Robertshaw®

RS8110

Installation Manual

INSTALLATION MANUAL

This manual covers the following models: **RS8110**

Thermostat Applications Guide

Description	
Gas or Oil Heat	Yes
Electric Furnace	Yes
Heat Pump (No Aux. or Emergency Heat)	Yes
Heat Pump (with Aux. or Emergency Heat)	No
Multi-stage Systems	No
Heat only Systems	Yes
Heat only Systems - Floor or Wall Furnace	Yes
Cool Only Systems	Yes
Millivolt	Yes

Power Type

Battery Power
Hardwire (Common Wire)
Hardwire (Common Wire) with Battery Backup

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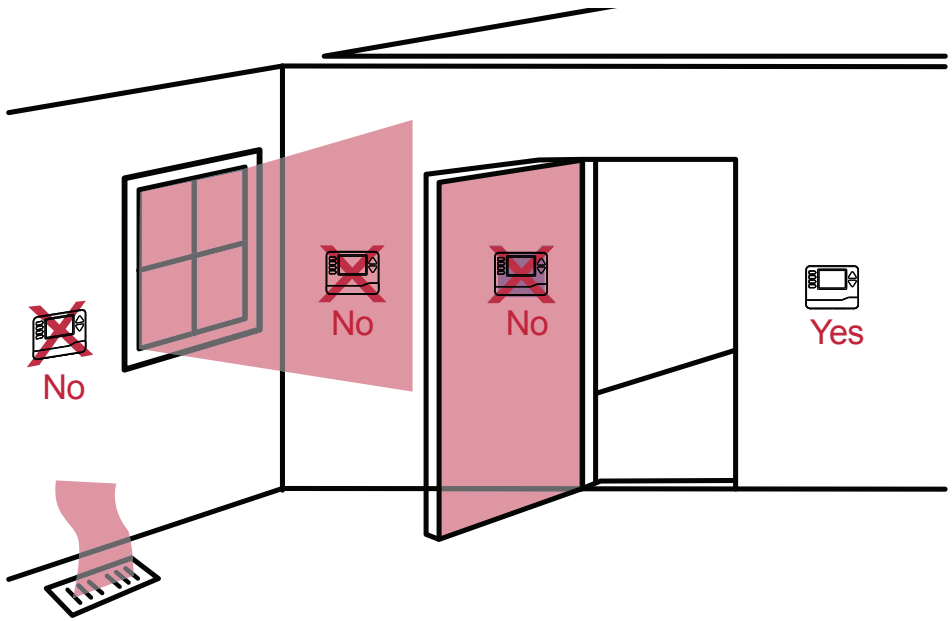
A trained, experienced technician must install this product.

Carefully read these instructions. You could damage this product or cause a hazardous condition if you fail to follow these instructions.

INSTALLATION TIPS

Wall locations

The thermostat should be installed approximately 4 to 5 feet above the floor.
Select an area with average temperature and good air circulation.



Do not install thermostat in locations:

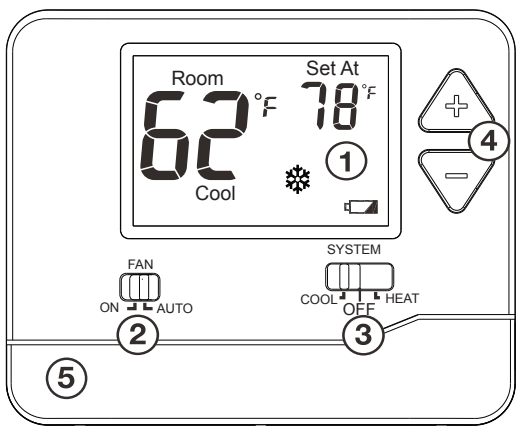
- Close to hot or cold air ducts
- That are in direct sunlight
- With an outside wall behind the thermostat
- In areas that do not require heating and/or cooling
- Where there are dead spots or drafts (in corners or behind doors)
- Where there might be concealed chimneys or pipes

Tip

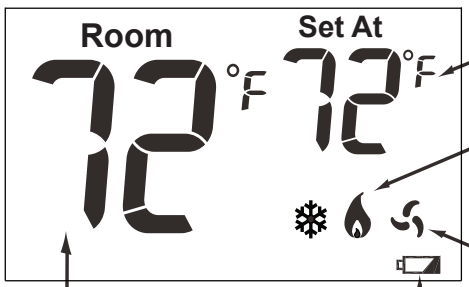
Pick an installation location that is easy for the user to access. The temperature of the location should be representative of the building.

