

Robertshaw®

RS8110

Installation Manual

Thank you for purchasing a Robertshaw® thermostat.
This manual will describe how to install and test the Robertshaw **RS8110** thermostat.

Thermostat System Types

Gas, Oil, or Electric Heat with Air Conditioning
Heat Pumps (without auxiliary or emergency heat)
Heat-Only, including for Floor and Wall-Furnace
Cool-Only
750 Millivolt Heating Systems

Power Options

Battery Power
Hardwire (Common Wire)

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IMPORTANT SAFETY INFORMATION WARNING:

- Always turn off power at the main power source by unscrewing fuse or switching circuit breaker to the off position before installing, removing, cleaning, or servicing thermostat.
- Read all of the information in this manual before installing or programming this thermostat.
- This is a 24V AC low voltage thermostat. Do not install on voltages higher than 30V AC.
- All wiring must conform to local and national building and electrical codes and ordinances.
- Do not short (jumper) across terminals on the gas valve or at the system control to test installation. This will damage the thermostat and void the warranty.

INSTALLATION LOCATION

Install the thermostat 4 to 5 feet above the floor in an area with good air circulation and average temperature.

For new installations, mount thermostat on an inside wall, 4-5 feet above the floor.

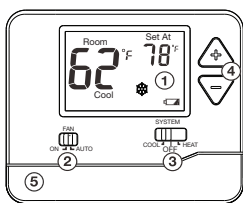
Do not install the thermostat in the following locations:

- Behind a Door
- In a Corner
- Near Air Vents
- In Direct Sunlight
- With an Outside Wall Behind the Thermostat
- Near any Heat or Steam Generating Fixtures
- Near any Concealed Pipes or Chimneys

Installation at these locations will affect thermostat operation.

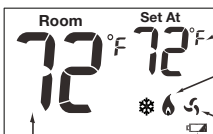
THERMOSTAT QUICK REFERENCE

Getting to know your thermostat



- 1 LCD Display
- 2 Fan Switch
- 3 System Switch
- 4 Temperature Set-Point Buttons
- 5 Easy change battery door

① LCD



Displays the user selected set-point temperature.

System operation indicators: The **COOL**, **HEAT** or **FAN** icon will display when the COOL, HEAT or FAN is on.

NOTE: If these icons are flashing, there is a 5-minute delay for compressor protection.

Low Battery Indicator:
Replace batteries when
Indicator is shown.

Indicates the current
room temperature.

WALLPLATE INSTALLATION



Caution:
Electrical Hazard.

Disconnect power before installing this product. Failure to do so can cause electric shock or equipment damage.

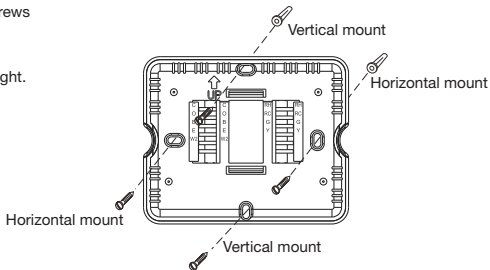


Mercury Notice:

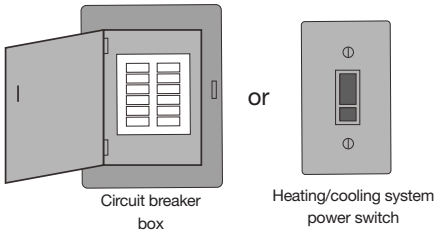
This product is mercury-free. However, if this product is replacing a control which contains mercury, it needs to be disposed of properly. Contact your local waste management authority for instructions regarding recycling and proper disposal of the control.

For a vertical mount, put screws on the top and bottom.

For a horizontal mount, put screws on the left and the right.



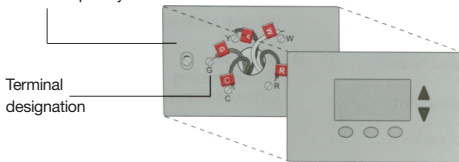
1 Turn Off Power to Heating/Cooling System



2 Remove Old Thermostat

Remove old thermostat but leave wallplate with wires attached.

Do not remove wallplate yet



WIRING

3 Label Wires with Tags

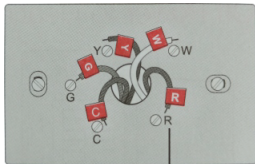
Label the wires using the supplied wire labels as you disconnect them.

Wiring Labels

Apply these wiring labels to each wire with the appropriate terminal designation as you remove it from the existing thermostat.

B	B	Y2	Y2	C	C	E	E	F	F
G	G	H	H	L	L	O	O	P	P
R	R	RC	RC	RH	RH	T	T	U	U
VNR	VNR	W	W	W1	W1	W2	W2	W3	W3
X	X	X1	X1	X2	X2	Y	Y	Y1	Y1
AUX	AUX								

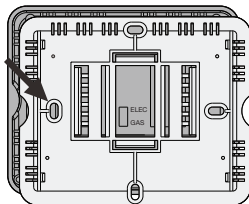
Wire Labels



Terminal designation

4 Separate Wallplate from New Thermostat

Remove wallplate from the new thermostat and mount onto wall.



