

PRO¹ T721

Pro1 Technologies, Inc.

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Hours of Operation: M-F 9AM - 6PM Eastern

Thermostat Applications Guide

Description	Yes
Gas or Oil Heat	Yes
Electric Furnace	Yes
Heat Pump (No Aux. or Emergency Heat)	Yes
Heat Pump (with Aux. or Emergency Heat)	Yes
Multi-Stage Heating	Yes
Heat Only Systems	Yes
Heat Only Systems - Floor or Wall Furnaces	Yes
Cool Only Systems	Yes
Millivolt Conventional Systems	Yes
Two Transformer Systems	No

Power Type

Battery Power

Hardwire (Common Wire)

Hardwire (Common Wire) with Battery Backup

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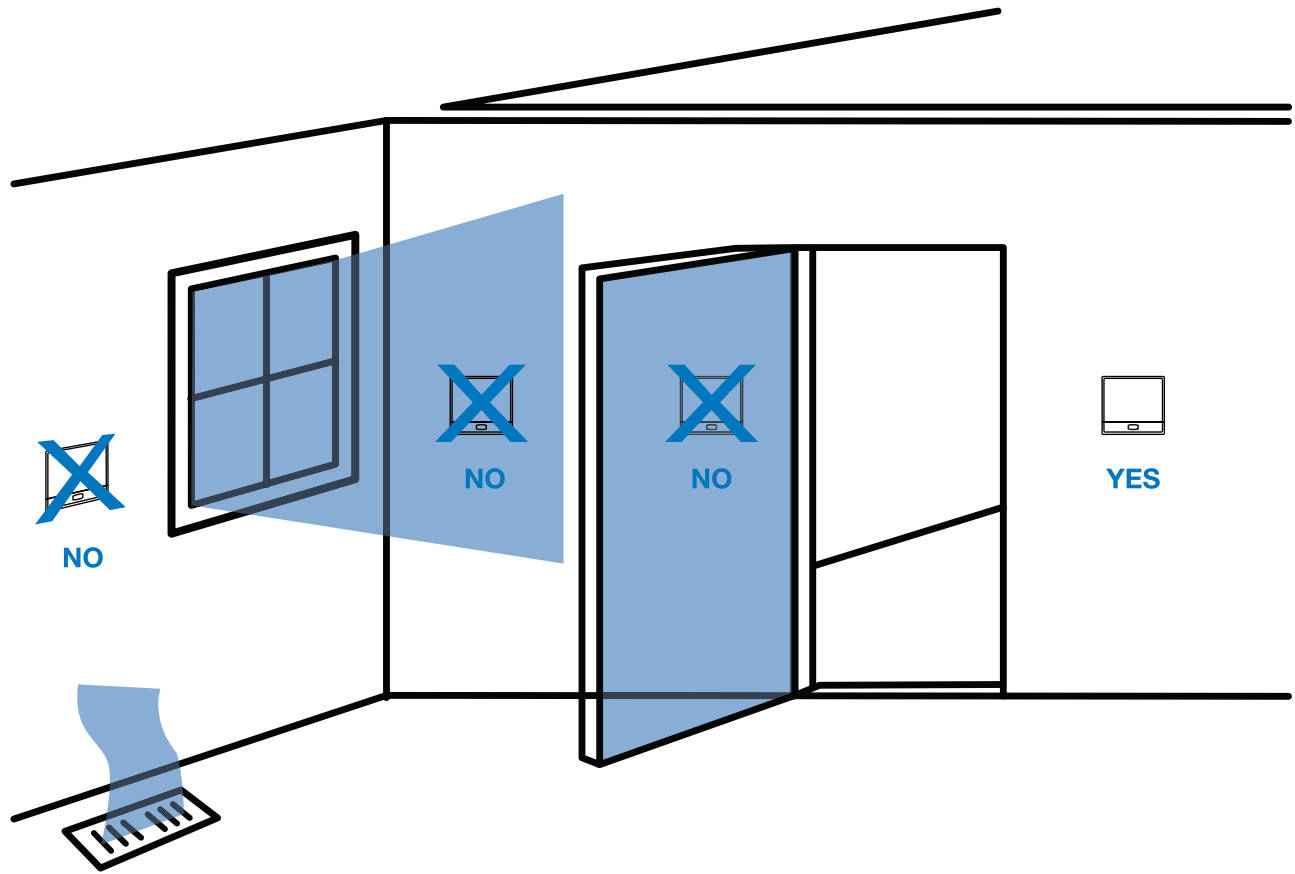
A trained, experienced technician must install this product.

