

## INDEX

Thermostat Installation	2-4
Wiring	2
Installer Menu	3-4
Test Equipment	4
Using the Thermostat	5-7
Thermostat Overview	5
Thermostat Operation	6
Thermostat Schedule/Programming	6-7
Troubleshooting	7-8
Technical Support	8

Thermostat Applications	Maximum Stages Heat/Cool
Single Stage Cooling, One or Two Stage Heating – 1 Stage Aux Heat Electric only	2/1

**MERCURY NOTICE:** This product does not contain mercury. However, this product may replace a product that contains mercury. Mercury and products containing mercury must not be discarded in household trash. Refer to [www.thermostat-recycle.org](http://www.thermostat-recycle.org) for information on disposing of products containing mercury.

## SPECIFICATIONS

### Electrical Rating:

Battery Power .....	20 to 30 VAC, NEC Class II, 50/60 Hz
Input-Hardwire .....	20 to 30 VAC, NEC Class II, 50/60 Hz
Terminal Load .....	1.5 A per terminal, 2.5 A maximum all terminals combined
Setpoint Range .....	60° to 85° F (16° to 29° C)

### Rated Differentials (@ 6°F/ Hr): Fast .Med Slow

Heat Pump (Heating).....	0.9°F	1.2°F	1.7°F
Heat Pump (Cooling) .....	0.9°F	1.2°F	1.7°F
Auxiliary Heat.....	0.5°F	0.75°F	1.9°F

Operating Ambient .....

32°F to +105°F (0° to +41°C)

Display Temperature Range .....

32°F to +99°F (0 to 37°C)

Operating Humidity .....

90% non-condensing maximum

Shipping Temperature Range .....

-20°F to + 150°F (-29° to +65°C)

Thermostat Dimensions.....

3-3/4" H x 6" W x 1-1/8" D

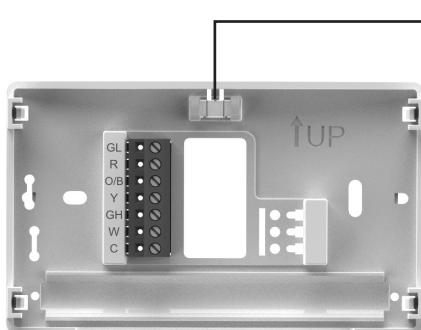
**PART NO. 37-7881001**

# THERMOSTAT INSTALLATION

## WIRING

Refer to equipment manufacturer's instructions for specific system wiring information. After wiring, see INSTALLER MENU for proper thermostat configuration. Wiring table shown are for typical systems and describe the thermostat terminal functions.

Terminal Designations	Terminal Function
GL	Low Speed Fan Relay
R	Power (24V)
O/B	Changeover Terminal-Energized in Cool (O) or Heat (B) for Heat Pump
Y	Heat and Cool Mode 1st Stage Compressor
GH	High Speed Fan Relay
W	Heat Mode – 2nd Stage Heat (Electric)
C	Common wire for 24V



### Leveling Thermostat

Leveling is for appearance only and will not affect thermostat operation.

## Precautions

- Do not exceed the specification ratings.
- All wiring must conform to local and national electrical codes and ordinances.
- This control is a precision instrument, and should be handled carefully. Rough handling or distorting components could cause the control to malfunction.

### WARNING

Do not use on circuits exceeding specified voltage.  
Higher voltage will damage control and could cause shock or fire hazard.

Do not short out terminals on primary control to test. Short or incorrect wiring will burn out thermostat and could cause personal injury and/or property damage.

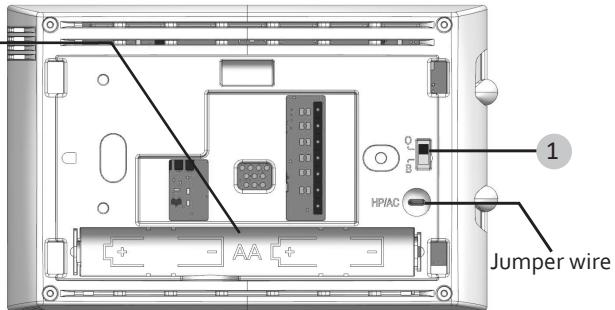
### CAUTION

To prevent electrical shock and/or equipment damage, disconnect electrical power to system, at main fuse or circuit breaker box, until installation is complete.