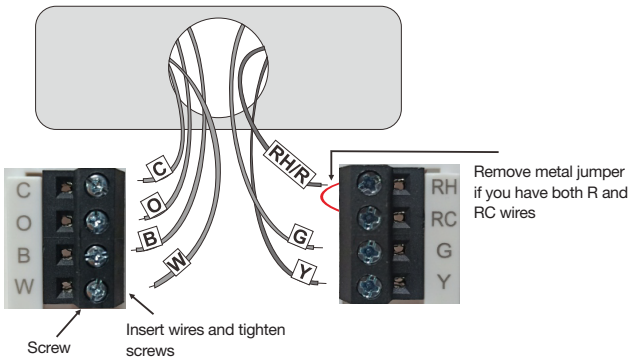
Wallplate

WIRING

6 Connect Wires

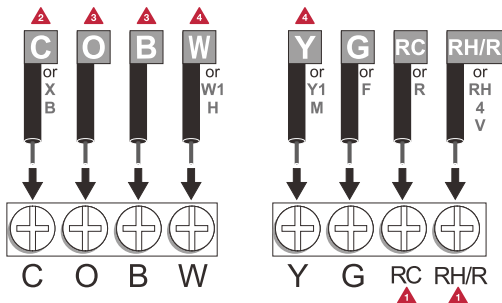
Simply match wire labels.

If labels do not match letters on the thermostat, check “Alternate Wiring (Conventional Systems)” on page 9 and connect to terminal as shown (see notes, below).



Alternate Wiring (Conventional Systems)

If labels do not match letters on the thermostat, check the chart below and connect to terminal as shown here (See notes, below).



- ▲ Remove metal jumper if wires will be connected to both **RH/R** and **RC** terminals.
- ▲ If a 24 volt common wire is present (typically labeled **C** or **X**) connect it to the **C** terminal. The **C** terminal is not used if a 24 volt common wire is not present.
- ▲ The **O** and **B** terminals are for a reversing valve (single stage **heat pump** application ONLY). These terminals are not used on a system that is not a **heat pump**.
- ▲ Place a jumper wire between the **Y** and **W** terminals if you have a single stage heat pump system ONLY.

WIRING

Terminal Designations

W	Heat relay
G	Fan relay
Y	Compressor relay
O	Heat pump reversing valve energized in cooling
RC	24 volt cooling transformer
RH/R	24 volt heating transformer OR 24 volt power terminal if a common wire is present
B	Heat pump reversing valve energized in heating
C	24 volt common terminal

Notes:

RH & RC terminals

In a single-transformer system, leave the metal jumper in place between the RH and RC. Remove the metal jumper in two-transformer systems.

Heat Pump Systems (with No Auxiliary or Emergency Heat) If wiring to a heat pump, use a small piece of wire (not supplied) to connect terminals W (Heat relay) & Y (Compressor relay).

Wire specifications

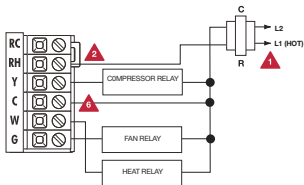
Use 18- to 22-gauge thermostat wire. Shielded wire is not required.

Common Wire

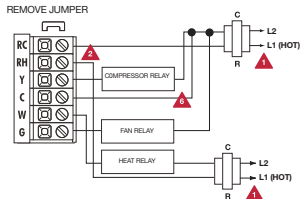
The C (common wire) is optional when the thermostat is powered by batteries.

- 1 Power supply.
- 2 Factory-Installed jumper. Remove only when installing on 2-transformer systems.
- 3 Use either O or B terminals for reversing valve. Heat pump application ONLY.
- 4 Use a small piece of wire (not supplied) to connect W and Y terminals.
- 5 Set fan operation switch to either gas or electric based on your system.
- 6 Optional 24 VAC common connection not to be used when powering thermostat with batteries.

Typical 1H/1C system: 1 transformer

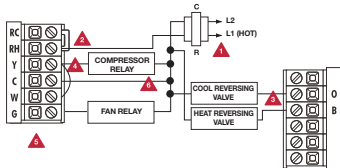


Typical 1H/1C system: 2 transformer

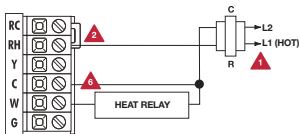


WIRING

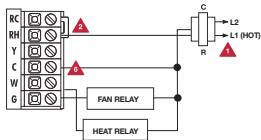
Typical 1H/1C heat pump system



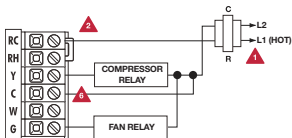
Typical heat-only system



Typical heat-only system with fan



Typical cool-only system



Tips:

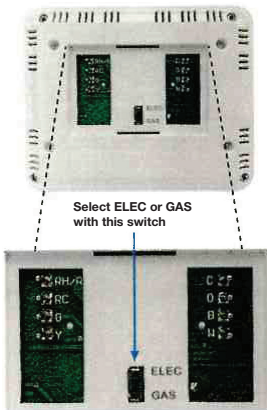
24 V common wire may not be present in all systems.

