BlueFin™

THBF705 Master Series

INSTALLATION MANUAL

INSTALLATION MANUAL

This manual covers the following models:

THBF705

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 Furnaces	Yes
Cool Only Systems	Yes
Millivolt	Yes

Table of Contents

Power Type

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

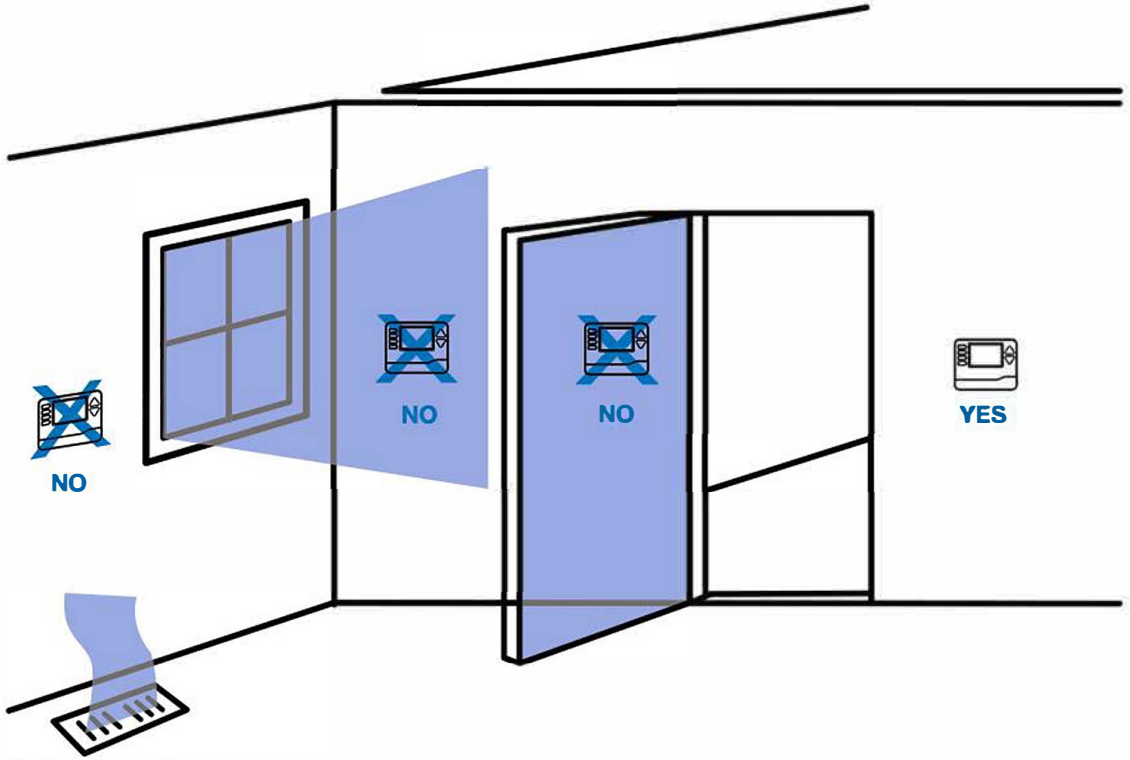
This product must be installed by a trained, experienced technician.

Failure to carefully follow these instructions could create hazardous conditions or cause damage to the product.

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:

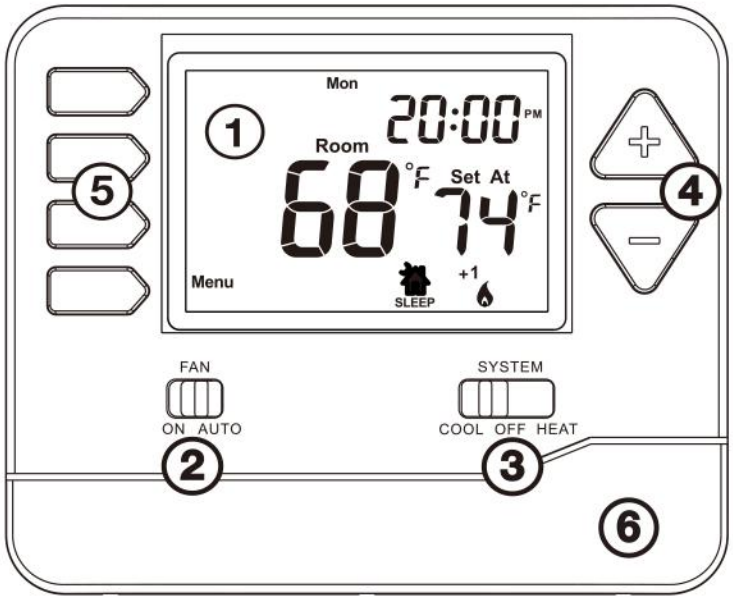
- Near hot or cold air ducts
- In direct sunlight
- On an outside adjacent wall
- In areas that do not require conditioning
- Near dead spots or drafts (in corners or behind doors)
- Near concealed chimneys or pipes

Tip

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

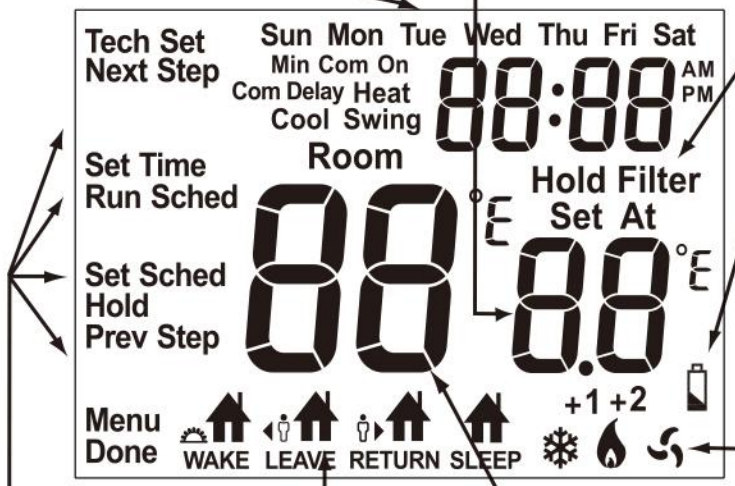
THERMOSTAT QUICK REFERENCE

Getting to know your thermostat



1. LCD Display
2. Fan Switch
3. System Switch
4. Temperature Setpoint Buttons
5. User Buttons
6. Easy Change Battery Door

1 LCD



Days of the week and time.