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

Una versión en español de este manual se puede descargar en la página web de la compañía.

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.



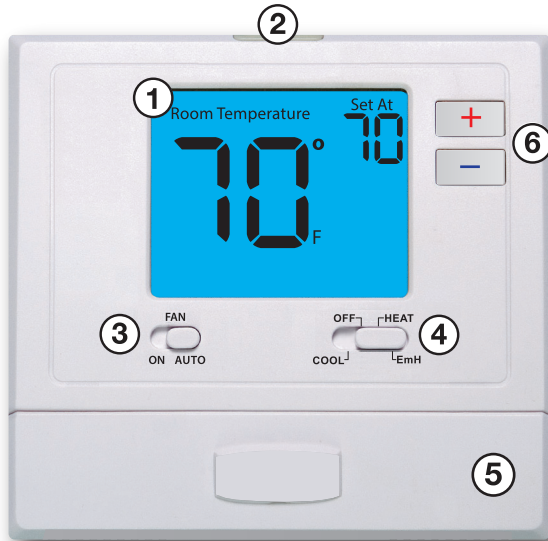
Do not install thermostat in locations:

- 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 conditioning
- Where there are dead spots or drafts (in corners or behind doors)
- Where there might be concealed chimneys or pipes

Installation Tip

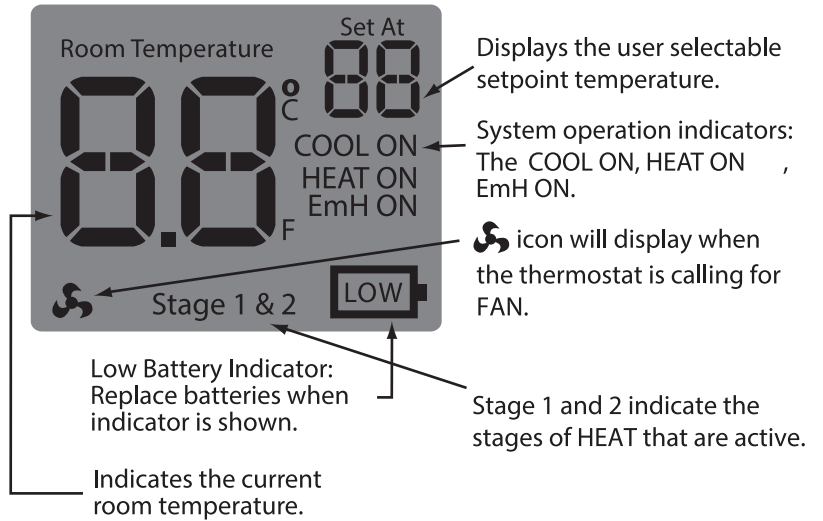
Pick an installation location that is easy for the user to access. The temperature of the location should be representative of the building.

Getting to know your thermostat



- ② Glow in the Dark Light Button
- ③ Fan Switch
- ④ System Switch
- ⑤ Easy Change Battery Door
- ⑥ Temperature Setpoint Buttons

① LCD



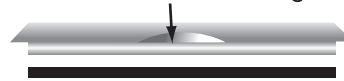
Important:

The low battery indicator is displayed when the AA battery power is low. If the user fails to replace the battery within 21 days, the screen will only show the low battery indicator but maintain all functionality. If the user fails to replace the batteries after an additional 21 days (days 22-42 since first "low battery" display) the set points will change to 55°F(Heating) and 85°F(Cooling). If the user adjusts these setpoints away from these it will hold for 4 hours then return to either 55°F or 85°F. After day 84 the batteries must be replaced immediately to avoid freezing or overheating because the thermostat will shut the unit off until the battery is changed.

Removing the private label badge



Use the bevel on lower ridge



Magnet in door

Gently slide a screwdriver into the bottom edge of the badge. Gently turn the screwdriver counter clockwise. The badge is held on by a magnet in the well of the battery door. The badge should pry off easily.

Do not use force.

About the Badge

All our thermostats use the same universal magnetic badge. Visit the company website to learn more about our free private label program.



