Robertshaw®

RS8210

Installation Manual

INSTALLATION MANUAL

Thank you for purchasing a Robertshaw® thermostat.
This manual will describe how to install and test the Robertshaw **RS8210** 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 Type

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

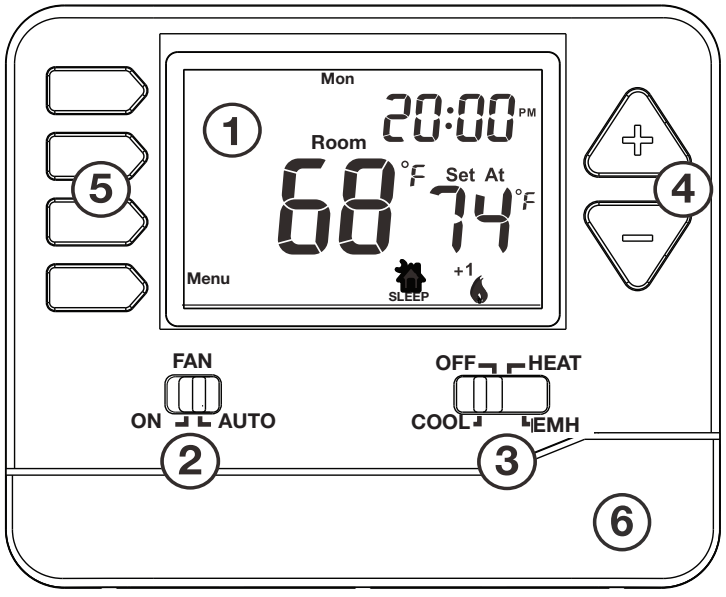
Install the thermostat 4 to 5 feet above the floor in an area with good air circulation and average temperature.

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.

Getting to know your thermostat



1 LCD Screen

2 Fan Switch

3 System Switch

4 Temperature Set-Point Buttons

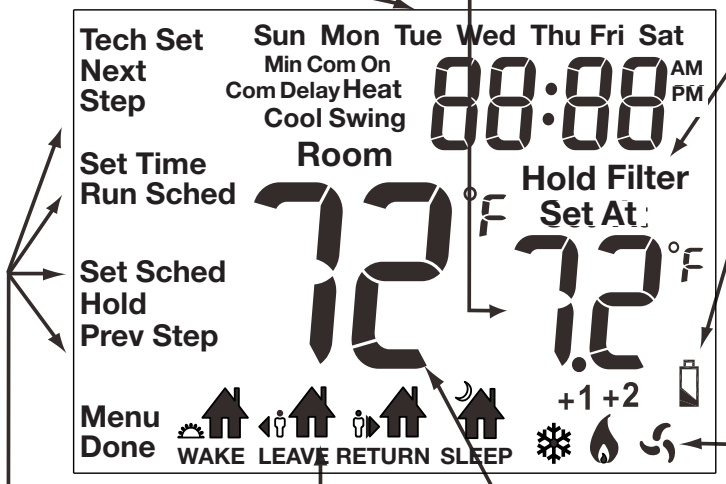
5 User Buttons

6 Easy Change Battery Door

1 LCD

Days of the week and time.

Displays the user selectable 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

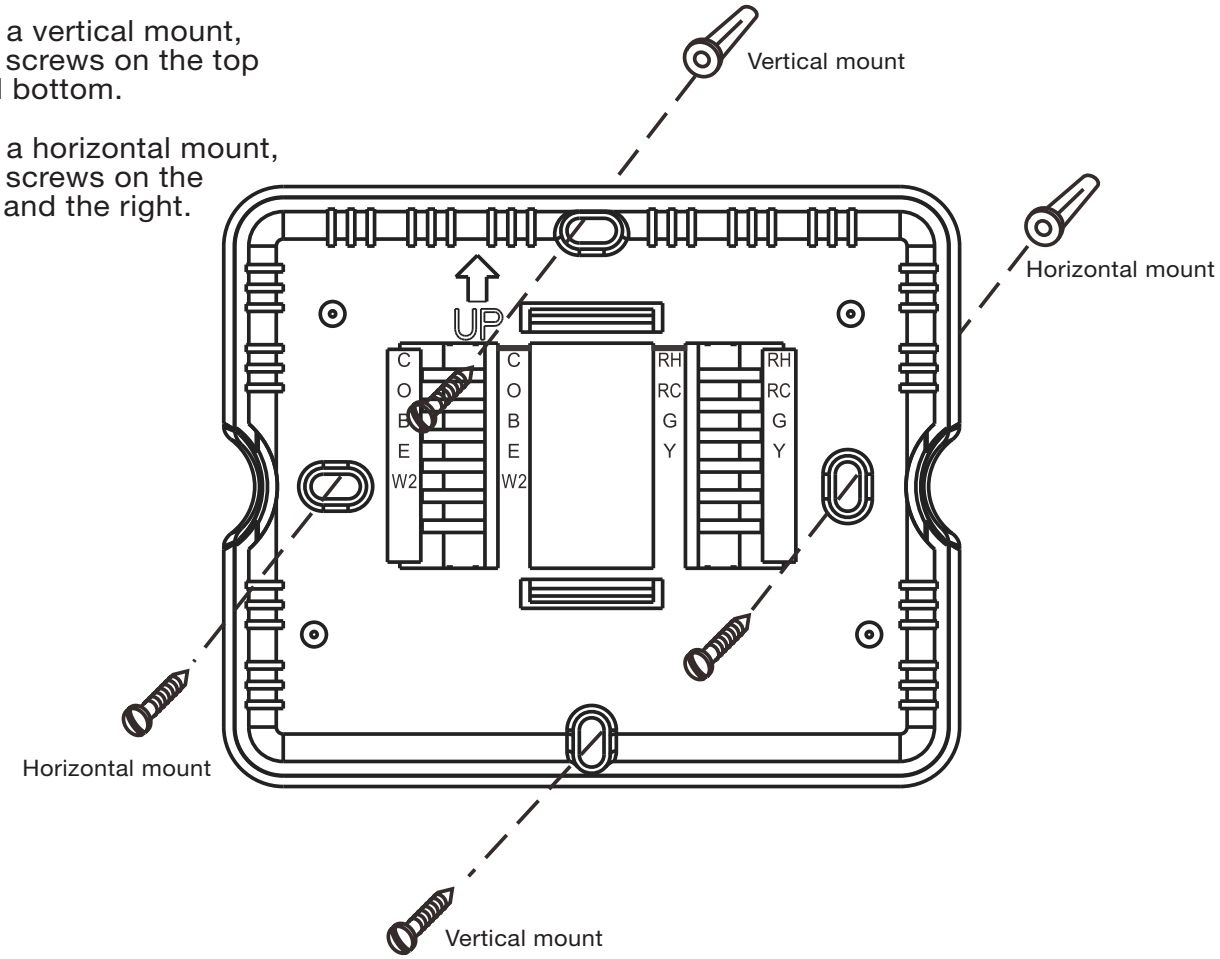
Disconnect power before installing this product. Failure to do so can cause electric shock or equipment damage.