THERMOSTAT QUICK REFERENCE

Getting to know your thermostat



① LCD



Displays the user selectable setpoint temperature.

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

NOTE: The compressor delay feature is active if these icons are flashing.
The compressor will not turn on until the 5 minute delay has elapsed.

Low Battery Indicator: Replace batteries when Indicator is shown.

Indicates the current room temperature.

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

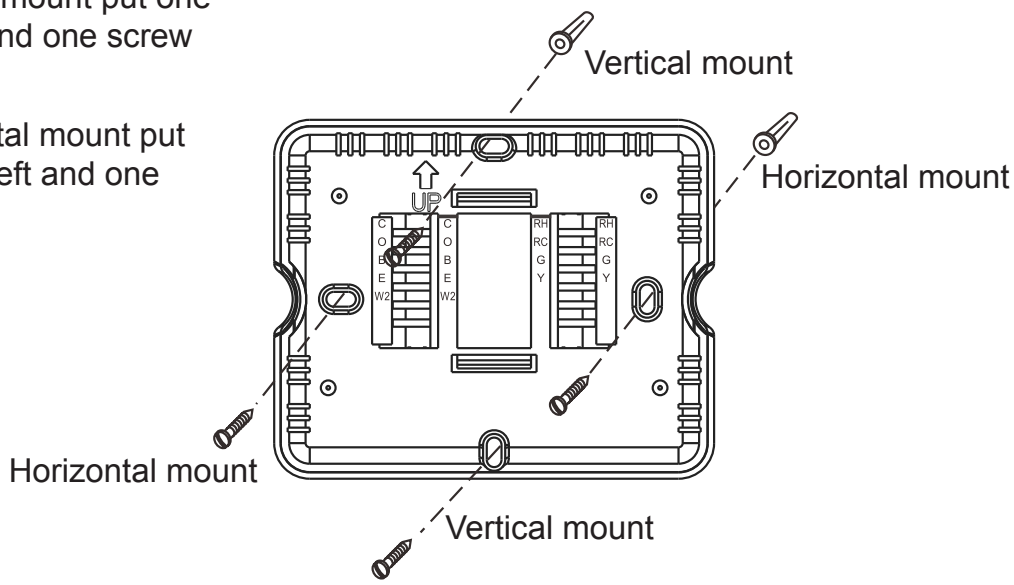
SUBBASE INSTALLATION

Caution:
Electrical Hazard
Failure to disconnect the power before beginning to install this product can cause electrical shock or equipment damage.

Mercury Notice:
All of our products are mercury free. However, if the product you are replacing contains mercury, dispose of it properly. Your local waste management authority can give you instructions on recycling and proper disposal.

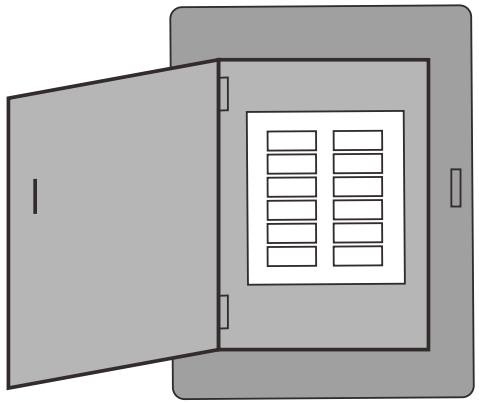
For vertical mount put one screw top and one screw bottom.

For horizontal mount put one screw left and one screw right.



