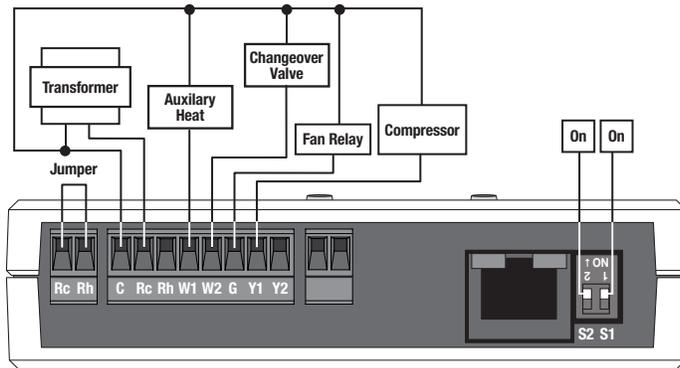
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# Lutron Thermostat Controls

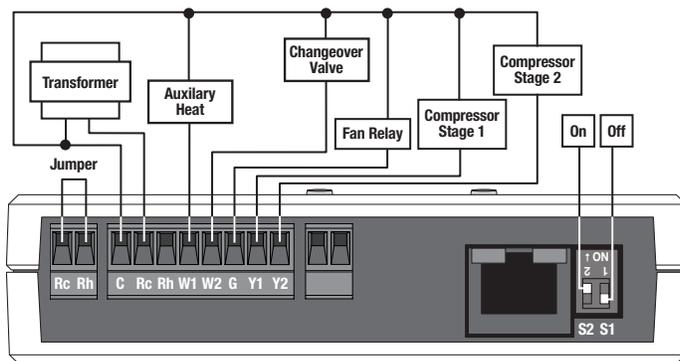
## Wiring Diagrams (continued)

### Heat Pump Systems (continued)

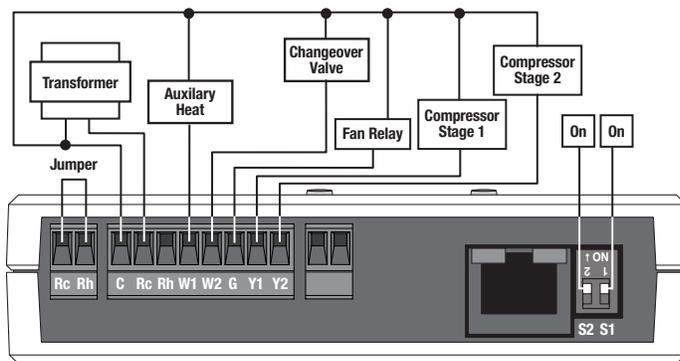
Single Stage Heat Pump w/ Auxiliary Heat (Changeover = Heat)



2 Stage Heat Pump w/ Auxiliary Heat (Changeover = Cool)



2 Stage Heat Pump w/ Auxiliary Heat (Changeover = Heat)



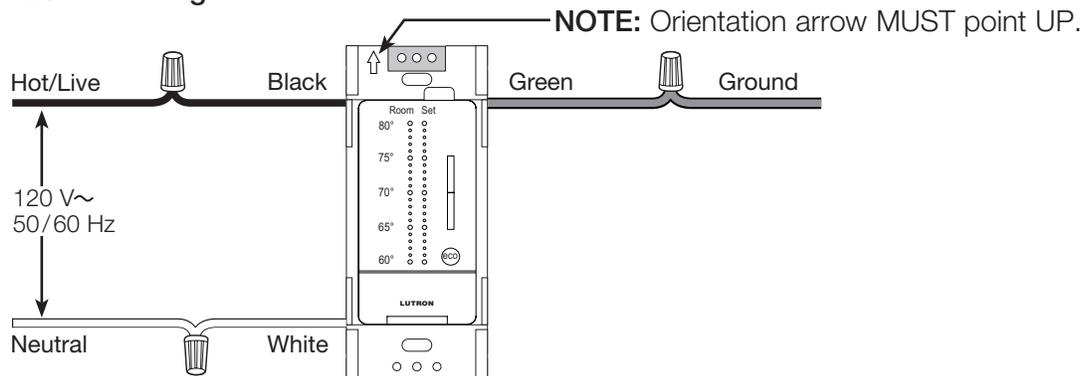
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# Lutron Thermostat Controls