Mercury Notice:

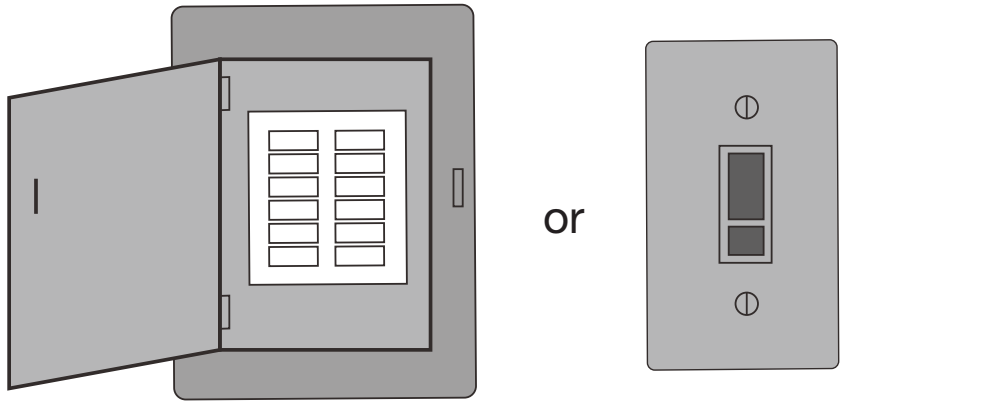
This product is mercury-free. However, if this product is replacing a control which contains mercury, it needs to be disposed of properly. Contact your local waste management authority for instructions regarding recycling and proper disposal of the control.