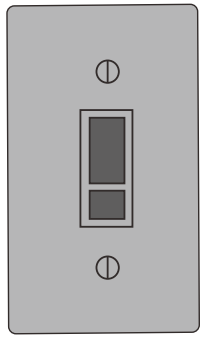
WIRING

1 Turn Off Power to Heating/Cooling System



Circuit breaker box

or



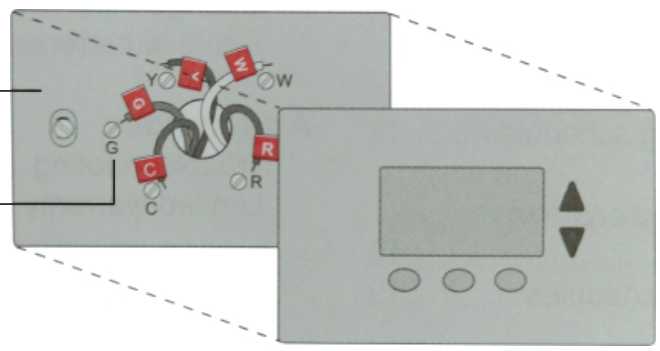
Heating/cooling system power switch

2 Remove Old Thermostat

Remove old thermostat but leave wallplate with wires attached.

Do not remove wallplate yet

Terminal designation



WIRING

3 Label Wires with Tags

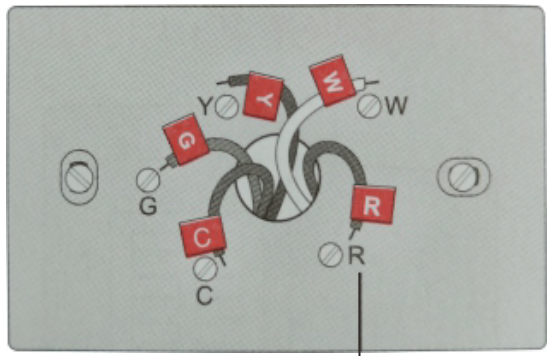
Label the wires using the supplied wire labels as you disconnect them.

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	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								

