INSTALLATION MANUAL

Robertshaw

RS9320T

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

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.

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

Installation Location

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

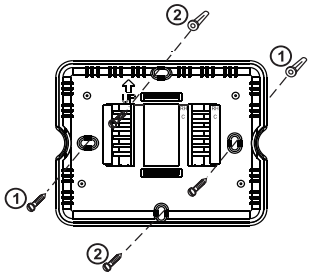
For new installations, mount thermostat on an inside wall, 4-5 feet above the floor. Do not install the thermostat in the following locations:

- 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.

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.

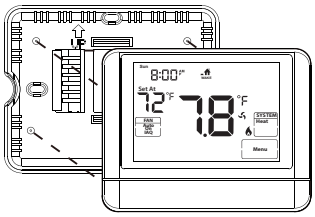
Mercury Notice

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.

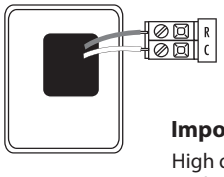
Mounting & Battery Installation

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

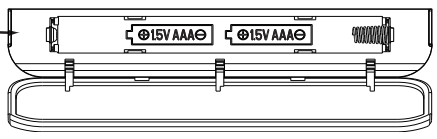


Battery installation is optional if used with AC power (the C terminal is connected). During power outages, the batteries will save settings and power the display.

Important:

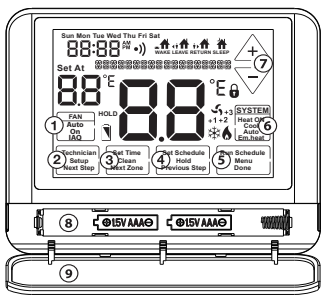
High quality alkaline batteries are recommended. Rechargeable batteries or low quality batteries are not recommended.

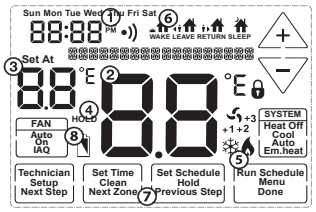
Insert 2 AAA Alkaline batteries (included). High quality alkaline batteries are recommended.



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
5 Battery Cover
5 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.

Terminal Designations

This thermostat is shipped from the factory to operate a conventional heating and cooling system. This thermostat may also be configured for a heat pump system. See the "heat pump" configuration step on page 14 of this manual to configure the thermostat for heat pump applications.

Terminal	2 Heat 2 Cool Conventional System	2 Heat 1 Cool Heat Pump System	3 Heat 2 Cool Heat Pump System
RC	24 VAC power (Cooling)	24 VAC power (Cooling)	24 VAC power (Cooling)
RH	24 VAC power (Heating)	24 VAC power (Heating)	24 VAC power (Heating)
C	24 VAC common	24 VAC common	24 VAC common
B	Reversing valve / configurable terminal	Reversing valve / configurable terminal	Reversing valve / configurable terminal
O	Reversing valve / configurable terminal	Reversing valve / configurable terminal	Reversing valve / configurable terminal
G	Fan relay	Fan relay	Fan relay
W/E	First stage of heat	Emergency Heat	First stage of auxiliary heat
Y	First stage of cool	First stage of heat & cool	First stage of heat & cool
Y2	Second stage of cool	N/A	Second stage of heat & cool
W2	Second stage of heat	Auxiliary heat	Second stage of auxiliary heat

Wiring Notes

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

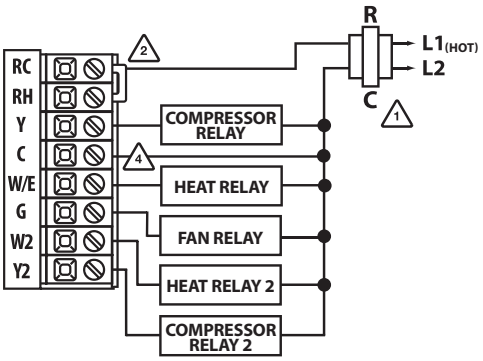
Wire Specifications
Use 18- to 22-gauge thermostat wire. Shielded wire is not required.

Notes:
In many heat pump systems without emergency heat relay, a jumper can be installed between **E** and **W2** to the turn thermostat into a single stage control for Emergency Heat Operation.