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



Circuit breaker box

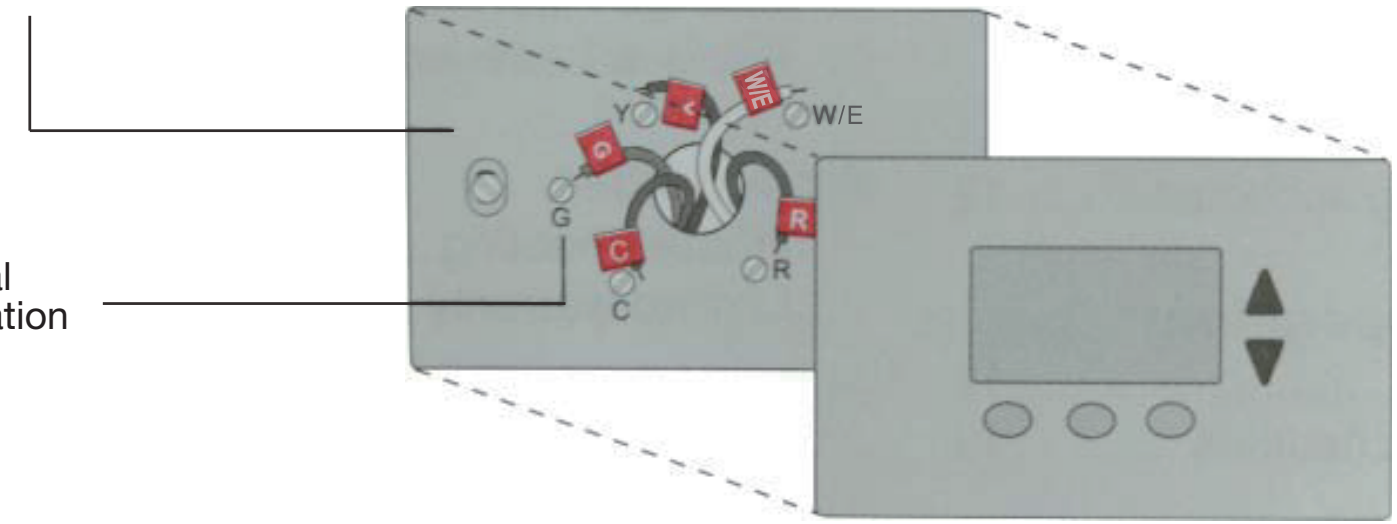
or

Heating/cooling system power switch

2 Remove Old Thermostat

Remove old thermostat but leave wallplate with wires attached.

Do not remove wallplate



WIRING

3 Label Wires with Tags

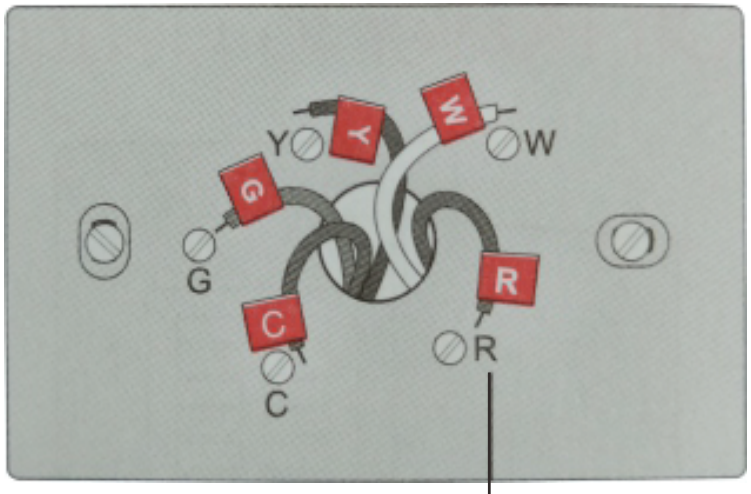
Label the existing wires using the supplied wire labels as you disconnect them.

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
V/VR	V/VR	W	W	W1	W1	W2	W2	W3	W3
X	X	X1	X1	X2	X2	Y	Y	Y1	Y1
AUX	AUX								

