

# Robertshaw® RS9110T

## Thermostat System Types

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

## Power Type

Battery Power  
Hardwire (Common Wire)

## Table of Contents

	Page
Installation Location	2
Mounting & Battery Installation	3
Thermostat Quick Reference	4
Wiring	5
Wiring Diagrams	6-8
Installer Setup Menu	9-12
Programming	13-15
Thermostat Quick Reference	16

## Specifications

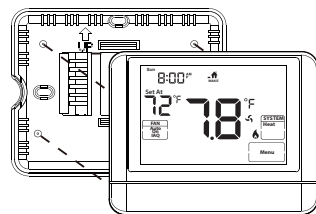
Temperature Display Range	32°F to 99°F (0°C to 40°C)
Temperature Control Range	41°F to 90°F (5°C to 32°C)
Load Rating	1 amp per terminal, 1.5 amp maximum all terminals combined
Differential	Heating is adjustable from 0.2° to 2.0° Cooling is adjustable from 0.2° to 2.0°
Power Source	18 to 30 VAC, NEC Class II, 50/60 Hz for hardwire 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	4.7"W x 4.4"H x 1"D

1

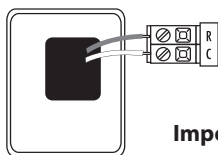
## Mounting & Battery Installation

### 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

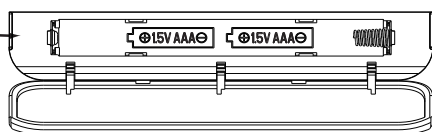


Battery installation is optional if used with AC power (the C terminal is connected). During power outages, the batteries will save settings and power the display.

#### Important:

High quality alkaline batteries are recommended. Rechargeable batteries or low quality batteries are not recommended.

Insert 2 AAA Alkaline batteries (included). High quality alkaline batteries are recommended.



3

### 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.

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

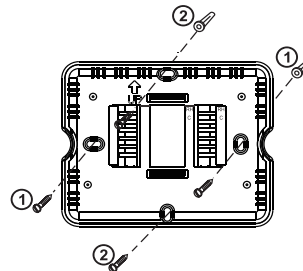
For new installations, mount thermostat on an inside wall, 4-5 feet above the floor. Do not install the thermostat in the following locations:

- 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.

### Wallplate Installation

- ① Horizontal Mount
- ② Vertical Mount



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

### Caution: Electrical Hazard

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

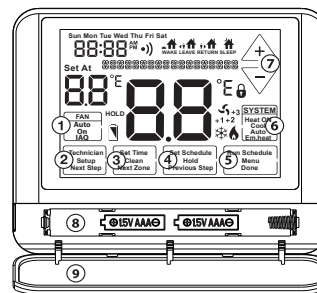
### Mercury Notice

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.

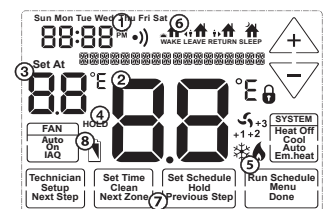
2

## Thermostat Quick Reference

### Getting to know your thermostat



- 1 Fan Buttons
- 2 Next Step Buttons
- 3 Set Time Buttons
- 4 Program Buttons
- 5 Menu Buttons
- 6 System Buttons
- 7 Set-Point Buttons
- 8 Battery Cover
- 9 Button/Battery Access Door



- 1 Days of the week and time
- 2 Indicates the current room temperature
- 3 Displays the user selectable set-point temperature
- 4 Hold is displayed when thermostat program is overridden.
- 5 **System Operation Indicators:** The compressor delay is active if these are flashing.
- 6 **Programmable Time Periods:** Residential uses 4 time periods - **WAKE, RETURN, LEAVE and SLEEP.**
- 7 **Program Menu Options:** Shows different options during programming.
- 8 **Low Battery Indicator:** Replace batteries when this indicator is shown.

4

**Terminal Designations**

- C** 24 VAC Common Wire
- O** Heat pump reversing valve energized in cooling
- B** Heat pump reversing valve energized in heating
- W** Heat relay
- RH** 24 VAC power for heating
- RC** 24 VAC power for cooling
- G** Fan relay
- Y** Compressor relay