Caution: Electrical Hazard

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

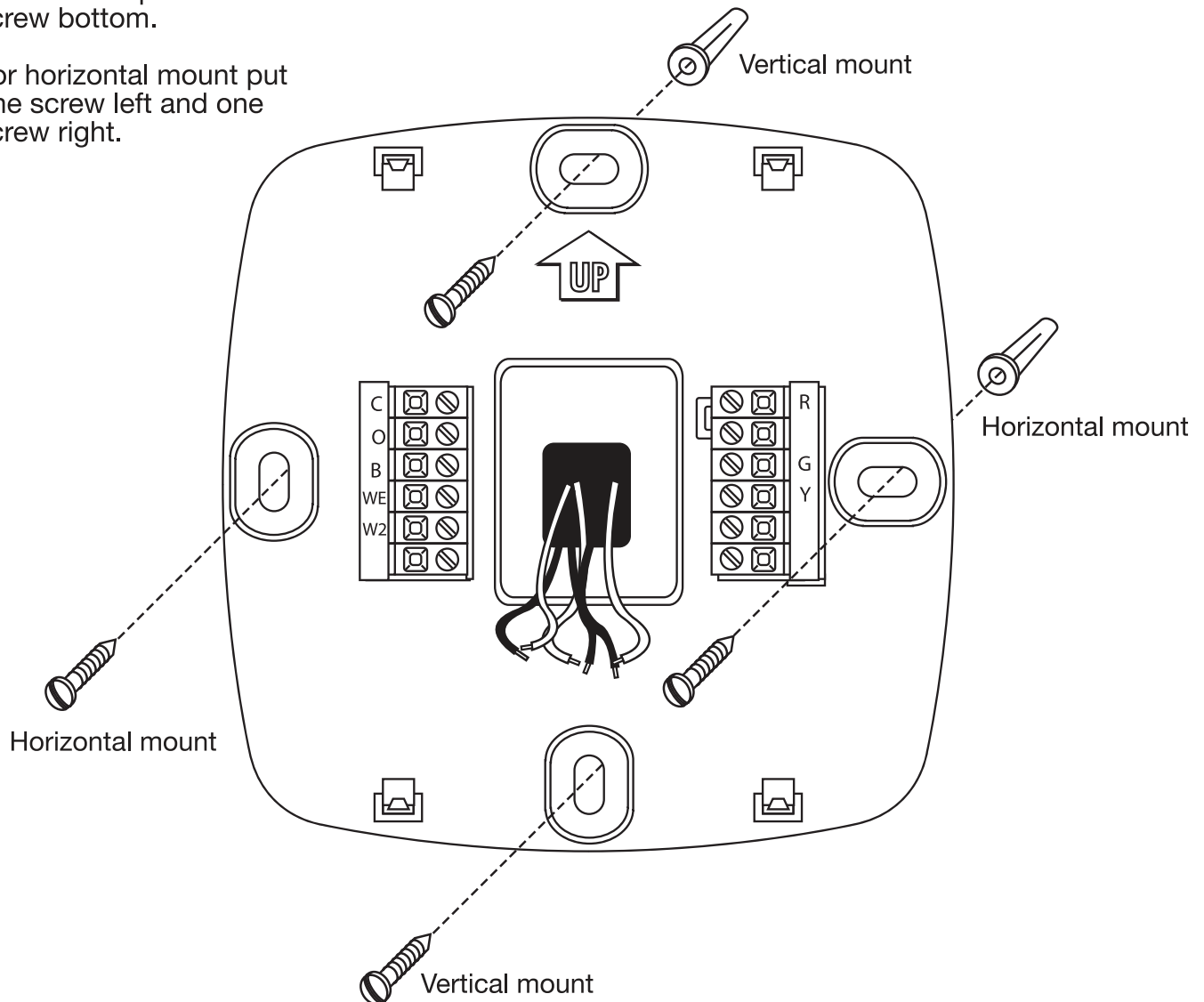


Mercury Notice:

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.