Displays the user selected setpoint temperature.

Hold: Is displayed when thermostat program is permanently 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: The compressor delay feature is active if these icons are flashing. The compressor will not turn on until the 5 minute delay has elapsed.

Button Options

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

Indicates the current room temperature.

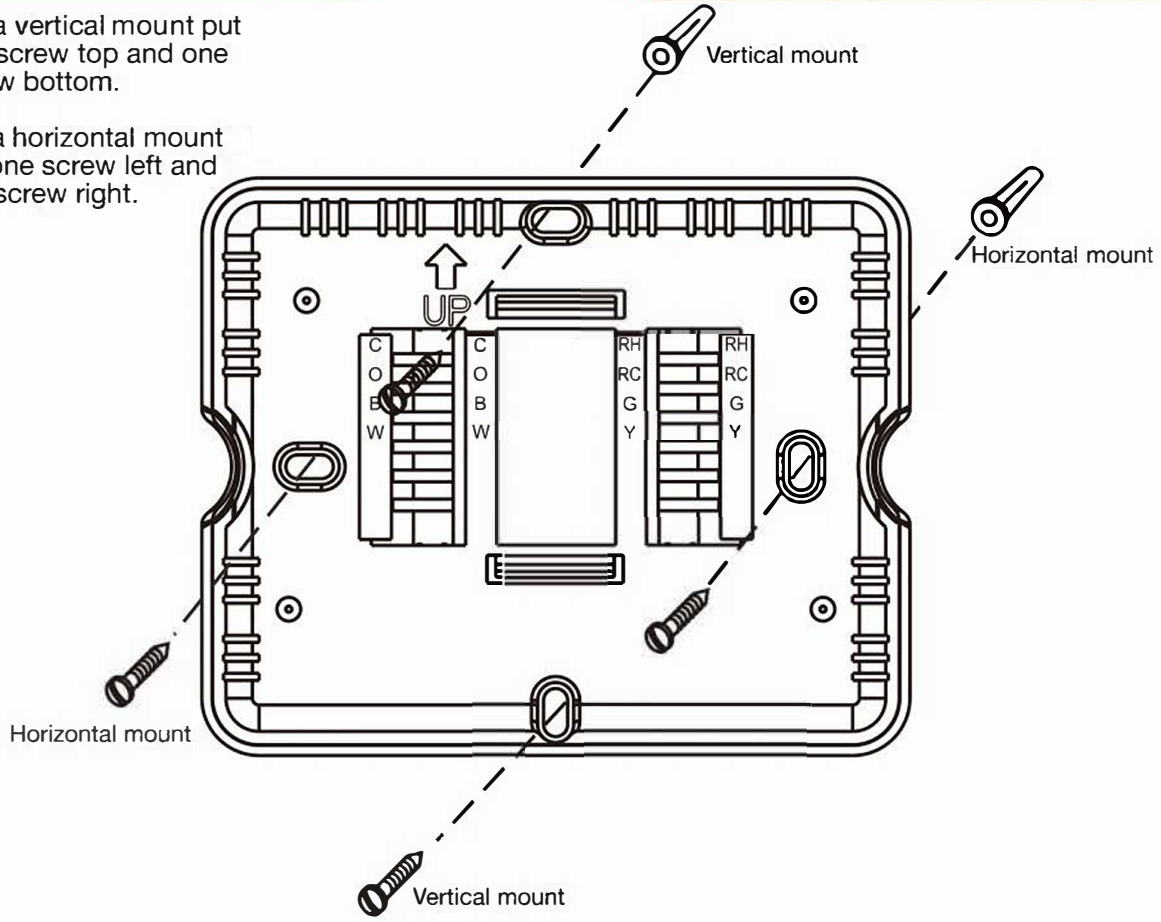
SUBBASE INSTALLATION

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.

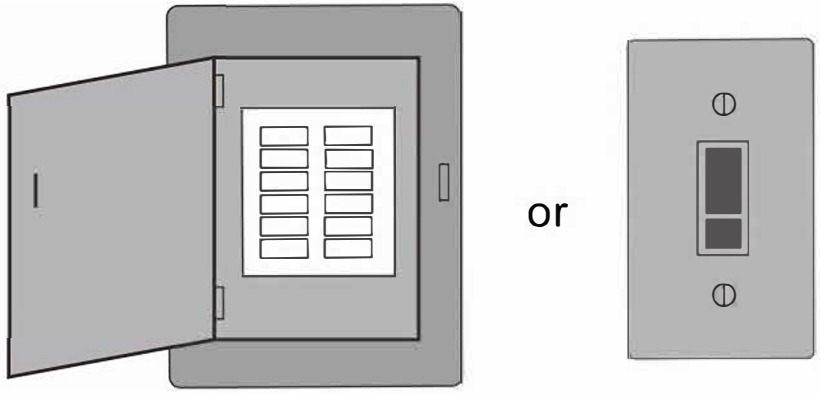
For a vertical mount put one screw top and one screw bottom.

