

Robertshaw®

# RS9210

Installation Manual



Thank you for purchasing a Robertshaw® thermostat. This manual will describe how to install and test the Robertshaw **RS9210** thermostat.

## Thermostat System Types

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

## Power Options

Battery Power

Hardwire (Common Wire)

## Table of Contents

	Page
Installation Location	2
Thermostat Quick Reference	3
Wallplate Installation	4
Wiring	5-12
Installer Setup Menu	13-17
Mounting & Battery Installation	18
Programming	19-22
Specifications	23

## 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

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

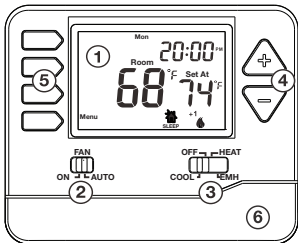
For new installations, mount thermostat on an inside wall, 4-5 feet above the floor. Do not install the thermostat in the following locations:

- 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

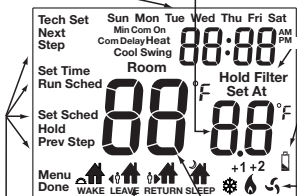


- 1 LCD Screen
- 2 Fan Switch
- 3 System Switch
- 4 Temperature Set-Point Buttons
- 5 User Buttons
- 6 Easy Change Battery Door

### 1 LCD

Days of the week and time.

Displays the user selected set-point temperature.



**Hold:** Is displayed when thermostat program is overridden.

**Low Battery Indicator:** Replace batteries when indicator is shown.

**System Operation Indicators:**

The or 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.

**Button Options**

**Programmable Time Periods:** This thermostat has 4 programmable time periods per day.

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.

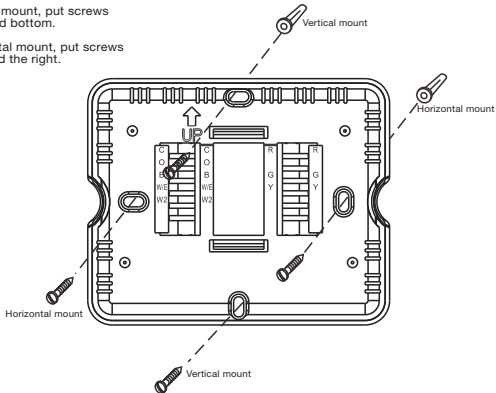


## Mercury Notice:

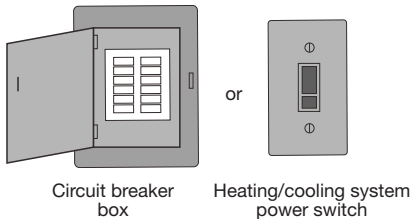
This product is mercury-free. However, if this product is replacing a control which contains mercury, it needs to be disposed of properly. Contact your local waste management authority for instructions regarding recycling and proper disposal of the control.

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

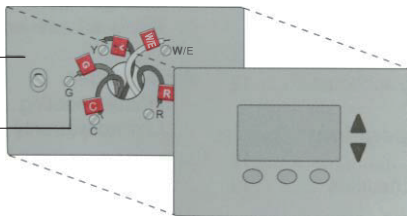


## 2 Remove Old Thermostat

Remove old thermostat but leave wallplate with wires attached.

Do not remove wallplate

Terminal designation



# WIRING

## 3 Label Wires with Tags

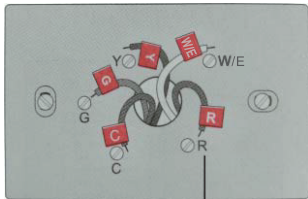
Label the wires using the supplied wire labels as you disconnect them.

### 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	W/E	W/E	F	F
G	G	H	H	L	L	O	O	P	P
R	R	RC	RC	RH	RH	T	T	U	U
V/VR	V/VR	W	W	W1	W1	W2	W2	W3	W3
X	X	X1	X1	X2	X2	Y	Y	Y1	Y1
AUX	AUX								

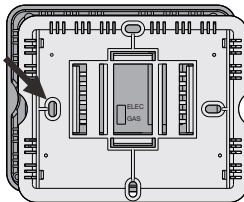
Wire Labels



Terminal designation

## 4 Separate Wallplate from New Thermostat

Remove wallplate from the new thermostat and mount onto wall.