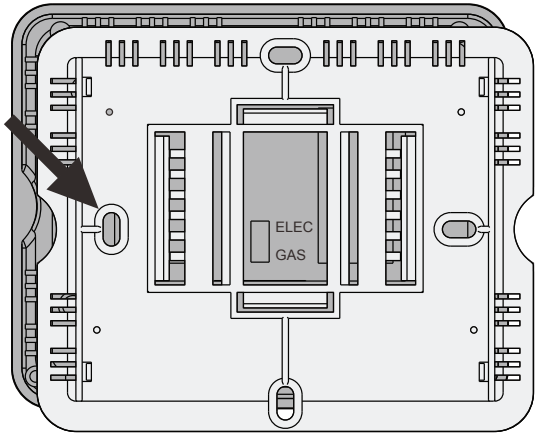
Wire Labels



Terminal designation

4 Separate Wallplate from New Thermostat

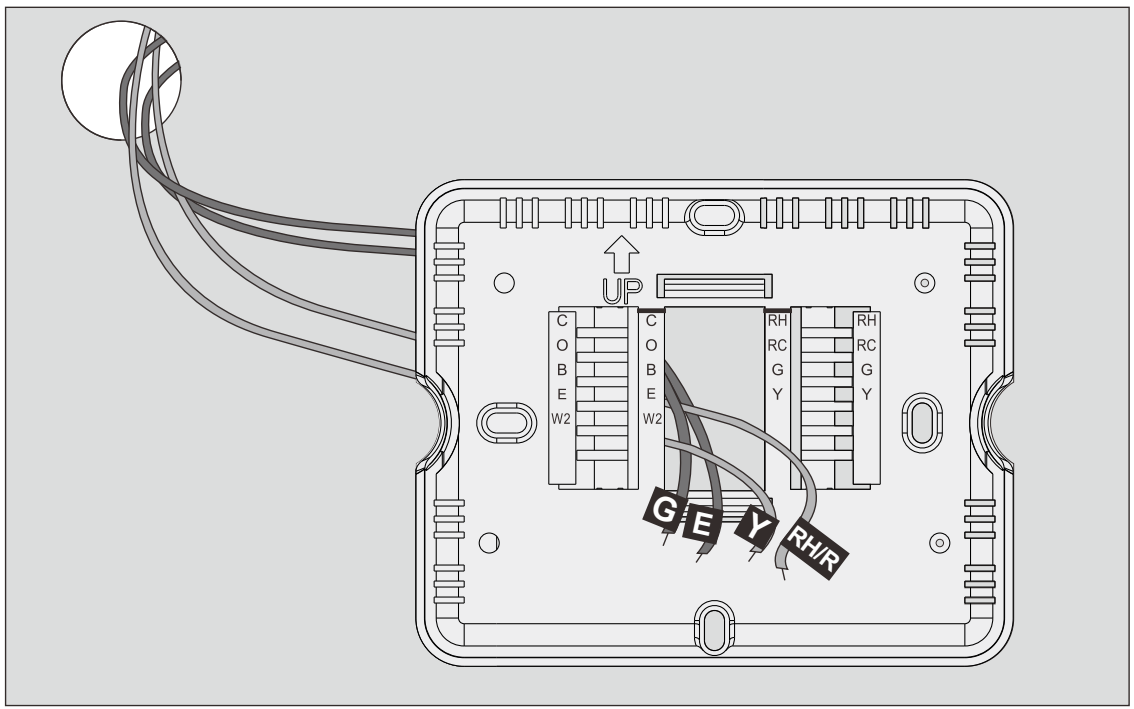
Remove wallplate from the new thermostat and mount onto wall.



Wallplate

5 Separate Wallplate from New Thermostat

Mount the new wallplate using the included screws and anchors.



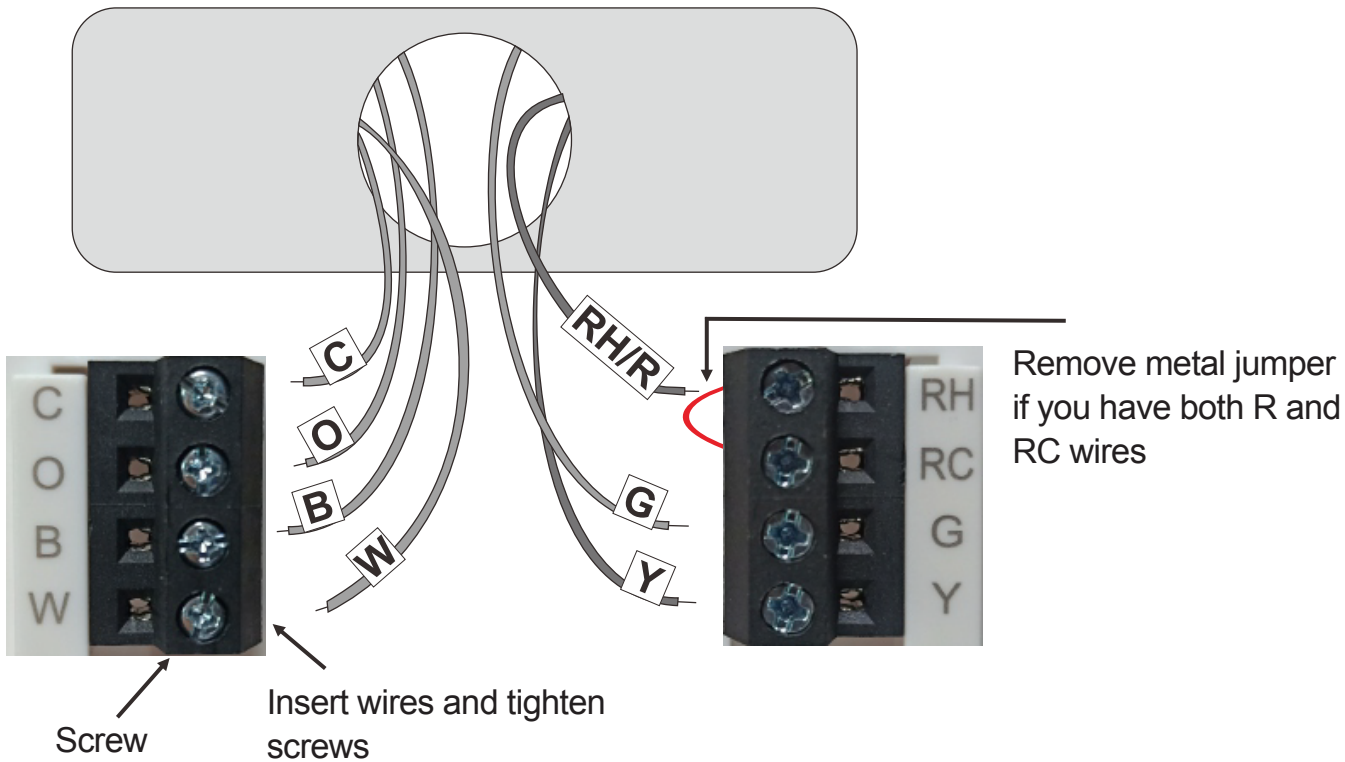
Drill 3/16-in. holes for drywall
Drill 3/16-in. holes for plaster