**Wiring 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).

**Common wire**

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

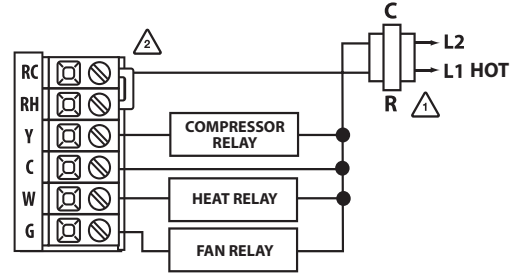
**Wire Specifications**

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

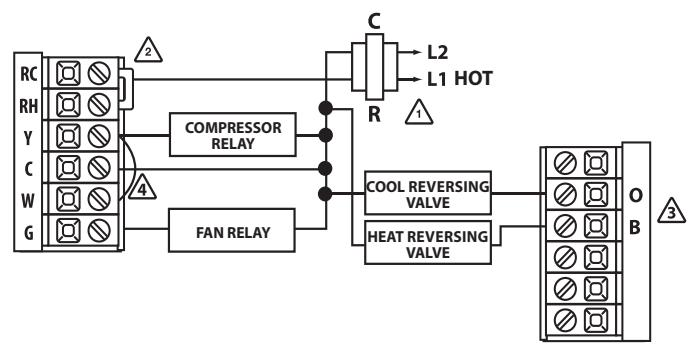
**Installation Tip:** Do not overtighten terminal block screws, as this can damage the terminal block. A damaged terminal block can keep the thermostat from fitting on the subbase correctly or cause system operation issues. **Max Torque = 6in/lbs.**

- Power supply
- Factory-installed jumper. Remove only when installing on 2-transformer systems.
- Use either O or B terminals for reversing valve.
- Use a small piece of wire (not supplied) to connect W and Y terminals. ONLY for a heat pump system without AUX or EMERGENCY heat
- Set fan operation switch to electric for heat pump systems.

**Typical 1H/1C System: 1 Transformer**



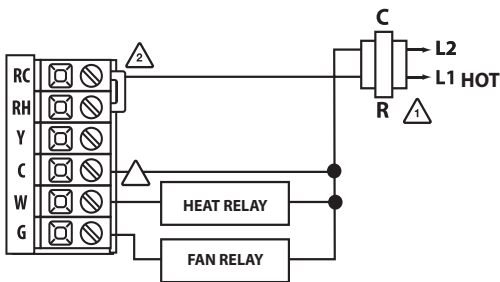
**Typical 1 H/1 C Heat Pump System**



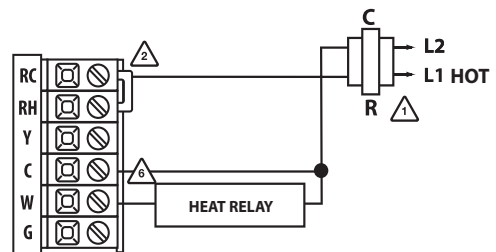
Wiring Diagrams

Wiring Diagrams

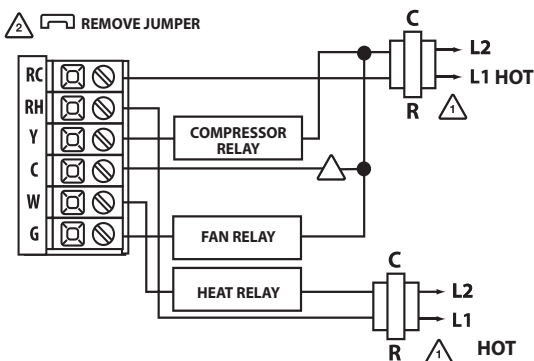
**Typical Heat-Only System With Fan**



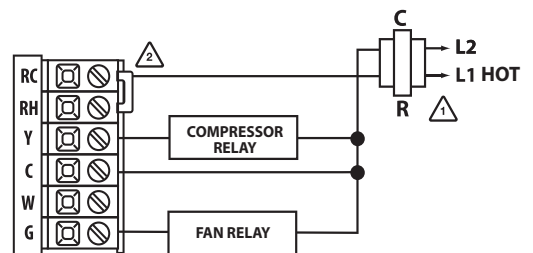
**Typical Heat-Only System**



**Typical 1H/1C System: 2 Transformers**



**Typical Cool-Only System**



## Installer Setup Menu

1. Press **MENU**.
2. Press and hold **INSTALLER SETUP** for 3 seconds.
3. Configure the installer options as desired using the table below.
4. Use  $\Delta$  or  $\nabla$  to change settings and **NEW STEP** or **PREV STEP** to move from one step to another. Note: Only press **DONE** when you want to exit the Installer Setup options.

Settings	Display	Adjustment Options	Default
Filter Change Reminder	FILTER OFF SE	The filter change reminder can be adjusted from <b>OFF</b> to 2000 hours in 50 hour increments.	OFF
Room Temperature Calibration	CALIBRATE 0°F	The room temperature display can be adjusted to read 3° above or below the factory calibrated temperature.	0
Minimum Compressor On-Time	MIN COMP 0F	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).	OFF
Compressor Short Cycle Delay	COMP PROTECTS 0N	The compressor short cycle delay setting will not allow the compressor to be turned on for 5 minutes after it was last turned off in order to protect the compressor.	ON
Cooling Differential	COOL SWING 0.5°F	The cooling differential is factory preset at 0.5°. This means that whenever the room temperature heats by 0.5° full degree from the temperature setting, the cooling system will turn on. If the cooling system turns on too often, increase the temperature differential.	0.5