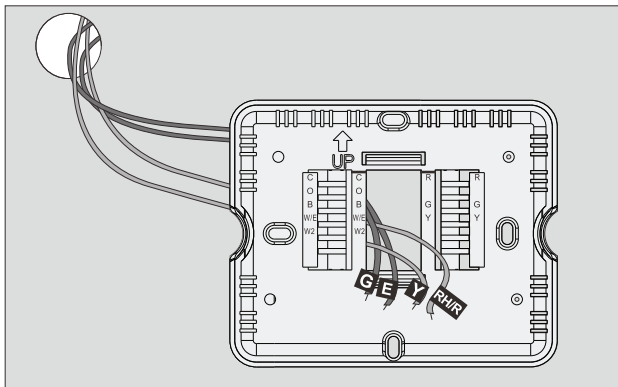


Wallplate



## 5 Mount Wallplate for New Thermostat

Mount the new wallplate using the included screws and anchors.



Drill 3/16-in. holes for drywall

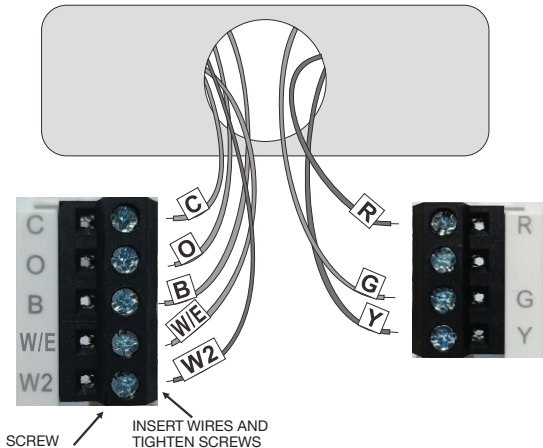
Drill 3/16-in. holes for plaster

# WIRING

## 6 Connect Wires

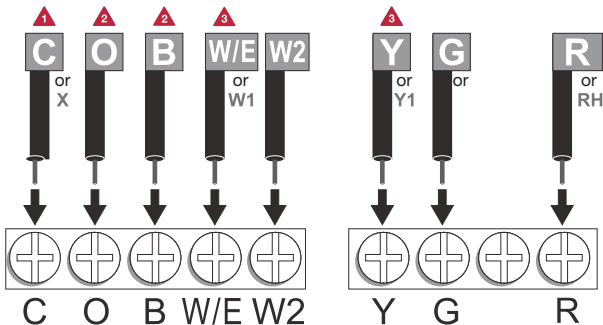
Simply match wire labels.

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).



- 1** If there is a **C** or **X** wire available then you can connect with **C** terminal. If there is no **C** or **X** wire then no need to connect with **C** terminal.
- 2** If you have a **heat pump** without auxiliary/backup heat connect either the **O** or **B**, not both. If you do not have a **heat pump**, do not connect **O** or **B**. Wrap bare end of wire with electrical tape.
- 3** Place a jumper (piece of wire) between **Y** and **W** if you are using a heat pump without auxiliary/backup heat.

# WIRING

## Terminal Designations

	Heat Pump System 1 HEAT 1 COOL / 2 HEAT 1 COOL	Conventional System 1 HEAT 1 COOL / 2 HEAT 1 COOL
R	Transformer Power	Transformer Power
C	Transformer Common	Transformer Common
B	Reversing Valve Energized in HEAT	Energized in HEAT
O	Reversing Valve Energized in COOL	Energized in COOL
G	Fan Relay	Fan Relay
W/E	First Stage of Emergency HEAT	First Stage of HEAT
W2	Second Stage of HEAT/ EMERGENCY HEAT	Second Stage of HEAT
Y	First Stage of HEAT and COOL	First Stage of COOL

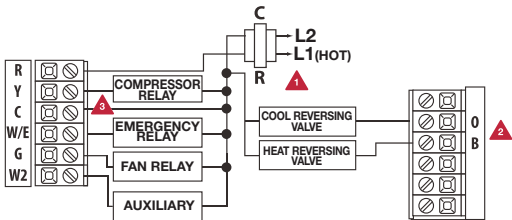
### Installation Tip:

Do not overtighten terminal block screws, as this can damage the terminal block. A damaged terminal block can keep the thermostat from fitting on the subbase correctly or cause system operation issues. Max Torque = 6in/lbs.