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



WIRING

1 Turn off Power to Heating/Cooling System



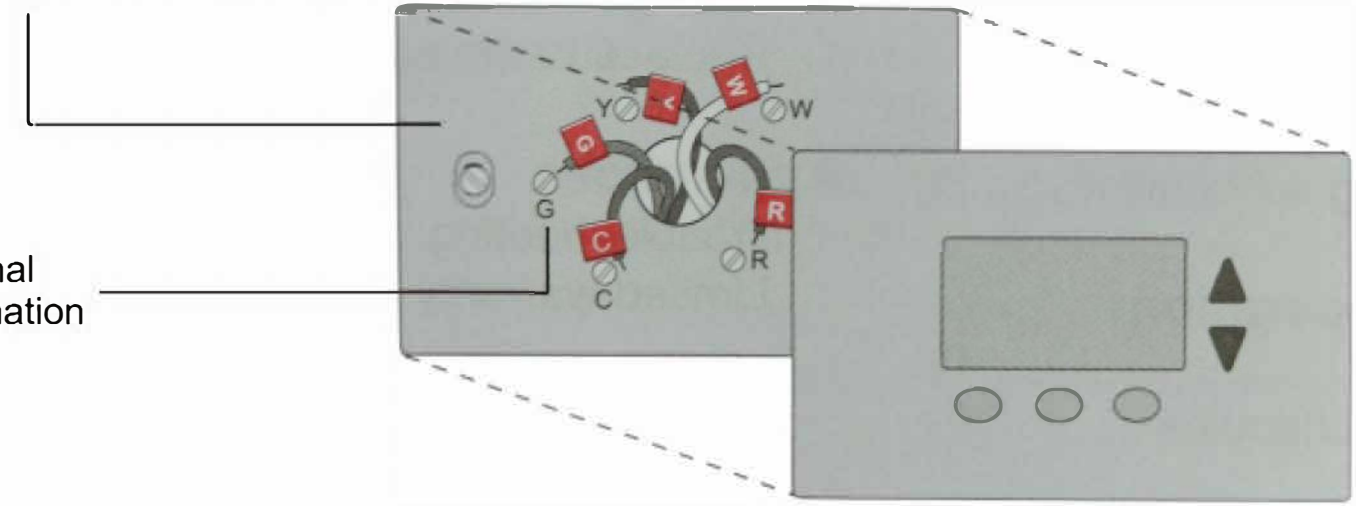
or

Circuit breaker box

Heating/cooling system power swich

2 Remove Old Thermostat

Remove the old thermostat but leave the wallplate with wires attached. Do not remove the wallplate yet.



Terminal designation

3 Label Wires with Tags

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

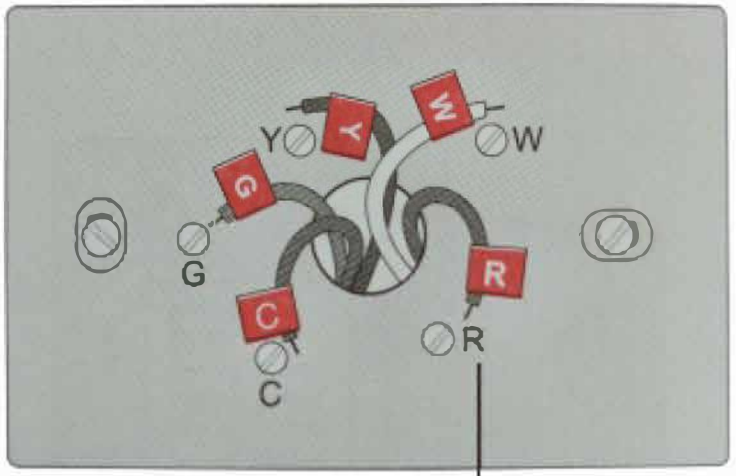
Wiring Labels
Apply these wiring labels to each wire with the appropriate terminal designation as you remove it from the existing thermostat.

Étiquettes de fils
Lorsque vous retirez les fils des bornes du thermostat existant, collez ces étiquettes sur chaque fil correspondant à la lettre de la borne.

Rótulos para los cables
Coloque estos rótulos, con la designación de las termina - les, en cada cable al remover los cables del termostato actual.