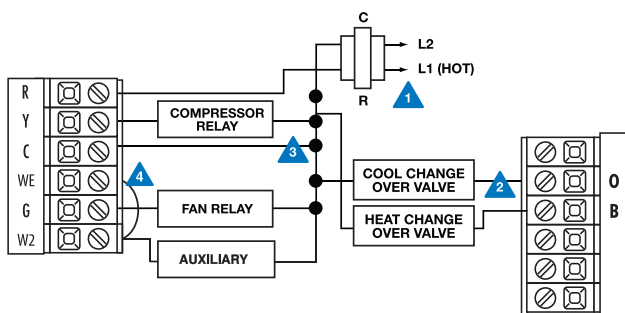
Heat Pump System

Factory Default Setting

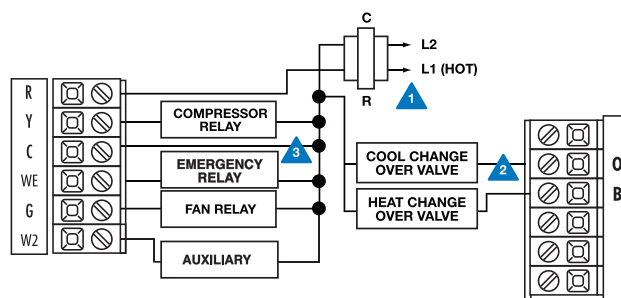
New Thermostat Installation Wiring

- 1 Power supply
- 2 Use either O or B terminals for changeover valve.
- 3 Optional 24 VAC common connection when thermostat is used in battery power mode.
- 4 Field-supplied jumper

Typical 2H/1C heat pump system



Typical 2H/1C heat pump system with separate emergency heat



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

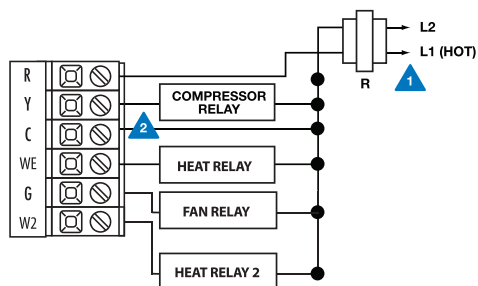
NOTE: This thermostat is only compatible with ONE transformer systems.

Conventional System

Turn Heat Pump Off in Tech Settings

- 1 Power supply
- 2 Optional 24 VAC common connection when thermostat is used in battery power mode.

Typical 1H/1C, 2H/1C Conventional System





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.



Caution:

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

Terminal Designations

Heat Pump System 1 HEAT 1 COOL / 2 HEAT 1 COOL		Conventional System 1 HEAT 1 COOL / 2 HEAT 1 COOL	
R	Transformer Power		Transformer Power
C	Transformer Common		Transformer Common
B	Changeover Valve Energized in HEAT		Energized in HEAT
O	Changeover 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

Technician Setup Menu

1. Select OFF with the System Switch.
2. Hold down the + and - buttons together for 3 seconds.
3. Use the + and - to change setting for that step, and the glow in the dark light button to move from one step to another.
4. To exit Tech Setup or Swing Settings Slide System switch to different position or wait approximately 20 seconds.

Tech Setup Steps							
Room Temperature Calibration	Compressor Short Cycle Delay	°F or °C	Fan Operation	Heat Pump	Gas Auxiliary for Heat Pump	Satisfy Setpoint	Staging Delay
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.	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.	Select F for Fahrenheit temperature display, or C for Celsius.	Select GAS for systems that control the fan during a call for heat. Select ELEC to have the thermostat control the fan during a call for heat.	When set to ON this thermostat will operate a heat pump system (default). If set to OFF this thermostat will operate a conventional system, and the next tech step will not appear.	When ON, this feature turns off the Y terminal 45 seconds after the second stage of heat turns on. This step will not appear if HP is set to OFF.	This feature allows the thermostat to keep multiple stages of heat or cool energized until setpoint is satisfied.	This feature allows a delay to occur when a second stage is needed. This allows the previous stage extra time to satisfy setpoint.
LCD Will Show							
Adjustment Options							
You can adjust the room temperature display to read -4° to +4° above or below the factory calibrated reading.	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.	F for Fahrenheit C for Celsius	EL - Electric for Thermostat Control. GS - Gas for System Control.	ON - Configured to operate Heat Pump System. OFF - Configured to operate Conventional System. See previous page for terminal designations.	Selectable ON or OFF This option should be "ON" for "DUAL FUEL" applications that use a gas furnace for auxiliary heat.	Use the or key to turn ON or OFF	Use the or key to select OFF, 5, 10, 15, 30, 45, 60, or 90 minutes.
Factory Default Settings							
0°	On	°F	EL	ON	OFF	OFF	OFF

Note:



Our Standard staging logic, optional satisfy setpoint and optional staging delay allows for job by job customization that balances comfort, energy efficiency and equipment longevity.