**Battery Location**

Premium AA alkaline batteries are required. The batteries provide a back-up source of power (this will maintain the clock in the event of a power outage).

**Note:** Batteries are included



**Instructions:** To convert the system from PTHP to PTAC, cut the jumper wire located in the back of the thermostat. Change menu item #20 from default **HP** to **AC**.

*Note: Menu item #32 will not be displayed in AC mode.*

### 1.) O/B Terminal Switch

The O/B switch on this thermostat is factory set to the **B** position. This will accommodate heat pump applications, which require the changeover relay to be energized in **Heat**. If the heat pump being installed requires an **O** terminal to energize the changeover relay in **Cool**, the O/B switch must be moved to the **O** position.

## INSTALLER MENU

To access the INSTALLER'S MENU set the system switch to the OFF position and then press and hold the temperature **▲** and **▼** buttons for 3 seconds. The display will show item **20** in the table below. Use the temperature **▲** and **▼** buttons by pressing them simultaneously to navigate through menu items. Press **▲** or **▼** to change a menu setting. Press the RUN/HOLD button to exit the INSTALLER'S MENU.

Installer's Menu # (Hold Menu 3 Seconds)	Description	Default Setting (flashing icons)	Settings (Press <b>▲</b> or <b>▼</b> )
<b>20</b> <i>AC</i>	Algorithm – AC or HP (If HP is selected, item #32 will be displayed)	HP	HP – Heat Pump or AC – Air Cond.
<b>30</b> <i>CR</i>	Heat Cycle Rate (how often the heat will turn on)	SLO	SLO – slow MEd – medium FAS – fast
<b>32</b> <i>CR</i>	Aux Cycle Rate (how often the auxiliary heat will turn on) <i>Note: Available if HP is selected on item #20</i>	SLO	SLO – slow MEd – medium FAS – fast
<b>35</b> <i>CR</i>	Cool Cycle Rate (how often the cooling will turn on)	SLO	SLO – slow MEd – medium FAS – fast
<b>50</b> <i>CL</i>	Compressor Lockout (protects the compressor from short cycling)	OFF	On – 5 minute delay OFF – no delay
<b>65</b>	Maximum Heat Limit (maximum set point for heat mode)	85°F	45°F to 99°F
<b>66</b>	Minimum Cool Limit (minimum set point for cool mode)	60°F	45°F to 99°F
<b>74</b>	Schedule Type (set as either 7-Day, 5-1-1 Day or Non-Programmable)	7	7 – 7 Day 5 – 5-1-1 Day 0 – Non Programmable

(Installer Menu continued on next page)

## INSTALLER MENU (Continued)

Installer's Menu # (Hold Menu 8 Seconds)	Description	Default Setting (flashing icons)	Settings (Press ▲ or ▼)
76 E	Early Start (starts heating or cooling early so your programmed temperature is reached by the programmed time)	OFF	On – start early OFF – start at program period time
79	Fahrenheit or Celsius	°F	°F – Fahrenheit °C – Celsius
81	Temperature Display Adjustment (adjust the displayed "Room Temperature")	0	-5 to +5
83 dL	Continuous Display Light (keep the backlight always on – "C" wire required)	OFF	On – always on OFF – momentarily on for 8 seconds
86	Change Air Filter (set up a monthly reminder)	OFF	1 to 12 – reminder time (months) OFF – no filter reminder

## TEST EQUIPMENT

Turn on power to the system.

### Fan Operation

- 1.) Move fan switch to Low position. The blower should begin to operate at low speed.
- 2.) Move fan switch to Auto Low position. The blower should stop immediately.
- 3.) Move fan switch to High position. The blower should begin to operate at high speed.
- 4.) Move the fan switch to Auto High position. The blower should stop immediately.