WIRING

6 Connect Wires

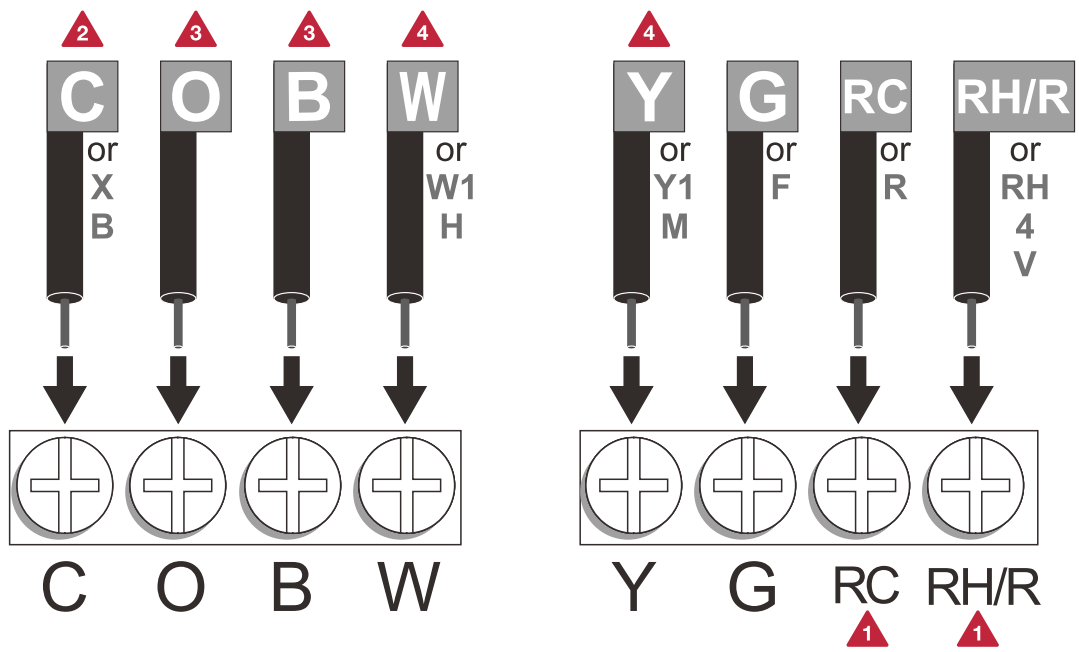
Simply match wire labels.

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. Remove metal jumber if wires will be connected to both **RH/R** and **RC** terminals.
2. 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.
3. 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**.
4. Place a jumper wire between the **Y** and **W** terminals if you have a single stage heat pump system ONLY.

WIRING

Caution: Electrical Hazard
Failure to disconnect the power before beginning to install this product can cause electrical shock or equipment damage.