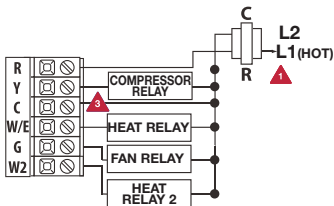


## WIRING

### Typical 2H/1C Heat Pump System with separate emergency heat



### Conventional System 1H/1C, 2H/1C (Heat pump set to OFF in tech settings)





**Note:** This thermostat is only compatible with ONE transformer systems.

## Installer Setup Menu




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This thermostat has an installer setup menu for easy configuration. Follow the procedure below to set up the thermostat to match the specific heating/cooling system.

1. Press **MENU**.
2. Press and hold **TECH SET** for 3 seconds.
3. Configure the installer options as desired using the table on page 14.




Use  or  to change settings and **NEW STEP** or **PREV STEP** to move from one option to another. **Note:** Only press **DONE** when you want to exit the Installer Setup options.

# INSTALLER SETUP MENU



Settings	Display	Adjustment Options	Default
<b>Filter Change Reminder</b>		The filter change reminder can be adjusted from <b>OFF</b> to 2000 hours in 50 hour increments. Press the second button from the top left side of the thermostat to display the current filter elapsed runtime.	<b>OFF</b>
<b>Room Temperature Calibration</b>		The room temperature display can be adjusted to read 3° above or below the factory calibrated temperature.	<b>0</b>
<b>Minimum Compressor On-Time</b>		The minimum compressor run time can be adjusted from <b>OFF</b> to 3, 4, or 5 minutes. If 3, 4, or 5 is selected, the compressor will run for at least the selected time before turning off (although the fan may continue to run for a short time).	<b>OFF</b>



# INSTALLER SETUP MENU

Settings	Display	Adjustment Options	Default
<b>Compressor Short Cycle Delay</b>	<p>Next step</p>  <p>Prev step</p>	The compressor short cycle delay setting can be removed by selecting <b>OFF</b> .	<b>ON</b>
<b>Cooling Differential</b>	<p>Next step</p>  <p>Prev step</p>	The cooling differential setting is adjustable from 0.2°F to 2°F.	<b>0.5</b>
<b>Heating Differential</b>	<p>Next step</p>  <p>Prev step</p>	The heating differential setting is adjustable from 0.2°F to 2°F.	<b>0.4</b>

## INSTALLER SETUP MENU

Settings		Display	Adjustment Options	Default
F or C	Select F for Fahrenheit temperature display or select C for Celsius display.	Next step 82 °F Prev step	F for Fahrenheit C for Celsius	F
12 or 24 Hour Clock	Select a 12 or 24 hour clock setting.	Next step 24H Prev step	Use  and  to select 12 or 24 hour clock.	12
Fan Operation	Select <b>GAS</b> or <b>ELEC</b> depending on the type of furnace.	Next step GAS Prev step	GAS - GS or ELEC - EL	GAS

## Settings

## Display

## Adjustment Options Default

### Program Options

This thermostat can be configured to have 7 Day, 5+1+1 programming or be non-programmable.



If 7 Day is selected, in Set Time all seven days will need to be programmed individually.

If 5+1+1 programming is selected, in Set Time Monday–Friday will be programmed together and Saturday and Sunday will need to be programmed individually.

If 0d is selected, the thermostat becomes non-programmable.

Next step

Pr 00  
5d  
Prev step

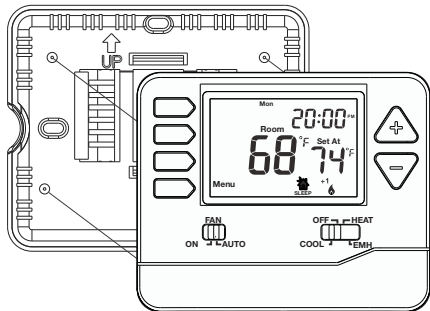
Use  and  to select **7d** for 7 Day, **5d** for 5+1+1, or **0d** for non-programmable.

5d

# MOUNTING & BATTERY INSTALLATION

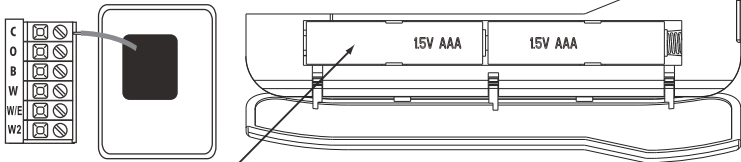
## Mounting Thermostat

Align the 4 tabs on the faceplate with the corresponding slots on the back of the thermostat, then push gently until the thermostat snaps into 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.