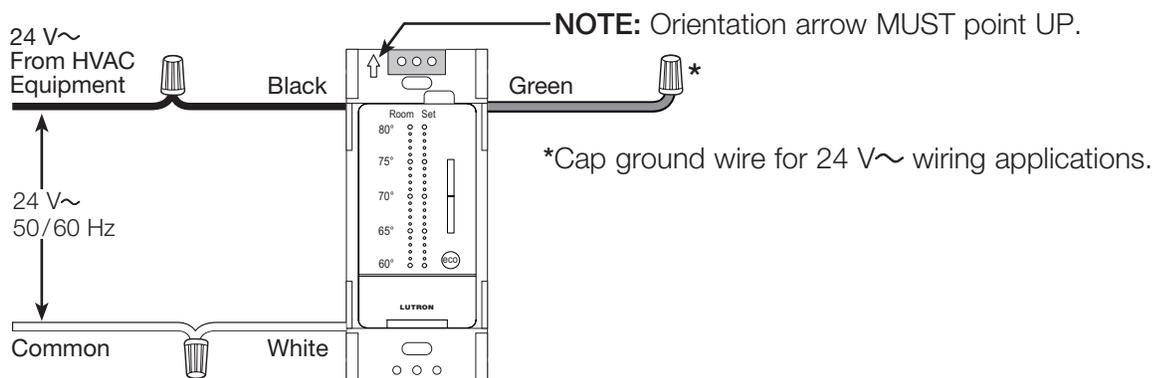
## Wiring Diagrams (continued)

### seeTemp™ Wall Display

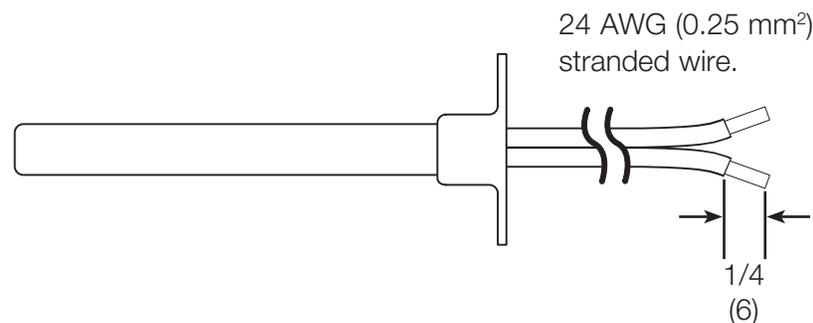
#### 120 V~ Wiring



#### 24 V~ Wiring



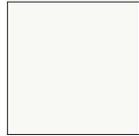
#### Wired Temperature Sensor



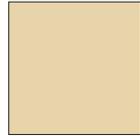
# Lutron Thermostat Controls

## Colors and Finishes

### Gloss Finishes



White  
WH



Ivory  
IV



Almond  
AL



Light  
Almond  
LA



Gray  
GR



Brown  
BR



Black  
BL

### Satin Finishes



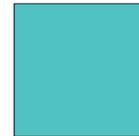
Hot  
HT



Merlot  
MR



Plum  
PL



Turquoise  
TQ



Taupe  
TP



Eggshell  
ES



Biscuit  
BI



Snow  
SW



Palladium  
PD



Midnight  
MN



Sienna  
SI



Terracotta  
TC



Greenbriar  
GB



Bluestone  
BG



Mocha  
Stone  
MS



Goldstone  
GS



Desert Stone  
DS



Stone  
ST



Limestone  
LS

- Due to printing limitations, colors and finishes shown cannot be guaranteed to perfectly match actual product colors.
- Color chip keychains are available for more precise color matching:

Gloss Finishes- DG-CK-1

Satin Finishes - SC-CK-1

### Metal Finish (wallplate only)



Stainless  
Steel SS

When using Stainless Steel wallplates, it is recommended to order the controls in Black (BL) or Midnight (MN).