Warning:
All components of the control system and the thermostat installation must conform to Class II circuits per the NEC Code.

Wiring

1. If you are replacing a thermostat, make note of the terminal connections on the thermostat that is being replaced. In some cases the wiring connections will not be color coded. For example, the green wire may not be connected to the **G** terminal.
2. Loosen the terminal block screws. Insert wires then retighten terminal block screws.

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

Tips:

RH & RC terminals
For single transformer systems, leave the jumper wire in place between RH and RC. Remove jumper wire for two transformer systems.

Heat pump system (With No AUX or Emergency Heat) If wiring to a heat pump, use a small piece of wire (not supplied) to connect terminals W and Y.

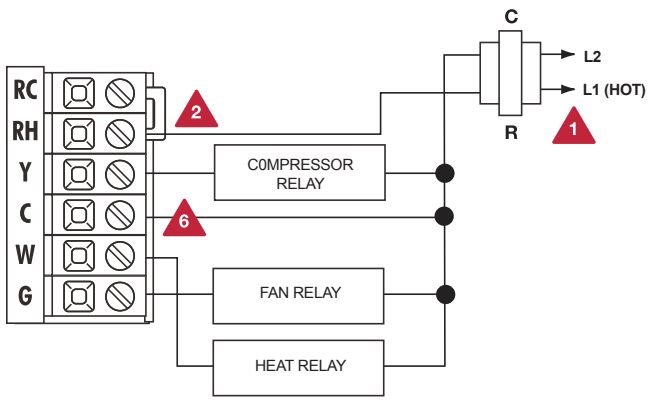
Wire specifications
Use shielded or non-shielded 18-22 gauge thermostat wire.

C terminal
The C (common wire) terminal does not have to be connected when the thermostat is powered by batteries.