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								

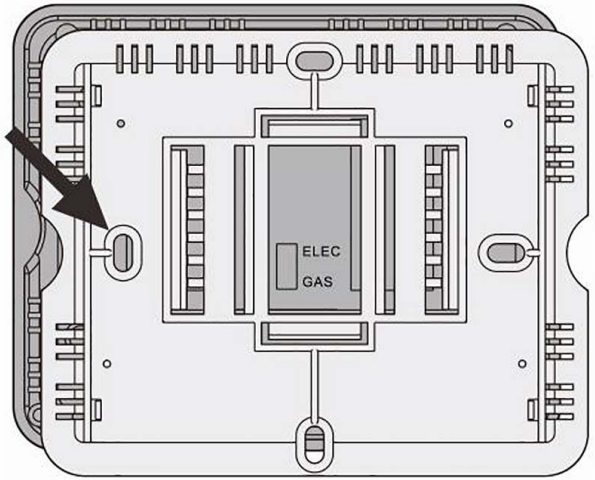
Wire Labels



Terminal designation

4 Separate Wallplate from New Thermostat

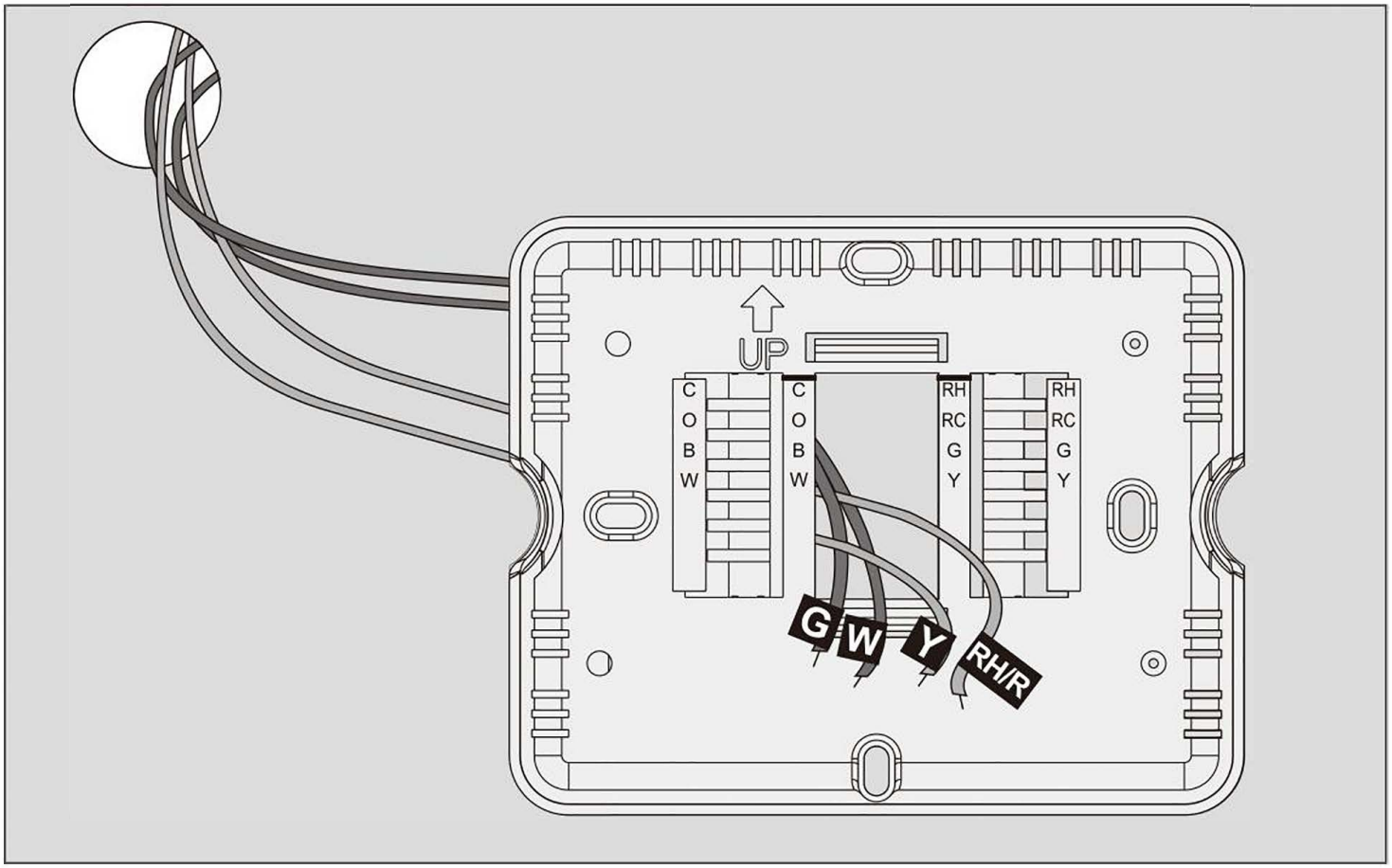
Remove the wallplate from the new thermostat and it mount onto the wall.



Wallplate

5 Mount the New Wallplate

Mount the new wallplate using the included screws and anchors.

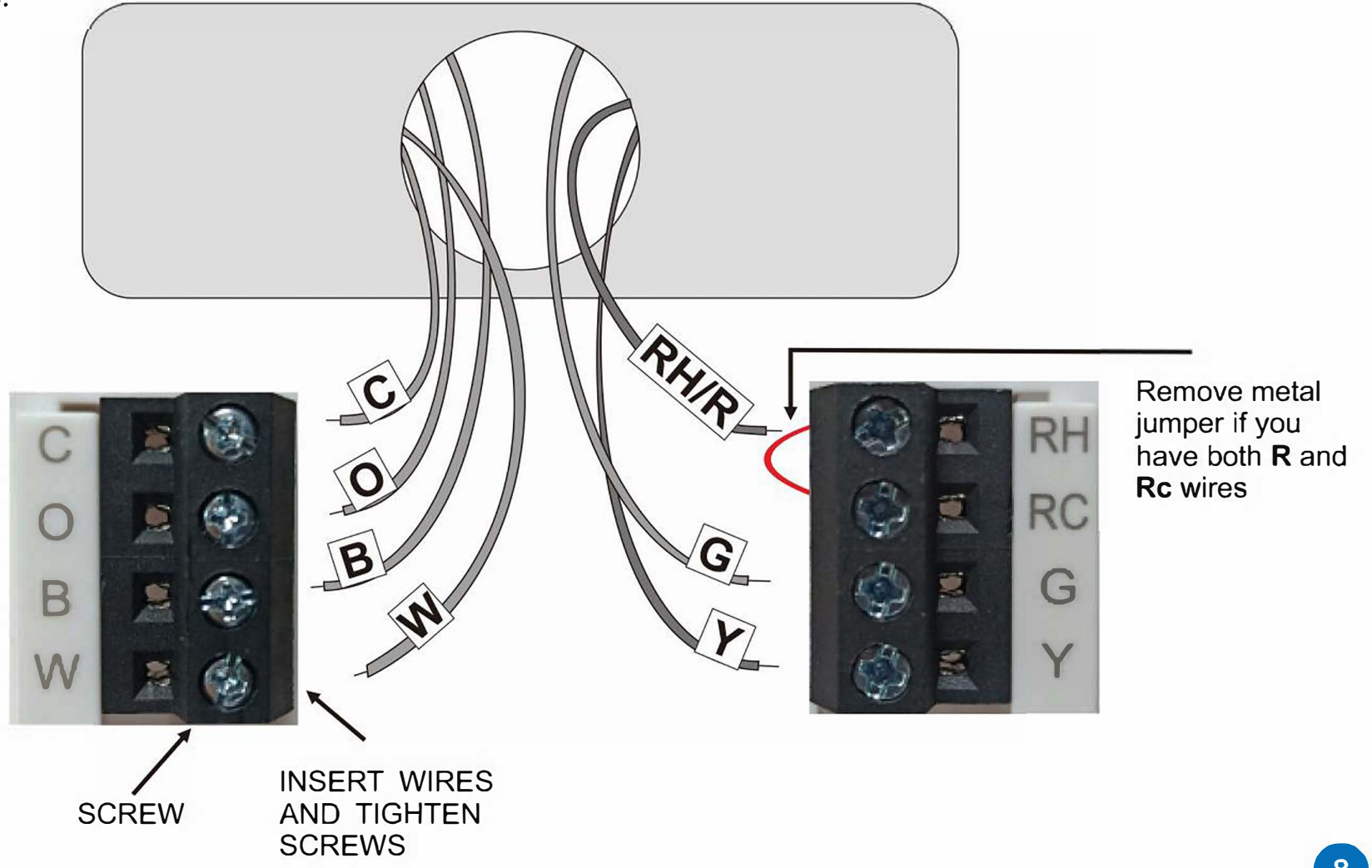


Drill 3/16-in. holes for drywall
Drill 3/16-in. holes for plaster

6 Connect Wires

Match the wire labels.