9

## Installer Setup Menu

Settings	Display	Adjustment Options	Default
Heating Differential	HEAT SWING 0.4°F	The heating differential is factory preset at 0.4°. This means that whenever the room temperature cools by 0.4° from the temperature setting, the heating system will turn on. If the heating system turns on too often, increase the temperature differential.	0.4
Heating Temperature Set-Point Limit	HEAT LIMIT 90°F	This feature allows you to set a maximum heat set-point value. The set-point temperature cannot be raised above this value.	90°
Cooling Temperature Set-Point Limit	COOL LIMIT 44°F	This feature allows you to set a minimum cool set-point value. The set-point temperature cannot be lowered below this value.	44°
F° or C°	OF F OR C SET 83°F	Select F for Fahrenheit temperature display or select C for Celsius display.	F° for Fahrenheit C° for Celsius
12 or 24 Hour Clock	12 H HOUR CLOCK SETTING	Select a 12 or 24 hour clock setting.	12 Hour Clock

10

## Installer Setup Menu

Settings	Display	Adjustment Options	Default
Fan Operation	GAS FAN OPERATION	Select <b>GAS</b> or <b>ELEC</b> depending on the type of furnace.	GAS
Morning Recovery	MORNING RECOVERY 0N	This setting will start heating early to bring the building temperature to its programmed set-point by the beginning of the <b>WAKE</b> time period.	ON
Program Options	PROGRAM OPTIONS 5d	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.	5d
Display Light	AUTO DL	The display light can be configured to come on when any key is pressed or to stay on all of the time.	AUTO

11

## Installer Setup Menu

Settings	Display	Adjustment Options	Default
Contractor Call Number	PHONE NUM 0F	The thermostat allows installers to put their phone number in the display.	OFF
Beep	BEEP 0F	The thermostat can be configured to make an audible beep when any key is pressed.	ON
System Switch	SYSTEM SET SYSTEM Heat Off Auto	The system switch can be configured for the particular application: Heat - Off - Cool, Heat - Off, Cool - Off, Heat - Off - Cool - Auto Auto= Auto changeover	HEAT OFF COOL
Cooling Fan Delay	COOL FAN DELAY 0F	The cooling fan delay setting delays the fan from coming on in cool mode and keep it running after the compressor shuts off for a short time in order to save energy.	OFF

### Programming Notes

#### Keypad Lockout

The function of activating your lockout choice takes place after you have exited Tech Setup. To lock or unlock the keypad hold down the **MENU** for 3 seconds.

#### Contractor Call Number

If contractor call number is selected **ON**, the selected phone number will show in the display if there has been a continuous call for heating or cooling for 24 hours or if the **FAN** button is held down for 3 seconds. To remove the phone number from the display, hold the **FAN** button down for 3 seconds.

12

**Set Time of day and day of week (If using programming)**

1. Press the **MENU** button.
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**.
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**.
7. The minutes will be flashing. Use or to select the current minutes.
8. Press **DONE** when completed.

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 AM	70°F (21°C)	75°F(24°C)
	Leave	8 AM	62°F (17°C)	83°F(28°C)
	Return	6 PM	70°F (21°C)	75°F(24°C)
	Sleep	10 PM	62°F (17°C)	78°F(26°C)
Saturday	Wake	6 AM	70°F (21°C)	75°F(24°C)
	Leave	8 AM	62°F (17°C)	83°F(28°C)
	Return	6 PM	70°F (21°C)	75°F(24°C)
	Sleep	10 PM	62°F (17°C)	78°F(26°C)
Sunday	Wake	6 AM	70°F (21°C)	75°F(24°C)
	Leave	8 AM	62°F (17°C)	83°F(28°C)
	Return	6 PM	70°F (21°C)	75°F(24°C)
	Sleep	10 PM	62°F (17°C)	78°F(26°C)

**Custom Programming**

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:

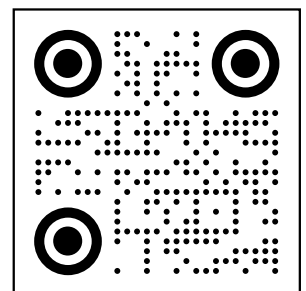
1. Select **HEAT** or **COOL**. Note: Heat and cool need to be programmed separately.
2. Press **MENU** (If menu does not appear first, press **RUN SCHED**).
3. Press **SET SCHED**. Note: Monday–Friday (or Monday if in 7 Day mode) will be displayed and the **WAKE** icon is shown.
4. Time will be flashing. 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.

**Notes**

**Auto Changeover:** In Auto mode, users can toggle between Auto Heat or Auto Cool by pressing **System** only when the current mode has reached its temperature set point. To switch out of Auto mode, hold down **System**. To return to Auto mode, toggle the System key to **Auto**.

**Programmable Fan:** The programmable fan feature will run the fan continuously during any time period it is programmed to be on. This is the best way to keep the air circulated and to eliminate hot and cold spots in your building.

**Reminders:** Once a Reminder has been turned on and set, the elapsed time can be checked by navigating the Tech Setup step. The time can be reset by pressing and holding the third button from the left for 3 seconds. Resetting an expired Reminder can be done by pressing and holding the 3rd button from the left for 3 seconds.



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