Understanding Thermostat Staging

Your thermostat will control two stages of heating. The thermostat will try to maintain your comfort setting using the first stage for energy efficiency. The second stage of heating will only be used if your thermostat cannot maintain your comfort setting using only one stage. When the second stage is used you will see Stage 2 in the display.

Swing Setting Menu

1. Select HEAT or COOL with the system switch. They are set separately.
2. Hold down the + and - buttons together for 3 seconds to enter setting.
3. Select setting with + and - buttons.
4. To exit slide system switch to different position.

Swing Settings	
Cooling Swing	Heating Swing
<p>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 less frequent cycles.</p>	<p>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 less frequent cycles.</p>
	
<p>The cooling swing setting is adjustable from 0.2° to 2°. For example: A swing setting of 0.5° will turn the cooling on at approximately 0.5° above the setpoint and turn the cooling off at approximately 0.5° below the setpoint.</p>	<p>The heating swing setting is adjustable from 0.2° to 2°. For example: A swing setting of 0.5° will turn the heating on at approximately 0.5° below the setpoint and turn the heating off at approximately 0.5° above the setpoint.</p>
0.8	0.8

Swing Setting Tip

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

Note:

The second stage will turn on at 2x the swing setting. The second stage will turn off when 1x the swing is reached. For example, if the swing setting is .8 degrees for heating and the thermostat is set at 70°F, the first stage will turn on at approximately 69.2°F. The second stage will turn on at 68.4°F. The second stage will turn off at 69.2°F and the first will turn off at 70.8°F.

INSTALLATION MANUAL

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.

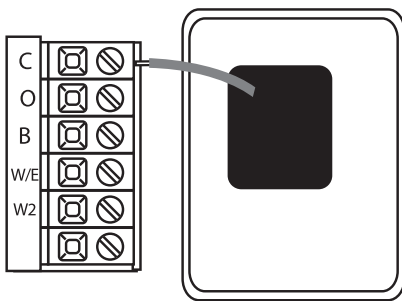


Battery Installation

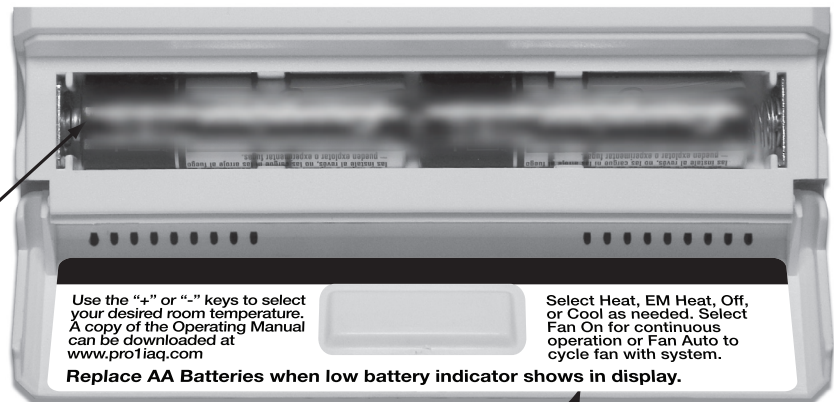
Battery installation is recommended even if thermostat is hardwired (C terminal connected). When thermostat is hardwired and batteries are installed, the thermostat will activate a compressor delay of 5 minutes when the thermostat detects a power outage from the hardwired power supply.

Important:

High quality alkaline batteries are factory installed. Rechargeable batteries or low quality batteries do not guarantee a 1-year lifespan.



Remove factory battery tab when installing thermostat.



Simple operating instructions are found on the back of the battery door.

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° 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 (common wire) Battery power from 2 AA Alkaline Batteries
Operating ambient	32° to 105°F (0° to 41°C)
Operating humidity	90% non-condensing maximum
Dimensions of thermostat	4.7"W x 4.4"H x 0.8" D