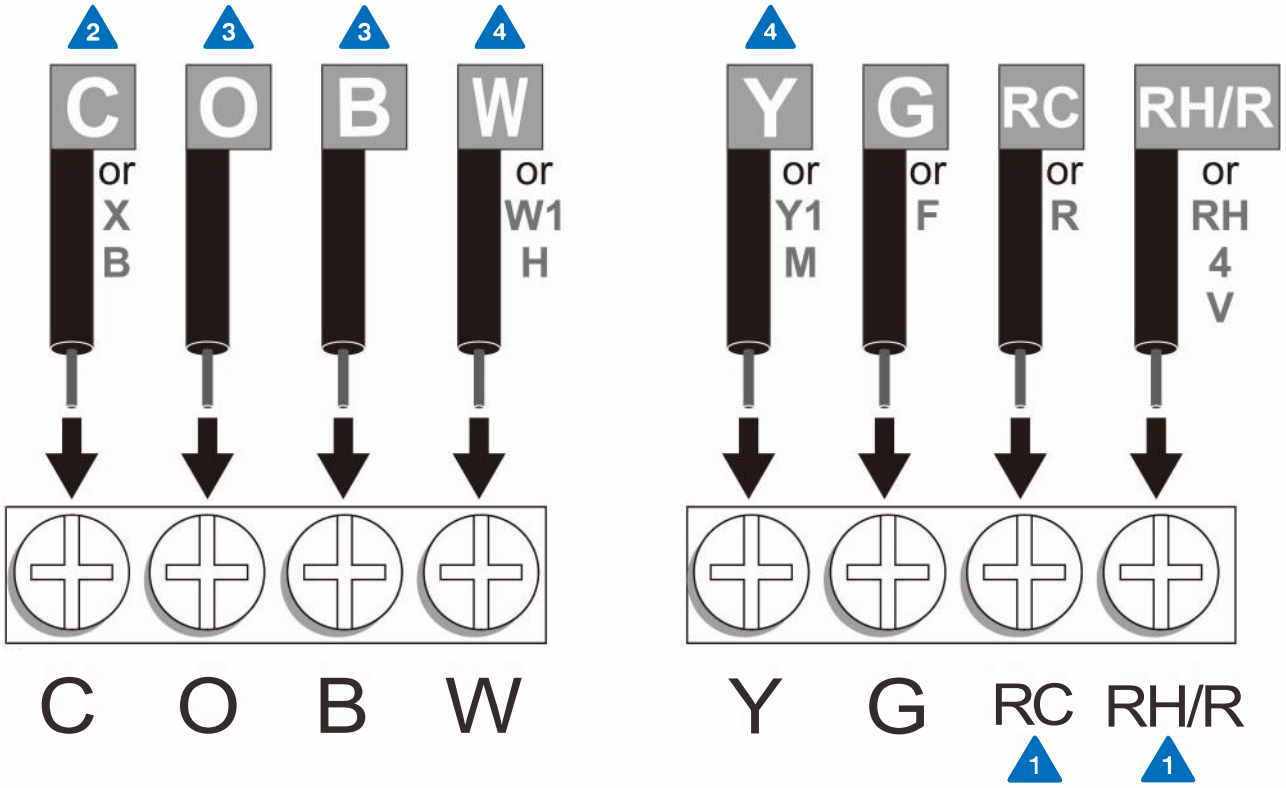
If the labels do not match the letters on the thermostat, refer to “Alternate Wiring (Conventional Systems)” on page 9 and connect the terminal accordingly (see notes below).



WIRING

Alternate Wiring (Conventional Systems)

If the labels do not match letters on the thermostat, refer to the chart below and connect the terminal accordingly (see notes below).



1. If the wires will be connected to both **RC** and **RH/RA** terminals, remove the metal jumper.
2. If a **C** or **X** wire is available, connect with the **C** terminal. If there is no **C** or **X** wire, there is no need to connect with **C** terminal.
3. If you have a **heat pump** without auxiliary/backup, connect **O** OR **B**. Do not connect both. If you do not have a **heat pump**, do not connect **B**. Wrap bare end of wire with electrical tape.
4. Place a jumper (piece of wire) between **Y** and **W** if you are using a heat pump without auxiliary/backup heat.

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.
3. Place nonflammable insulation into wall opening to prevent drafts.

Terminal Designations

W Heat relay G Fan relay Y Compressor relay

O Heat pump changeover valve energized in cooling

RC Transformer power for cooling

RH Transformer power for heating

B Heat pump changeover valve energized in heating

C Common wire from system transformer

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 systems (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.