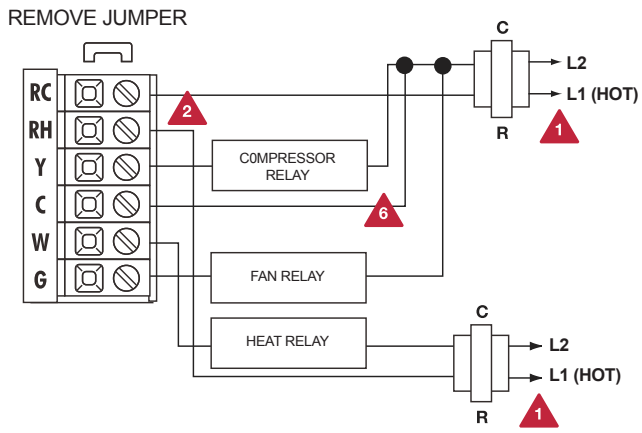
WIRING

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

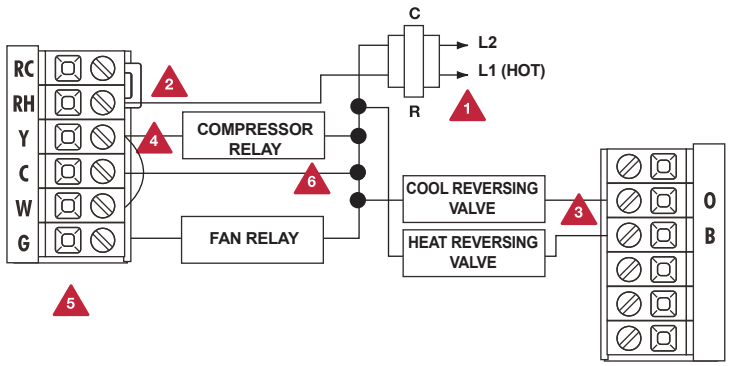


Typical 1H/1C system: 2 transformer

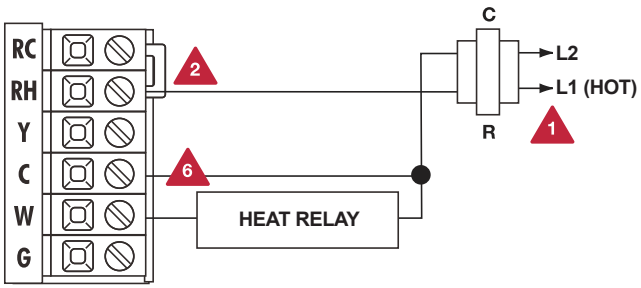


WIRING

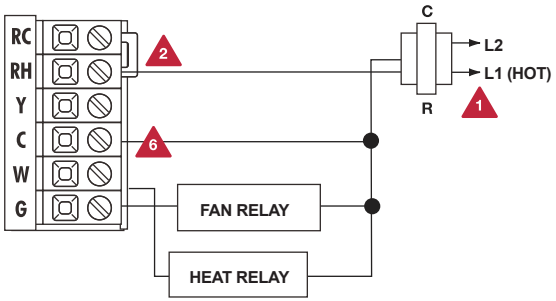
Typical 1H/1C heat pump system



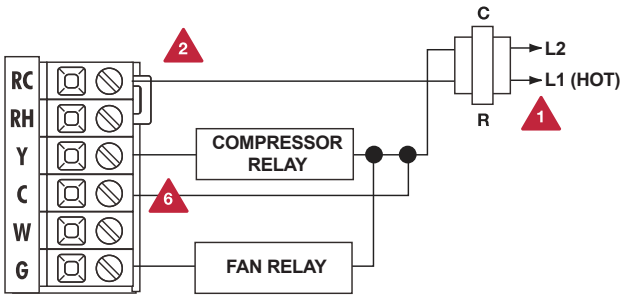
Typical heat-only system



Typical heat-only system with fan

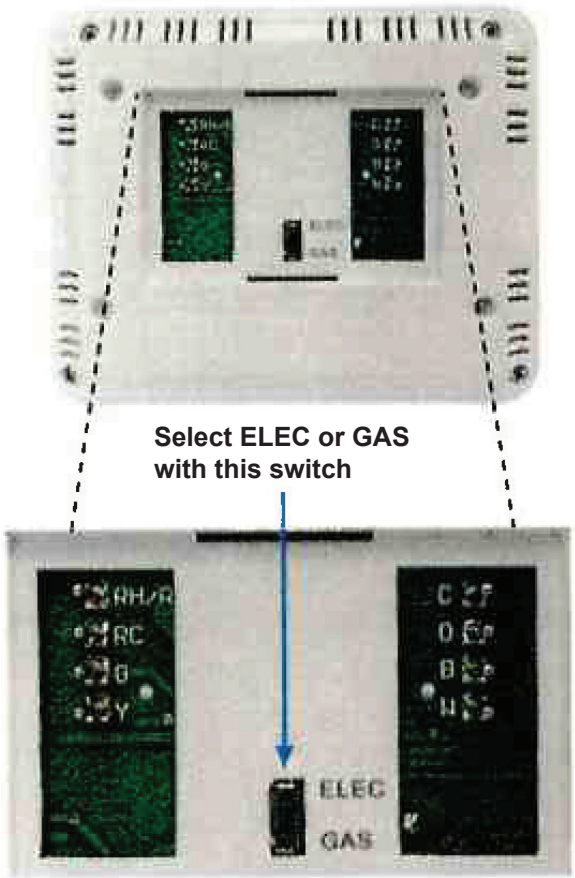


Typical cool-only system



Tips:

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



Gas or Electric Setup

Gas: For systems that control the fan during a call for heat, put the fan operation switch to the **GAS** position.

Electric: The thermostat operation switch should be put in the **ELEC** position. This setting allows the thermostat to operate the fan when the fan relay is connected to the **G** terminal.

TECHNICIAN SETUP

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 ∧ and ∨ keys together for 3 seconds.
3. Use the ∧ or ∨ key to adjust the differential. The differential is adjustable from ±0.2°F to ±2°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.