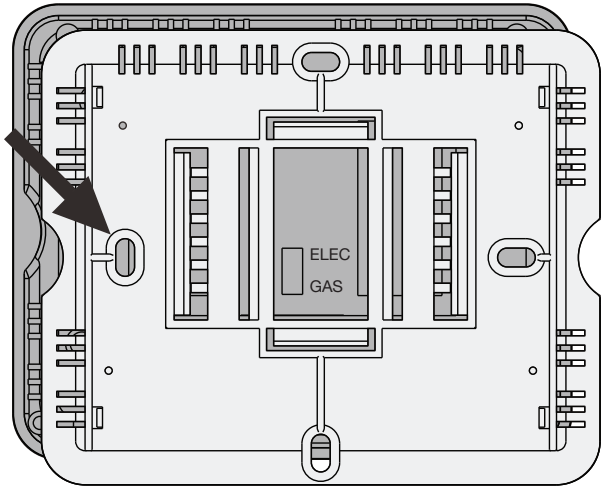
Wire Labels



Terminal designation

4 Separate Wallplate from New Thermostat

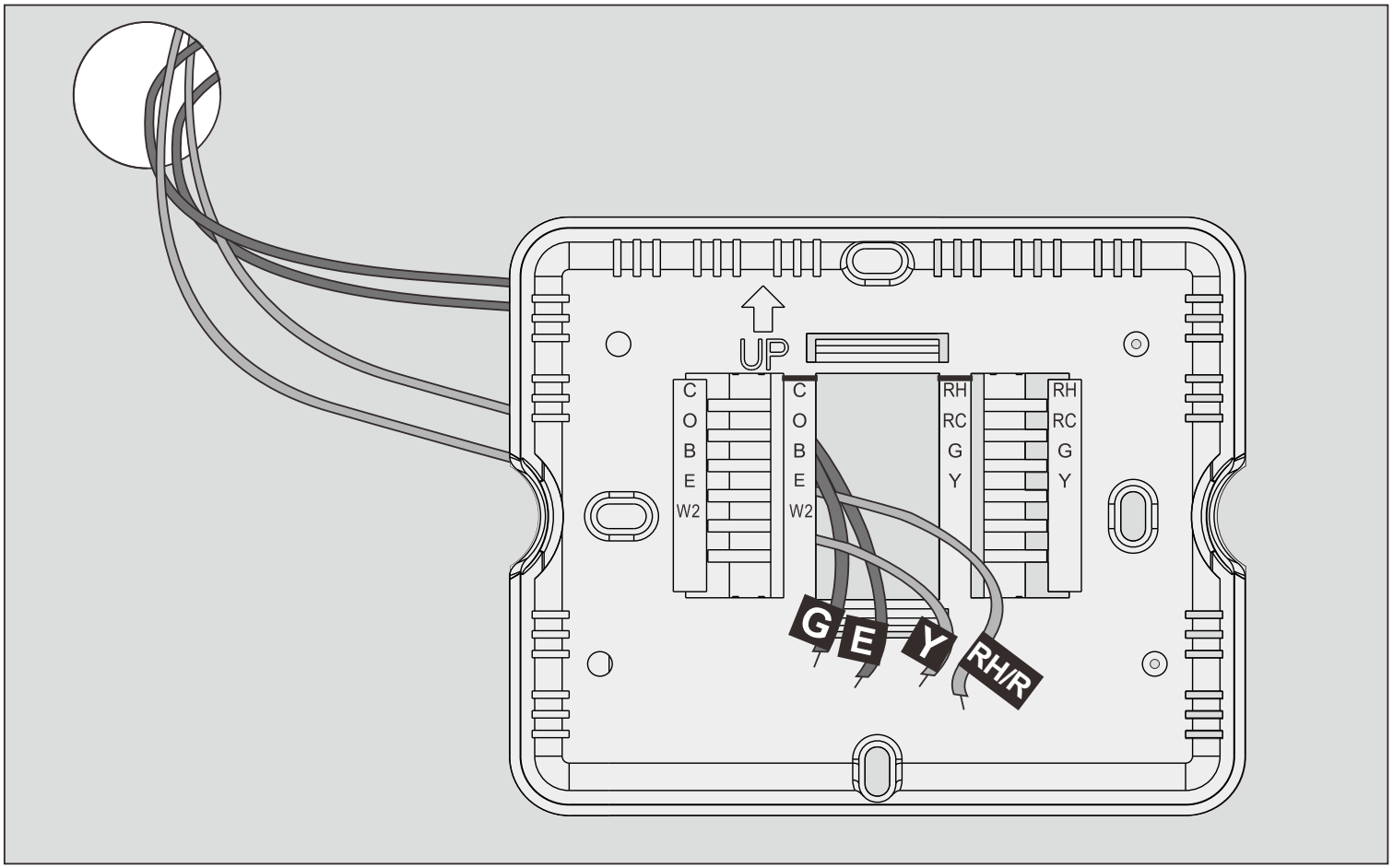
Remove wallplate from the new thermostat and mount onto wall.



Wallplate

5 Separate Wallplate from New Thermostat

Mount the new wallplate using the included screws and anchors.