C terminal

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

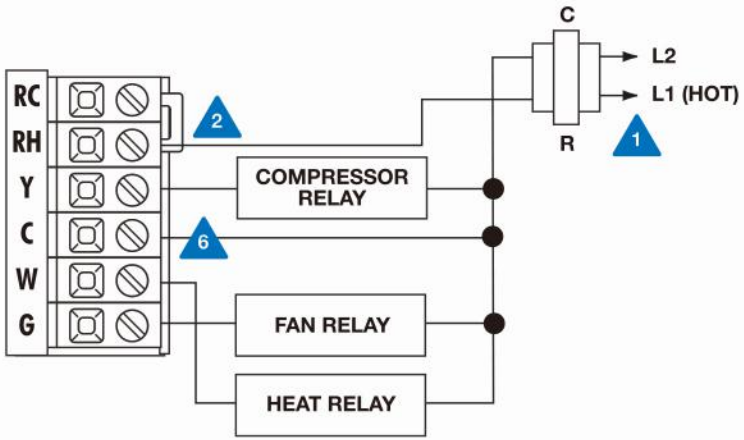
Wire specifications

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

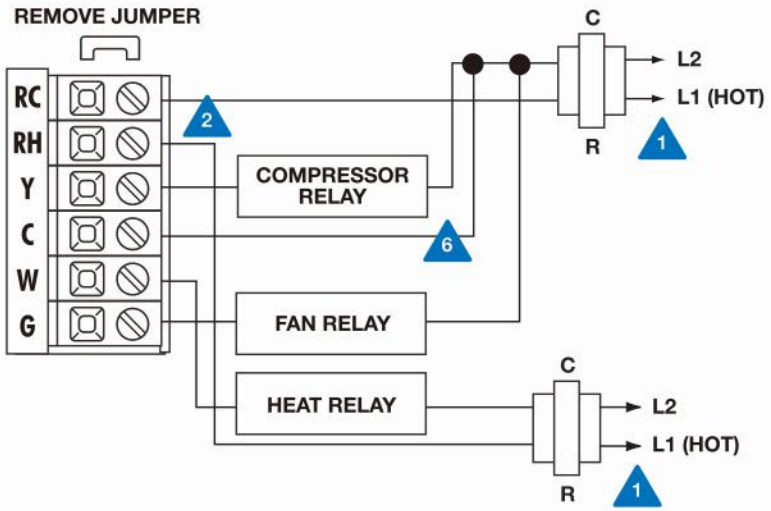
WIRING

1. Power supply
2. Factory-installed jumper. Remove only when installing on 2-transformer systems.
3. Use either O or B terminals for changeover valve
4. Use a small piece of wire (not supplied) to connect W and Y terminals
5. Set fan operation switch to electric
6. Optional 24 VAC common connection when thermostat is used in battery power mode