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.**

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.
4. Optional 24 VAC commom connection when thermostat is used in battery power mode.

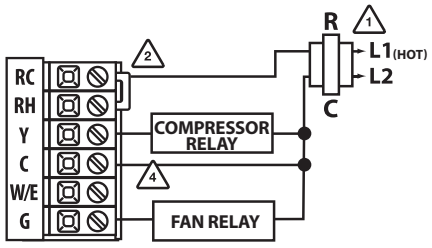
Typical 2H/2C System: 1 Transformer



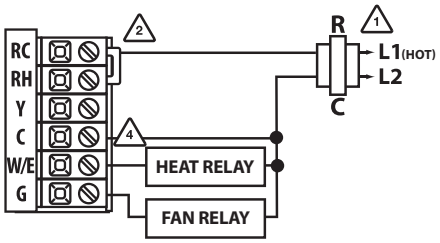
Note:

In many systems with no emergency heat relay a jumper can be installed between E and W2

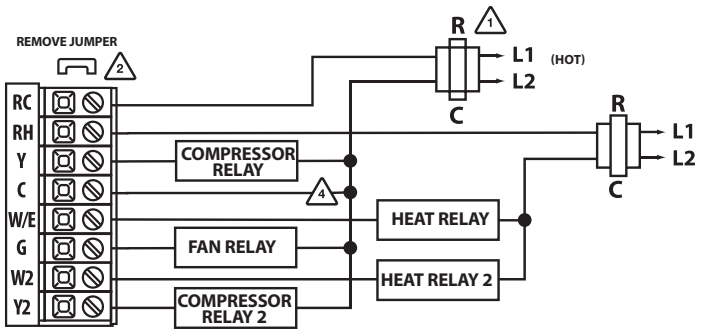
Typical Cool-Only System With Fan



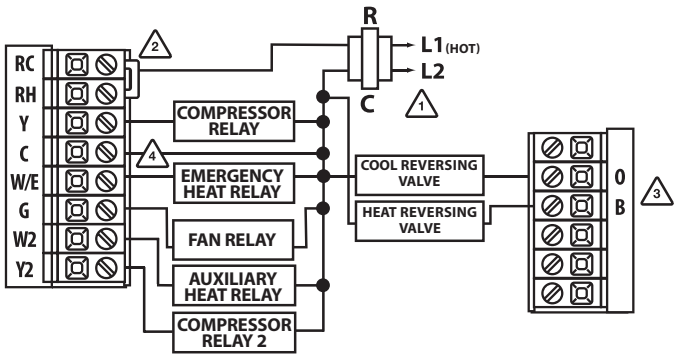
Typical Heat Only System With Fan



Typical 2H/2C System: 2 Transformers



Typical 3H/2C or 2H/1C Heat Pump System



Installer Setup Menu

1. Press **MENU**.
2. Press and hold **TECHNICIAN SETUP** for 3 seconds.
3. Configure the installer options as desired using the table below.
4. Use ⊕ or ⊖ 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	This setting will flash **FILT** in the display after the elapsed run time to remind the user to change the filter. The **OFF** setting will disable this feature.	FILTER OFF 5E	The filter change reminder can be adjusted from **OFF** to 2000 hours in 50 hour increments.	OFF
Room Temperature Calibration	This setting allows the installer to change the calibration of the room temperature display so that, for example, the thermostat would read 72°F instead of 70°F.	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	The installer can select the minimum run time for the compressor to help protect the compressor from short-cycling.	MIN COMP OF	The minimum compressor run time can be adjusted from **OFF** 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	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.	COMP PROTECTS ON	The compressor short cycle delay setting can be removed by selecting **OFF**.	ON
Cooling Differential	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.	COOL SWING 0.5°F	The cooling differential setting is adjustable from 0.2°F to 2°F.	0.5