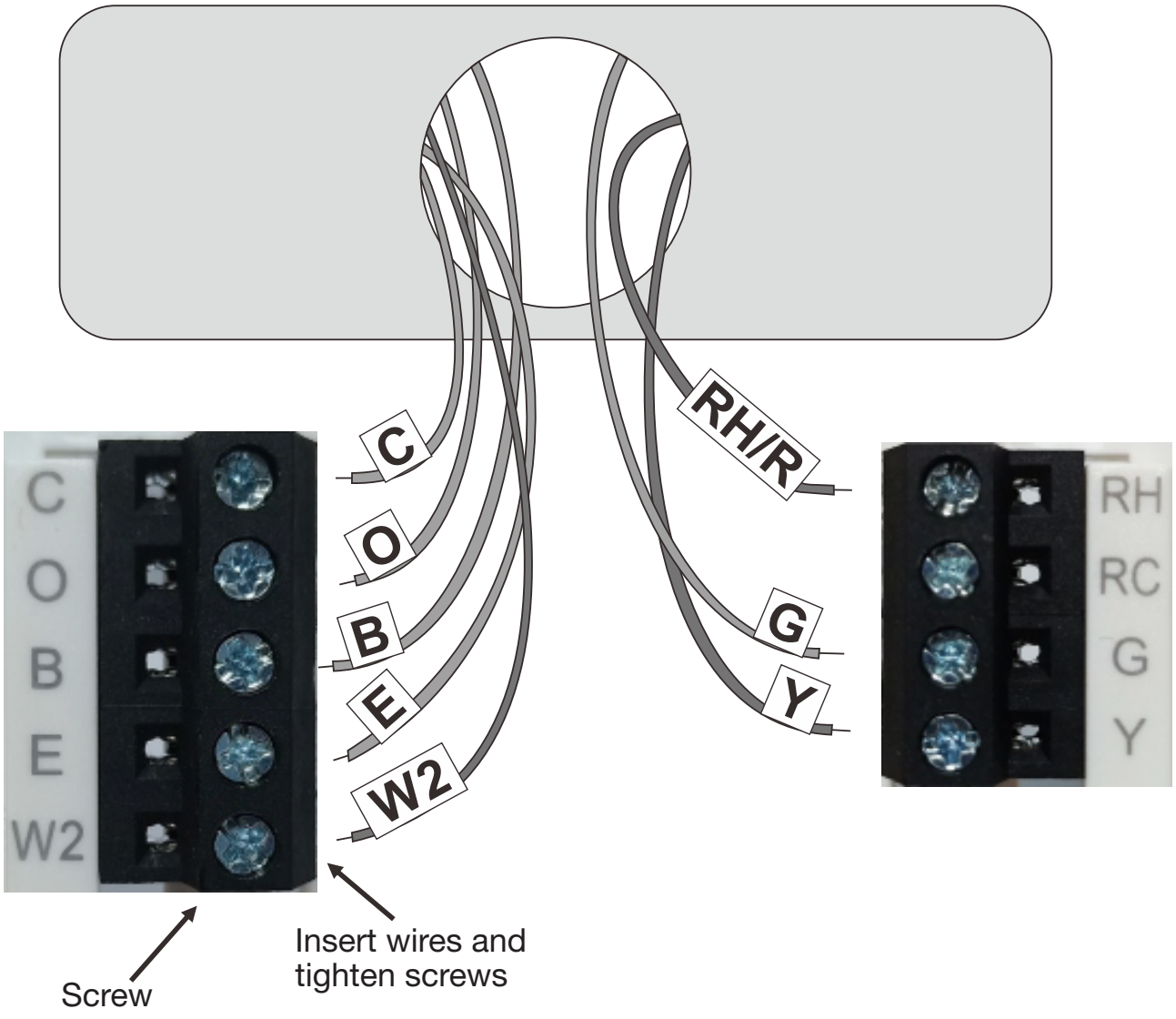


Drill 3/16-in. holes for drywall
Drill 3/16-in. holes for plaster

6 Connect Wires

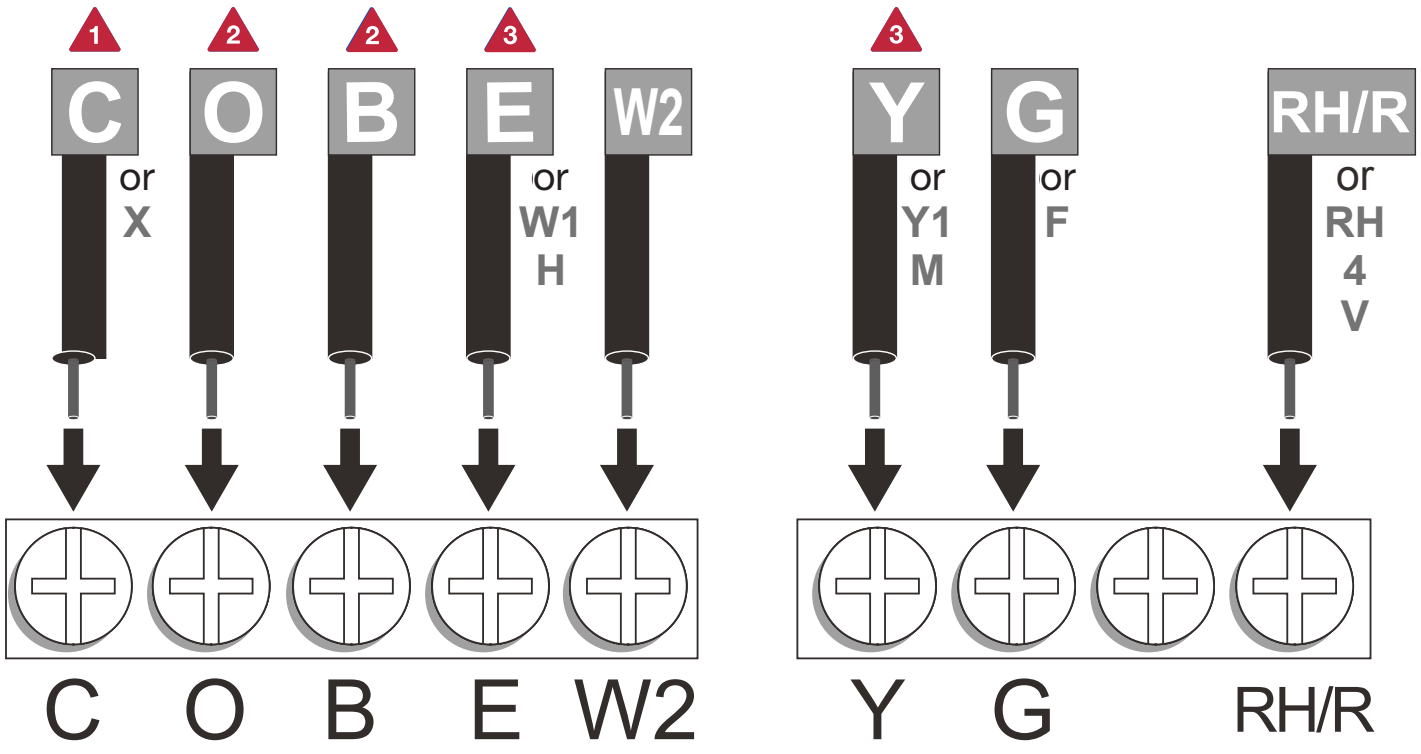
Simply match wire labels.