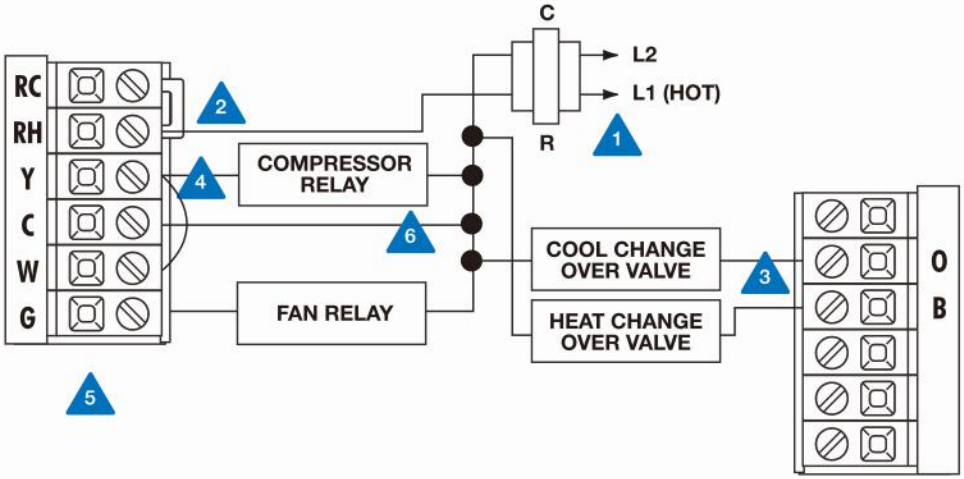
Typical 1H/1C system: 1 transformer



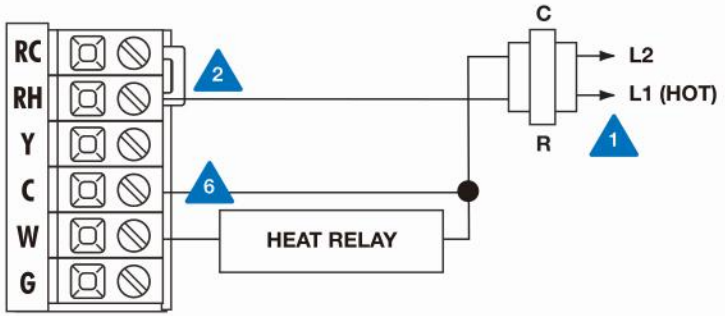
Typical 1H/1C system: 2 transformer



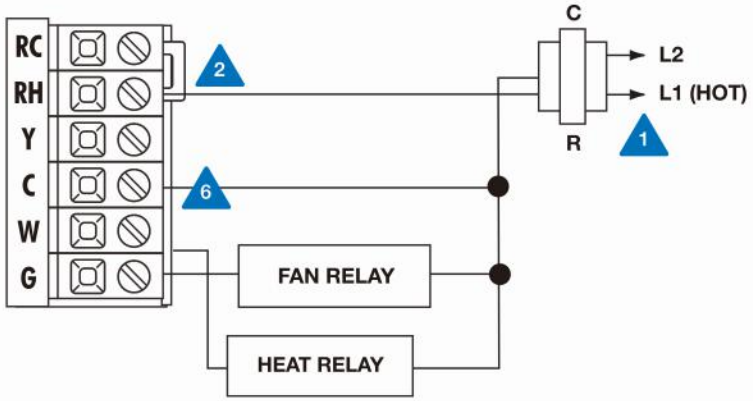
Typical 1H/1C heat pump system



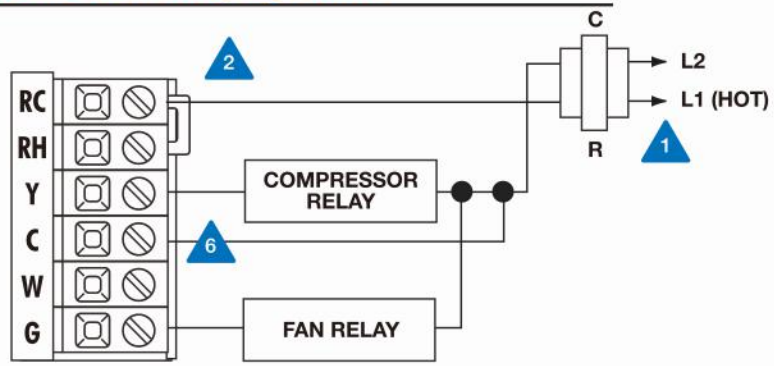
Typical heat-only system



Typical heat-only system with fan



Typical cool-only system



TECHNICIAN SETUP MENU

Technician Setup Menu

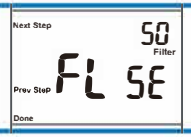
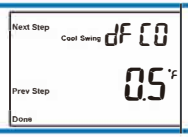
This thermostat has a technician setup menu for easy installer configuration. To setup the thermostat for your particular application:

1. Press **MENU** button
2. Press and hold **TECH SET** button for 3 seconds. This 3 second delay is designed so that homeowners do not accidentally access the installer settings.
3. Configure the installer options as desired using the table below.

   Use the + or − keys to change settings and the **NEXT STEP** or **PREV STEP** key to move from one option to another. **Note:** Only press **DONE** key when you want to exit the Technician Setup options.

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

TECHNICIAN SETUP MENU

Feature	Filter Change Reminder	Room Temperature Calibration	Minimum Compressor On Time	Compressor Short Cycle Delay	Cooling Swing	Heating Swing
Feature Description	This feature will flash "FILT" in the display after the elapsed run time to remind the user to change the filter. A setting of "off" will disable this feature.	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.	This feature allows the installer to select the minimum run time for the compressor. For example: A setting of 4 will force the compressor to run for at least 4 minutes every time the compressor turns on, regardless of the room temperature.	The compressor short cycle delay protects the compressor from "short cycling". This feature will not allow the compressor to be turned on for 5 minutes after it was last turned off.	The swing setting, often called "cycle rate", "differential" or "anticipation" is adjustable. A smaller swing setting will cause more frequent cycles and a larger swing setting will cause fewer cycles.	The swing setting, often called "cycle rate", "differential" or "anticipation" is adjustable. A smaller swing setting will cause more frequent cycles and a larger swing setting will cause fewer cycles.
LCD Will Show						
Adjustment Options	You can adjust the filter change reminder from "off" to 2000 hours of runtime in 50 hour increments.	You can adjust the room temperature display to read -3°F to +3°F above or below the factory calibrated reading.	You can select the minimum compressor run time from "off", "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.	Selecting "ON" will not allow the compressor to be turned on for 5 minutes after the last time the compressor was on. Select "off" to remove this delay.	The cooling swing setting is adjustable from ±0.2°F to ±2°F. For example: A swing 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 heating swing setting is adjustable from ±0.2°F to ±2°F. For example: A swing setting of 0.5°F will turn the heating on at approximately 0.5°F below the setpoint and turn the heating off at approximately 0.5°F above the setpoint.
Factory Default Settings	Off	0 °F	Off	On	0.5 °F	0.4 °F

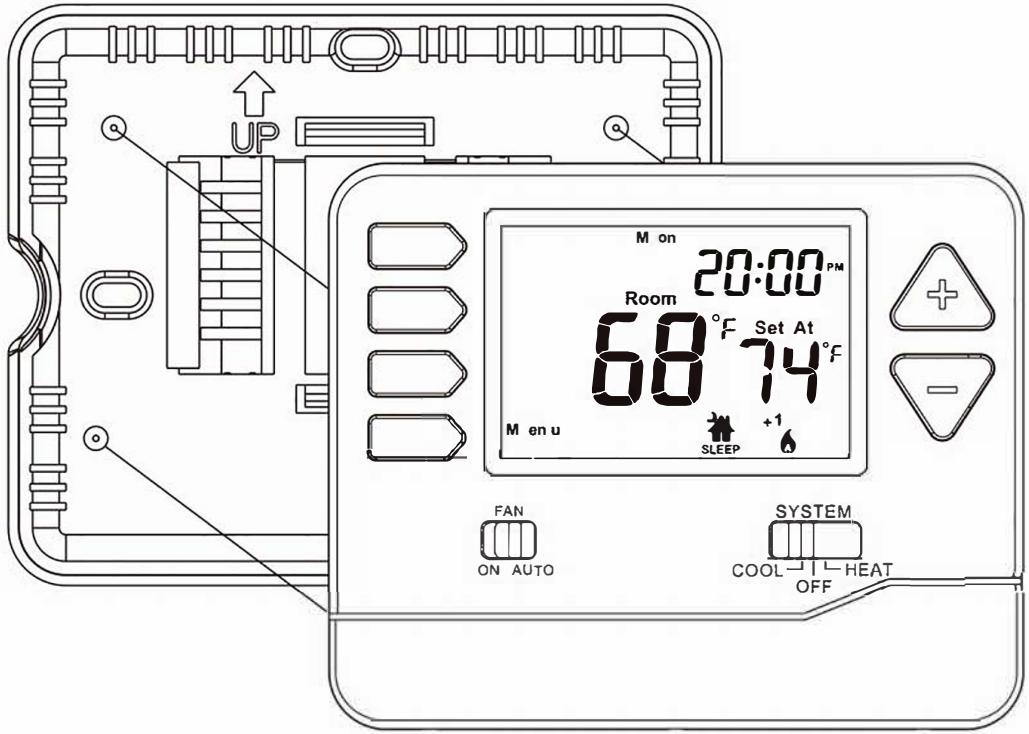
Tip

Temperature swing, sometimes called "differential" or "cycle rate", can be customized for individual applications. For most applications, choose a swing setting that is as long as possible without making the occupants uncomfortable.