Settings		Display	Adjustment Options	Default
Heating Differential	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.	HEAT SWING 0.4°F	The heating differential setting is adjustable from 0.2°F to 2°F.	0.4
Heat Pump	The thermostat can be optionally configured to operate a heat pump.	HEAT PUMP OF	Use ⊕ or ⊖ to configure the setting. **OFF** for conventional systems and **ON** for heat pump systems.	OFF
System Switch	The system switch can be configured for the particular application. Heat-Off-Cool, Heat-Off, Cool-Off, Heat-Off- Cool-Auto. Note: Emergency Heat is available in heat pump mode only.	SYSTEM SET SYSTEM Heat Off Cool Auto	Use ⊕ or ⊖ until the desired application is flashing. **AUTO** = (Auto Changeover)	OFF
Stages of Heat and Cool	If the heat pump is still **ON**, this thermostat can be configured to operate up to 2H/2C conventional, or up to 4H/2C heat pump system.	2H2C STAGS OF HEAT•COOL	Use ⊕ or ⊖ to select stages of heat, press NEXT, then select stages of cool. 3 or 4 heat will use Y1 and Y2 as 1st and 2nd stage of heat.	2 STAGES
Cooling Fan Delay	The cooling fan delay setting delays the fan from coming on in cool mode and keeps it running after the compressor shuts off for a short time in order to save energy.	COOL FAN DELAY OF	The cooling fan delay can be set to **OFF,** 15, 30, 60 or 90 seconds. If 15, 30, 60 or 90 is selected, the fan will not turn on for at least the selected time when there is a call for cool and will run for at least the selected time after satisfying the call for cool.	OFF

Settings		Display	Adjustment Options	Default
Heating Temperature Set-Point Limit	This setting establishes a maximum value above which the set-point temperature value cannot be raised.	HEAT LIMIT 90°F	Use ⊕ or ⊖ to select the maximum heat temperature set-point. Range 44°F - 90°F	90°
Cooling Temperature Set-Point Limit	This setting establishes a maximum value above which the set-point temperature value cannot be lowered.	COOL LIMIT 44°F	Use ⊕ or ⊖ to select the minimum cool temperature set-point. Range 44°F - 90°F	44°
F° or C°	Select F for Fahrenheit temperature display or select C for Celsius display.	OF F OR C SET 83°F	°F for Fahrenheit °C for Celsius	F°
12 or 24 Hour Clock	Select a 12 or 24 hour clock setting.	12H HOUR CLOCK SETTING	Use ⊕ or ⊖ to select 12 or 24 hour clock.	12 Hour Clock
Fan Operation	Select **GAS** or **ELEC** depending on the type of furnace.	GAS FAN OPERATION	**GAS** or **ELEC**	GAS
Morning Recovery	This setting will start heating early to bring the building temperature to its programmed set-point by the beginning of the **WAKE** time period.	MERNING RECOVERY ON	Use ⊕ or ⊖ to turn on or off.	ON

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.	PROGRAM OPTIONS 5d	Use ⊕ or ⊖ to select **7d** for 7 day, **5d** for 5+1+1, or **0d** for non-programmable.	5d
Display Light	The display light can be configured to come on when any key is pressed or to stay on all of the time.	AUTO dL	**AUTO** - Any key ON **ON** - Always ON	AUTO
Contractor Call Number	The thermostat allows installers to put their phone number in the display.	PHONE NUM OF	If selected **ON**, the input screen will appear after pressing Next Step. Use ⊕ or ⊖ to select the desired telephone number and the **FAN** or **SYSTEM** key to change characters.	OFF
Beep	The thermostat can be configured to make an audible beep when any key is pressed.	DEFAULT NO	If **ON** is selected, the beep will sound. If **OFF** is selected, the beep will be silenced.	ON

Differential Setting

The second stage will turn **ON** at 2x the differential setting and **OFF** at 1x the differential setting. For example, if the differential setting is 0.5° for heating and the thermostat is set at 70°F, the first stage will turn on at 69.5°F. The second stage will turn on at 69°F and turn off at 69.5°F. If the third stage is used, the third stage will turn on at 68.5°F and turn off at 69°F.

Keypad Lockout

The installer can activate a keypad lockout after exiting Tech Setup.

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.

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.

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 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.

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 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)

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.

Robertshaw®

Customer Service +1.800.304.6563
Technical Service +1.800.445.8299
HVACCustomerService@robertshaw.com
www.robertshaw.com • 352-00307-001 Rev. B

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