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 **C** or **X** wire is 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 <u>have</u> a **heat pump** without auxiliary/backup heat connect **O** or **B**, <u>not</u> both. If you do <u>not have</u> a **heat pump**, do not connect **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

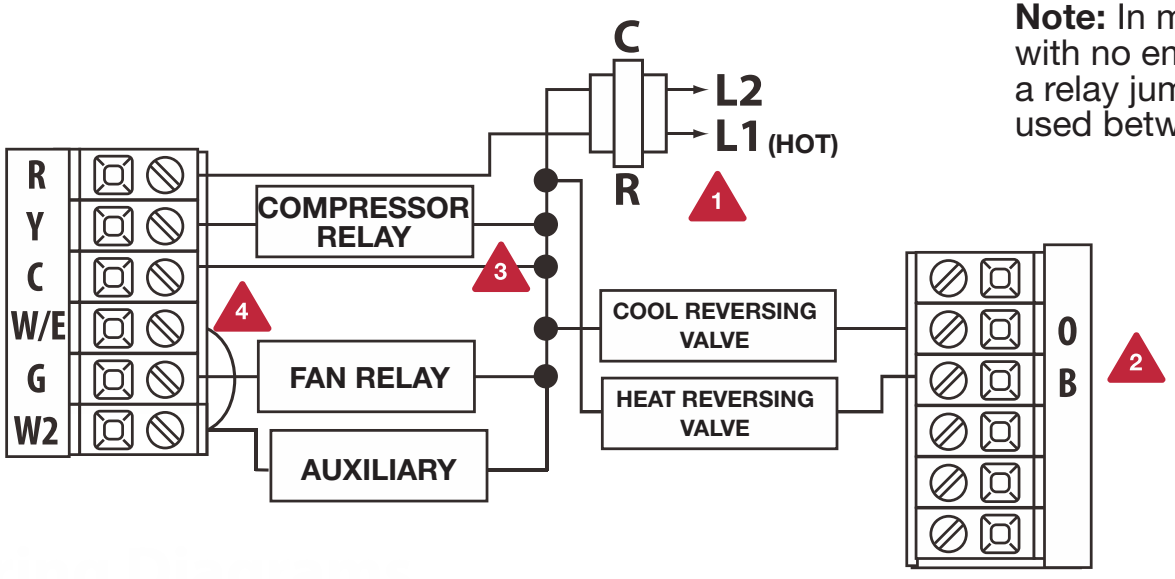
	Heat Pump System 1 HEAT 1 COOL / 2 HEAT 1 COOL	Conventional System 1 HEAT 1 COOL / 2 HEAT 1 COOL
RH/R	Transformer power	Transformer Power
C	Transformer Common	Transformer Common
B	Reversing Valve Energized in HEAT	Energized in HEAT
O	Reversing Valve Energized in COOL	Energized in COOL
G	Fan Relay	Fan 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 Note:

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. Use either O or B terminals for reversing valve.
3. Optional 24 VAC common connection when thermostat is used in battery power mode.
4. Jumper (not supplied).