MOUNT THERMOSTAT & BATTERY INSTALLATION

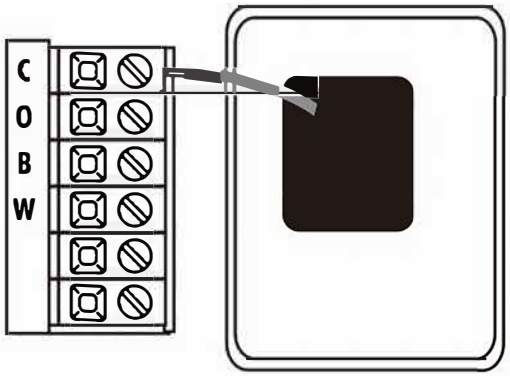
Mount Thermostat

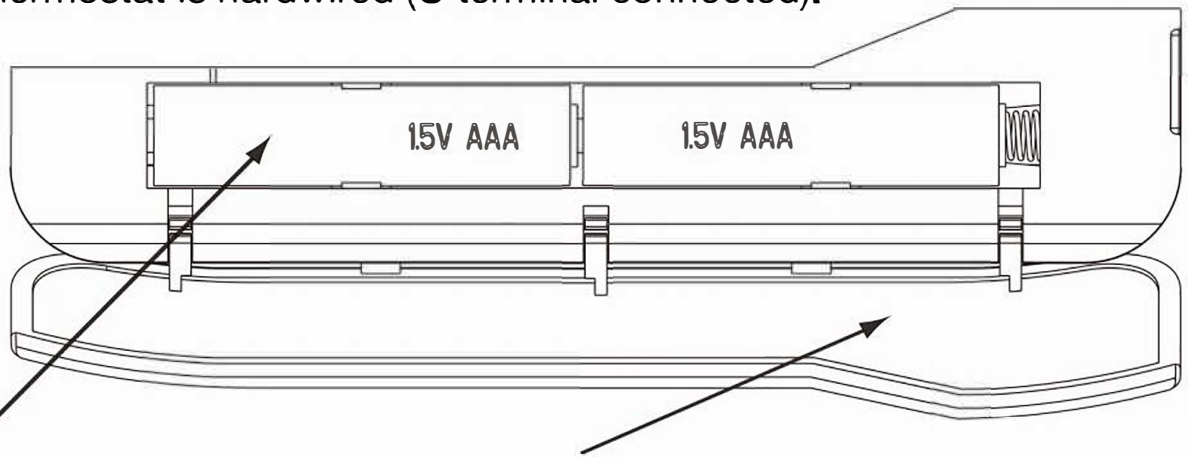
Align the 4 tabs on the **subbase** with corresponding slots on the back of the thermostat, then push gently until the thermostat snaps in place.



Battery Installation

Battery installation is optional if thermostat is hardwired (**C** terminal connected).





Insert 2 AAA alkaline batteries.

Operating instructions can be found on the back of the battery door.

Set Time

Follow the steps below to set the day of the week and current time:

1. Press **MENU**
2. Press **SET TIME**
3. Day of the week will be flashing. Use the + or − key to select the current day of the week.
4. Press **NEXT STEP**
5. The current hour will be flashing, When using 12-hour time, make sure the correct a.m. or p.m. choice is selected. Use the + or - key to make the correct a.m. or p.m. selection and to select the current hour.
6. Press **NEXT STEP**
7. Minutes will be flashing. Use the + or − key to select current minutes.
8. Press **DONE** when completed

Programming

All programmable thermostats are shipped with an energy saving pre-program. You can customize this default program by following the steps below.

Your thermostat can be programmed to have all the weekdays the same, a separate program for Saturday, and a separate program for Sunday. There are four time periods for each program (**WAKE, LEAVE, RETURN, SLEEP**).

PROGRAMMING THE THERMOSTAT

Factory Default Program				
Day of the Week	Events	Time	Setpoint Temperature (Heat)	Setpoint 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 (28° 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 (28° 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 (28° 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)

PROGRAMMING THE THERMOSTAT

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

Programming Table

Day of the Week	Events	Time	Setpoint Temperature (Heat)	Setpoint Temperature (Cool)
Weekday	Wake			
	Leave			
	Return			
	Sleep			
Saturday	Wake			
	Leave			
	Return			
	Sleep			
Sunday	Wake			
	Leave			
	Return			
	Sleep			

PROGRAMMING THE THERMOSTAT

Set Program Schedule

To customize your program schedule, follow these steps

Weekday:

1. Select **HEAT** or **COOL** from the system switch.
   Note: You have to program heat and cool each separately

2. Press **MENU**

3. Press **SET SCHED**. Note: Monday-Friday is displayed and the **WAKE** icon is shown. You are now programming the wake time period for the weekday setting.

4. Time will be flashing. Use the  or  key your time selection for the weekday **WAKE** time period.

5. Press **NEXT STEP**

6. The set point temperature will be flashing. Use the  or  key to make your set point temperature selection for the weekday wake period.

7. Press **NEXT STEP**

8. Repeat steps 4 through 7 for weekday **LEAVE** time period, for weekday **RETURN** time period, and for weekday **SLEEP** time period.

Saturday:

9. Repeat steps 4 through 7 for Saturday **WAKE** time period, for Saturday **LEAVE** time period, for Saturday **RETURN** time period, and for Saturday **SLEEP** time period.

Sunday:

10. Repeat steps 4 through 7 for Sunday **WAKE** time period, for Sunday **LEAVE** time period, for Sunday **RETURN** time period, and for Sunday **SLEEP** time period.

SPECIFICATIONS & CONTACT INFORMATION

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 Energizer batteries
Operating ambient	32° to +105° (0° to +41°C)
Operating humidity	90% non-condensing maximum
Dimensions of thermostat	4.72”W x 3.86”H x 0.98”D