## Set Time of Day and Day of Week

























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1. Press **MENU**.
2. Press **SET TIME**.
3. Day of the week will be flashing. Use  or  to select the current day of the week.
4. Press **NEXT STEP**.
5. The current hour will be flashing. Use  or  to select the current hour. Note the correct a.m. or p.m. indicator is selected.
6. Press **NEXT STEP**.
7. The minutes will be flashing. Use  or  to select the current minutes.
8. Press **DONE** when completed.

























# PROGRAMMING

## Default Program

This thermostat is pre-programmed for energy saving operation. The default program is below:

Default Program				
Day of the Week	Events	Time	Set-Point Temperature (Heat)	Set-Point Temperature (Cool)
Weekday	Wake  	6 a.m.	70° F (21° C)	75° F (24° C)
	Leave  	8 a.m.	62° F (17° C)	83° F (29° C)
	Return  	6 p.m.	70° F (21° C)	75° F (24° C)
	Sleep  	10 p.m.	62° F (17° C)	78° F (26° C)
Saturday	Wake  	8 a.m.	70° F (21° C)	75° F (24° C)
	Leave  	10 a.m.	62° F (17° C)	83° F (29° C)
	Return  	6 p.m.	70° F (21° C)	75° F (24° C)
	Sleep  	11 p.m.	62° F (17° C)	78° F (26° C)
Sunday	Wake  	8 a.m.	70° F (21° C)	75° F (24° C)
	Leave  	10 a.m.	62° F (17° C)	83° F (29° C)
	Return  	6 p.m.	70° F (21° C)	75° F (24° C)
	Sleep  	11 p.m.	62° F (17° C)	78° F (26° C)

You can use the table below to plan your customized program schedule.

Custom Program				
Day of the Week	Events	Time	Set-Point Temperature (Heat)	Set-Point Temperature (Cool)
Weekday	Wake  			
	Leave  			
	Return  			
	Sleep  			
Saturday	Wake  			
	Leave  			
	Return  			
	Sleep  			
Sunday	Wake  			
	Leave  			
	Return  			
	Sleep  			





# PROGRAMMING

## Custom Programming

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This thermostat can be configured to have 7 Day or 5+1+1 programming. If 7 Day is selected, all seven days will need to be programmed individually. If 5+1+1 programming is selected, Monday–Friday will be programmed together and Saturday and Sunday will need to be programmed individually. There are four time periods for each day (**WAKE**, **LEAVE**, **RETURN**, **SLEEP**).

Follow the steps below to customize your program schedule:

1. Select **HEAT** or **COOL**. Note: Heat and cool need to be programmed separately.
2. Press **MENU** (If menu does not appear first, press **RUN SCHED**).
3. Press **SET SCHED**. Note: Monday–Friday (or Monday if in 7 Day mode) will be displayed and the **WAKE** icon is shown.
4. Time will be flashing. Use  or  to make your time selection for the **WAKE** time period for Monday–Friday (or Monday if in 7 Day mode).
5. Press **NEXT STEP**.
6. The set-point temperature will be flashing. Use  or  to make your set-point selection for the **WAKE** time period for Monday–Friday (or Monday if in 7 Day mode).
7. Press **NEXT STEP**.
8. Repeat steps 4 through 7 for the **LEAVE** time period, for the **RETURN** time period, and for the **SLEEP** time period for Monday–Friday (or Monday if in 7 Day mode).
9. Repeat steps 4 through 8 for the Saturday **WAKE**, **LEAVE**, **RETURN**, and **SLEEP** time periods, and then again for the Sunday **WAKE**, **LEAVE**, **RETURN**, and **SLEEP** time periods for the 5+1+1 program schedule, and for each day for the 7-day program schedule.



## Specifications

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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 3.86"H x 0.98"D

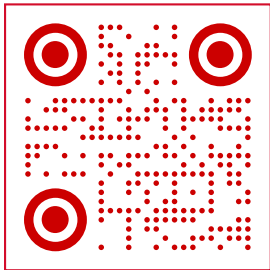






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