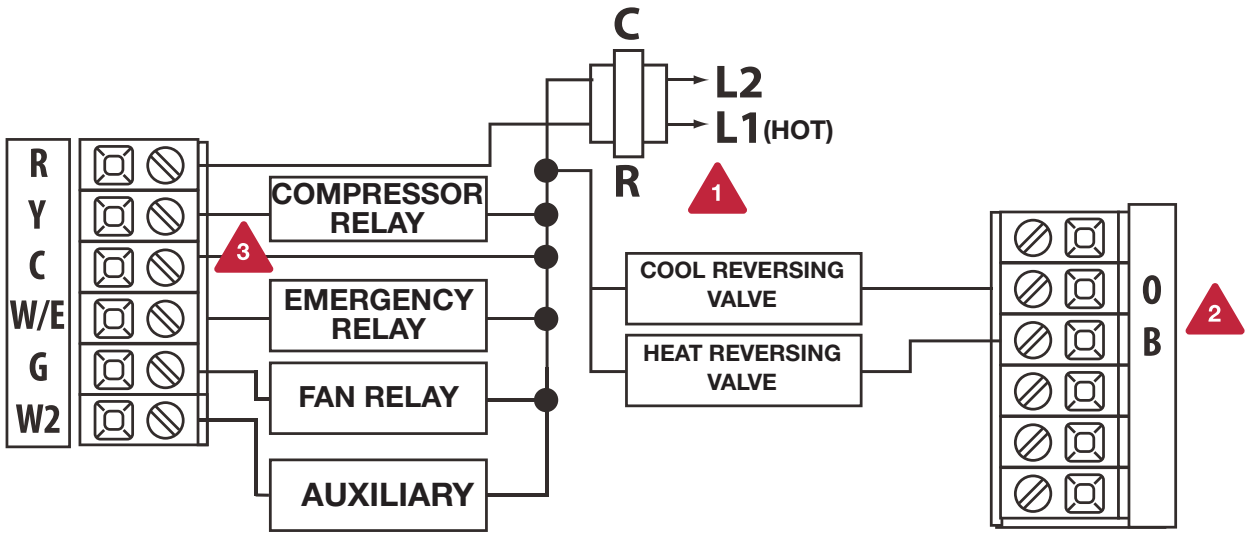
2H/1C Heat Pump System



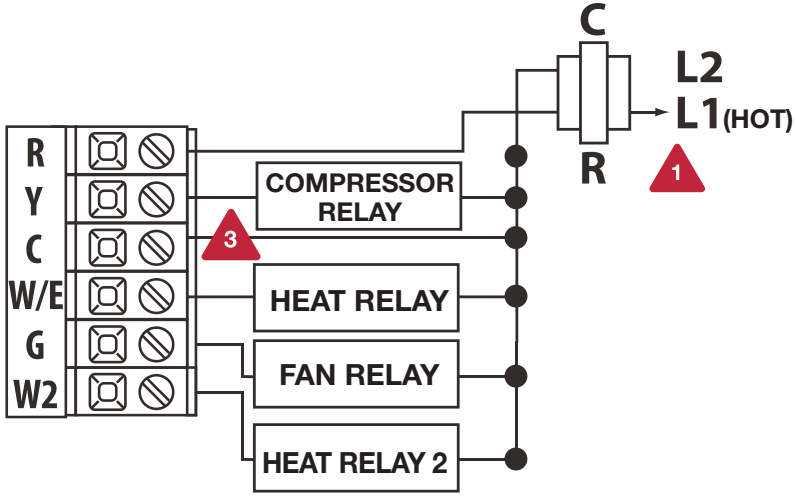
Note: In many systems with no emergency heat a relay jumper can be used between E and W2.

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.

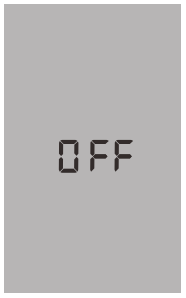
Installer Setup Menu

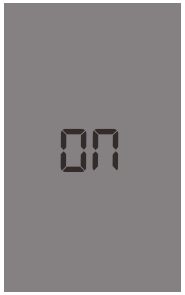
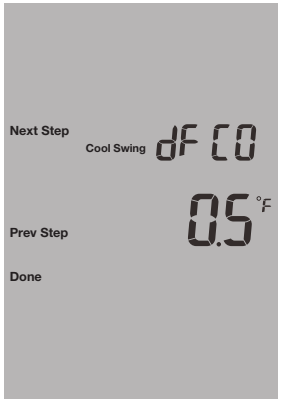
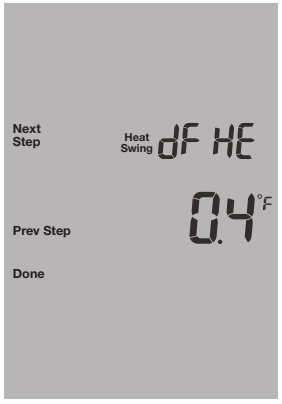
This thermostat has an installer setup menu for easy configuration. Follow the procedure below to set up the thermostat to match the specific heating/cooling system.

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

   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.
4. °F/°C Selection Setting: F(Fahrenheit) or C(Celsius).
5. 24H/12H Selection: Setting the 24 hour or 12 hour time format.
6. ELEC/GAS Selection: Select the **ELEC** or **GAS**.

INSTALLER SETUP MENU

Feature	Feature Description	Display	Adjustment Options	Factory default settings
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.		The filter change reminder can be adjusted from **OFF** 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 run time.	
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.		The room temperature display can be adjusted to read 3° above or below the factory calibrated temperature.	
Minimum Compressor On-Time	The installer can select the minimum run time for the compressor to help protect the compressor from short-cycling.		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).	

Feature	Feature Description	Display	Adjustment Options	Factory default settings
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.		The compressor short cycle delay setting can be removed by selecting **OFF**.	
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.		The cooling differential setting is adjustable from 0.2°F to 2°F.	
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.		The heating differential setting is adjustable from 0.2°F to 2°F.	