INSTALLER SETUP MENU

Gas or Electric Setup

Select GAS or ELEC depending on the type of furnace.

If ELEC is selected, the thermostat will operate the fan when the fan relay is connected to the G terminal.



INSTALLER SETUP MENU

Adjusting the Differential (Also called Swing or Cycle rate)

The differential is adjustable, a smaller differential will cause more frequent cycles and a larger differential will cause fewer cycles. There are separate differentials for heat and for cool. Follow the steps below to adjust the differential for heat or cool:

1. Select **HEAT** or **COOL** with the system switch.
2. Hold down the Δ and ∇ keys together for 3 seconds.
3. Use the Δ or ∇ key to adjust the differential. The differential is adjustable from $\pm 0.2^{\circ}\text{F}$ to $\pm 2^{\circ}\text{F}$. For example: A differential setting of 0.5°F will turn the cooling on at approximately 0.5°F above the setpoint and turn the cooling off at approximately 0.5°F below the setpoint. The factory default for cooling is 0.5°F and 0.4°F for heating.

Adjusting Room Temperature Calibration, Fahrenheit/Celcius Display and Compressor Delay

4. Wait approximately 10 seconds for the thermostat to return to normal operation.

This feature allows the Installer to change the calibration of the room temperature display. For example: If the thermostat reads 70° and you would like it to read 72° then select +2. You can adjust the room temperature display to read -4°F to $+4^{\circ}\text{F}$ above or below the factory calibrated reading. Follow the steps below to adjust the temperature reading:

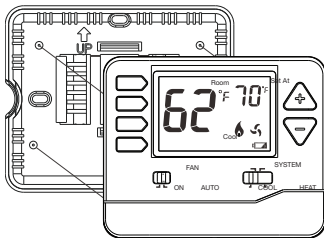
1. Select **OFF** with the system switch.
2. Hold down the Δ and ∇ keys together for 3 seconds.
3. Use the Δ key to adjust the room temperature display.
4. Then press ∇ to access the F (Fahrenheit) or C (Celsius) setting. use Δ to select.

5. Press ∇ again to access the compressor DELAY selection. The compressor delay will not allow the compressor to be turned on for 5 minutes after the last time the compressor was shutdown. Use the Δ to select **ON** or **OFF**. (**ON** will prevent the compressor from starting for at least 3 minutes). Wait approximately 15 seconds or slide the system switch to return to normal operation.

MOUNTING & BATTERY INSTALLATION

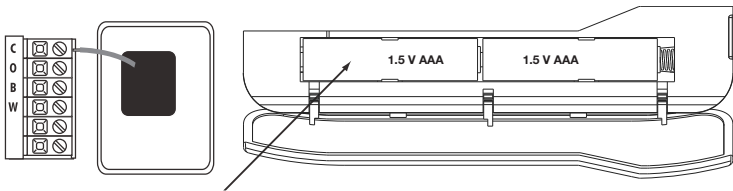
Mount Thermostat

Align the 4 tabs on the subbase with corresponding slots on the back of the thermostat, then push gently until the thermostat snaps in place.



Battery Installation

Battery installation is optional if used with AC power (the **C** terminal is connected). During power outages, the batteries will save settings and power the display.



Insert 2 AAA Alkaline batteries (included).

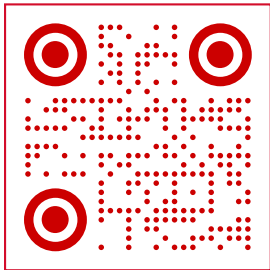
SPECIFICATIONS

Temperature Display Range	41°F to 95°F (5°C to 35°C)
Temperature Control Range	44°F to 90°F (7°C to 32°C)
Load Rating	1 amp per terminal, 1.5 amp maximum all terminals combined
Display Accuracy.....	± 1°F
Differential.....	Heating is adjustable from 0.2°F to 2.0°F Cooling is adjustable from 0.2°F to 2.0°F
Power Source	18 to 30 VAC, NEC Class II, 50/60 Hz for hardwire (common wire) Battery power from 2 AAA Alkaline batteries
Operating Ambient Temperature	32°F to +105°F (0°C to +41°C)
Operating Humidity	90% non-condensing maximum
Dimensions.....	4.72"W x 3.80"H x 0.98"D



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