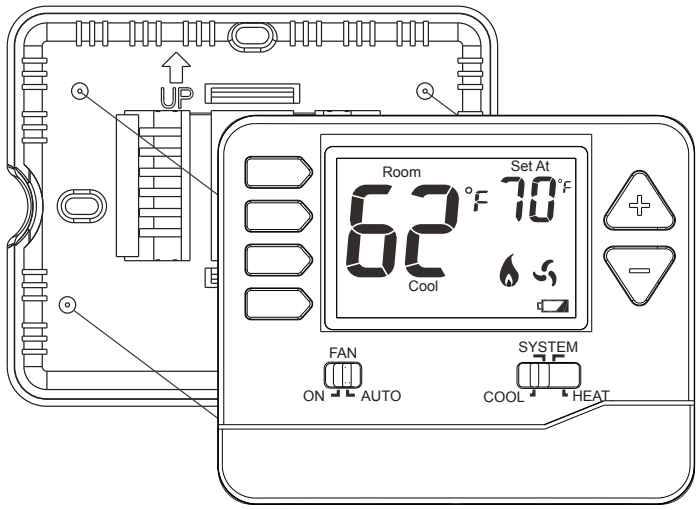
This feature allows the Installer to change the calibration of the room temperature display. For example: If the thermostat reads 70° and you would like it to read 72° then select +2. You can adjust the room temperature display to read -4°F to +4°F above or below the factory calibrated reading. Follow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

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

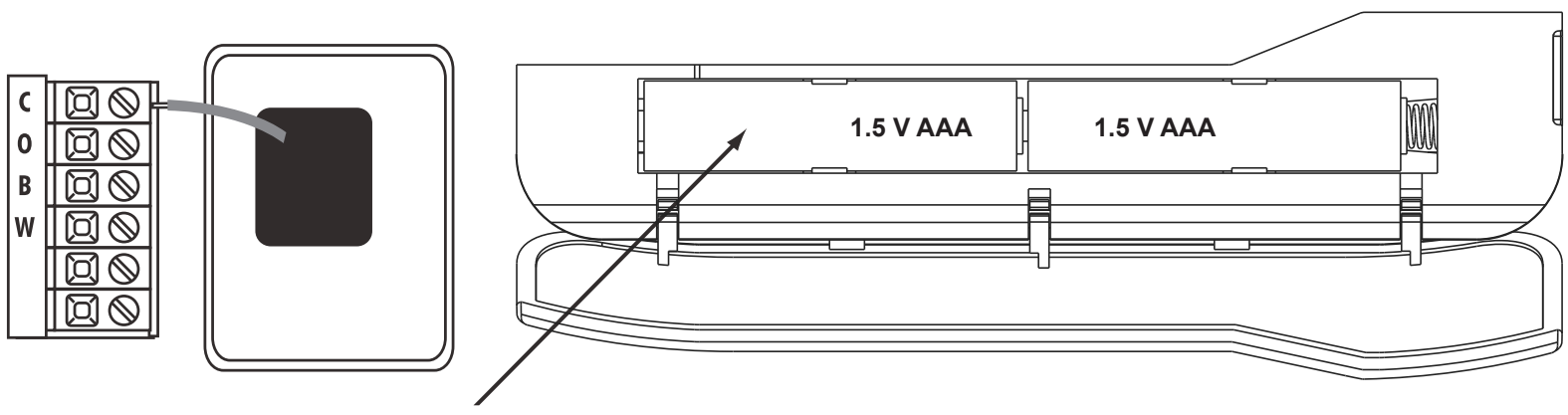
Mount Thermostat

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 thermostat is hardwired (**C** terminal connected).



Insert 2 AAA Alkaline batteries (included).

SPECIFICATIONS

The display range of temperature	41°F to 95°F (5°C to 35°C)
The control range of temperature	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
Swing (cycle rate or 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 of thermostat	4.72”W x 3.80”H x 0.98”D

Robertshaw®

Customer Service +1.800.304.6563
Technical Service +1.800.445.8299
HVACCustomerService@robertshaw.com
www.robertshaw.com • 352-00301-001

6 Year Limited Warranty

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