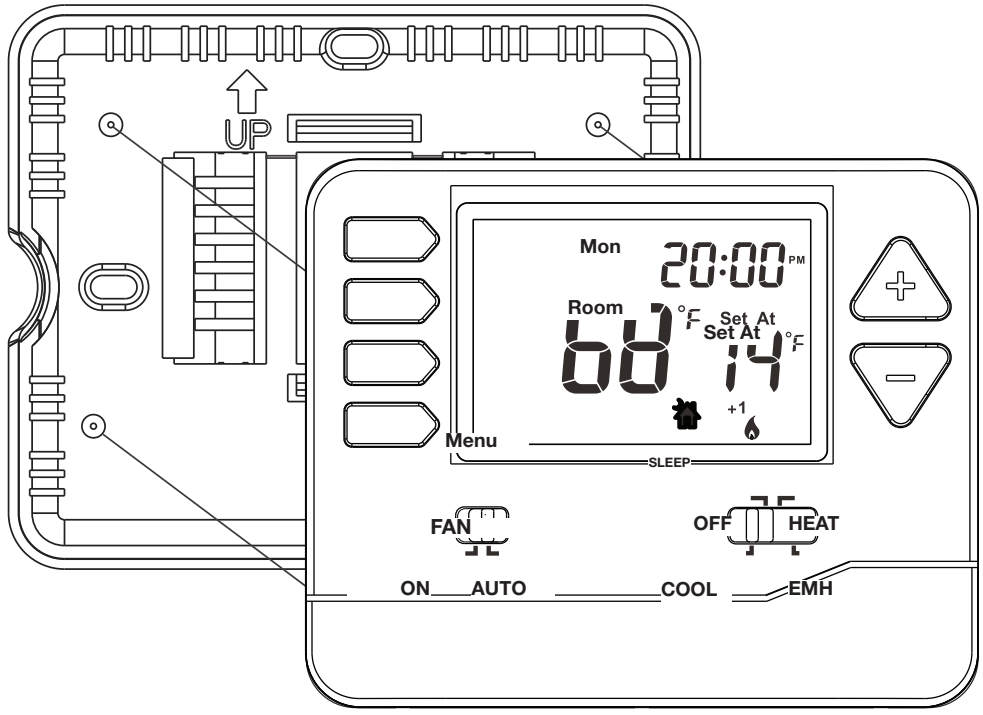
INSTALLER SETUP MENU

Settings		Display	Adjustment Options	Default
F or C	Select F for Fahrenheit temperature display or select C for Celsius display.		F for Fahrenheit, C for Celsius	oF
12 or 24 Hour Clock	Select a 12 or 24 hour clock setting.		Use the + or - key to select 12 or 24 hour clock.	12 Hour Clock
Fan Operation	Select **GAS** or **ELEC** depending on the type of furnace.		GAS or ELEC	GAS

MOUNT THERMOSTAT & INSTALL BATTERY

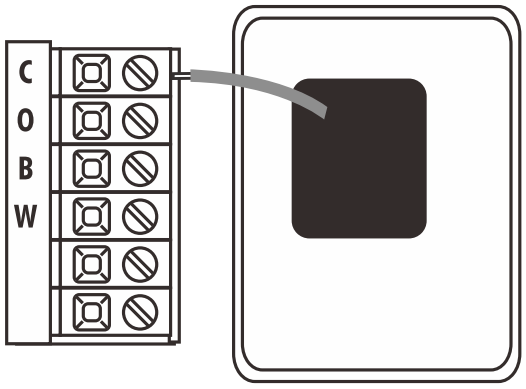
Mount Thermostat

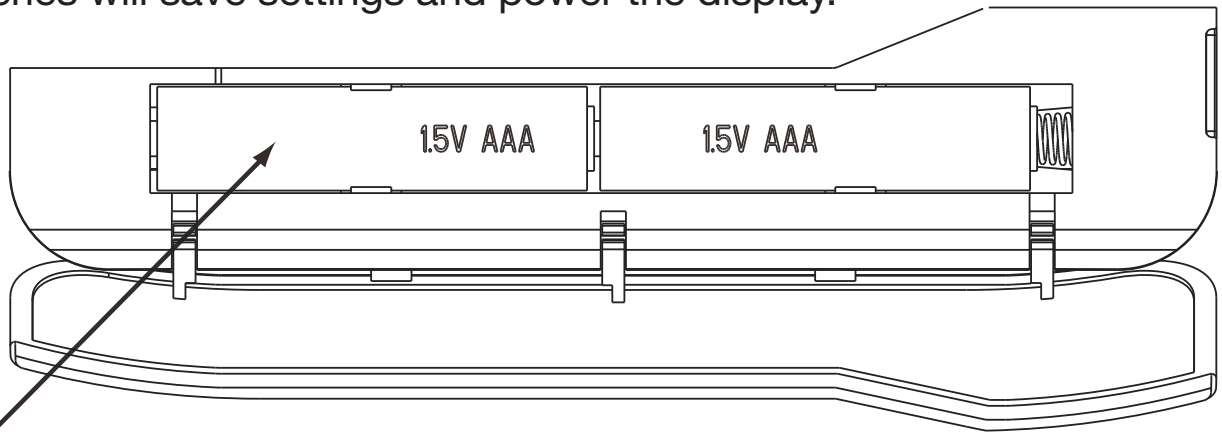
Align the 4 tabs on the faceplate with the corresponding slots on the back of the thermostat, then push gently until the thermostat snaps into place.



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 (included).

PROGRAMMING

Set Time of Day and Day of Week

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.

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° 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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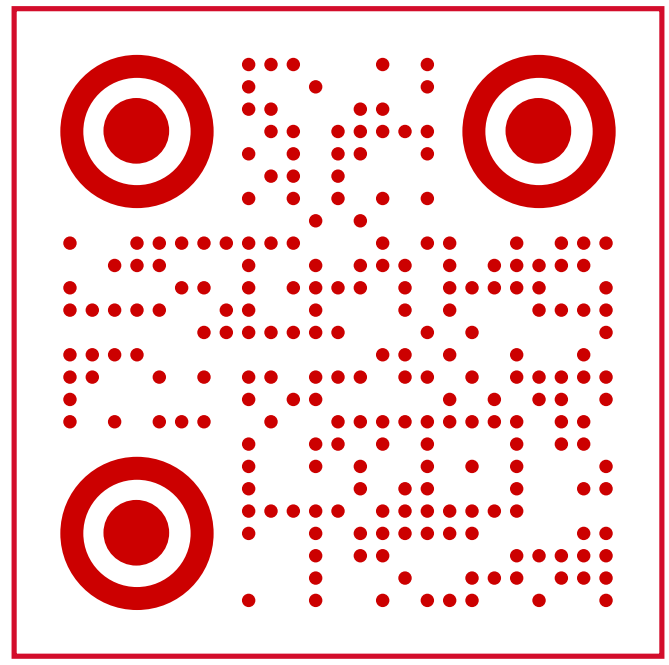

6 Year Limited Warranty

Use Phone to Scan for Warranty Info