### Heating System

- 1.) Move **System** Switch to **Heat** position.
- 2.) Press ▲ to adjust thermostat setting to 1° above room temperature. The heat pump system should begin to operate and the thermostat will indicate **Heat On**.
- 3.) Press ▲ to adjust thermostat setting to 3° above room temperature. The auxiliary heat should begin to operate and the thermostat will indicate **Heat On Auxiliary**.
- 4.) Press ▼ to adjust thermostat setting 1° below room temperature. The heating system should stop operating and the thermostat should indicate **Heat**.

### Cooling System

- 1.) Move **System** Switch to **Cool** position.
- 2.) Press ▼ to adjust thermostat setting 1° below room temperature. The blower should come on immediately, followed by cold air circulation. The thermostat will indicate **Cool On**. There can be up to a 5 minute delay. (see INSTALLER MENU, item 50)
- 3.) Press ▲ to adjust thermostat setting to 1° above room temperature. The cooling system should stop operating and the thermostat will indicate **Cool**.

*Note: If **Starting Soon** is shown on the display, the compressor lockout feature is operating. There will be up to a 5 minute delay before the compressor turns on. (see INSTALLER MENU, item 50)*



### CAUTION

To prevent compressor and/or property damage, if the outdoor temperature is below 50°F,  
DO NOT operate the cooling system.

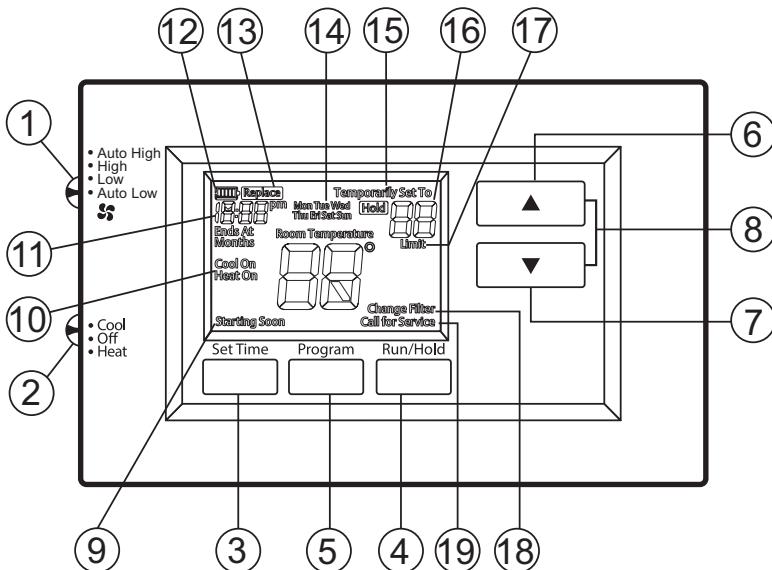
Do not allow the compressor to run unless the compressor oil heaters have been operational for 6 hours and the system has not been operational for at least 5 minutes.

# USING THE THERMOSTAT

## THERMOSTAT OVERVIEW

Before you begin using your thermostat, you should be familiar with its features, display and the location/operation of the thermostat buttons and switches.

THERMOSTAT BUTTONS AND SWITCHES	THE DISPLAY
1.) Fan Switch	9.) Thermostat is protecting the equipment from short cycling (5-minute delay)
2.) System Switch	10.) Indicates that the system is running in cool, heat or auxiliary mode (The auxiliary will run in Heat mode when the heat pump cannot maintain the set temperature.)
3.) Set Correct Time	11.) Displays the current time
4.) Hold a Permanent Temperature or Run Program	12.) Battery status indicator
5.) Access Programming	13.) Low battery indicator
6.) Raises Temperature Setting	14.) Day of the week used when programming a schedule
7.) Lowers Temperature Setting	15.) Permanent hold (bypassing the schedule)
8.) Access Menu Options	16.) Temperature setpoint
	17.) Displays when the thermostat setpoint has reached the maximum or minimum setting.
	18.) Displays change filter reminder
	19.) SEE TROUBLESHOOTING



Whenever " Replace" appears in the display, new premium brand AA alkaline batteries should be installed. If the room will be unoccupied for an extended period and either " " or " Replace" is displayed, install new batteries before leaving.

## THERMOSTAT OPERATION

- **Hold Temperature (bypassing the schedule)** – With the **System** Switch set to **Heat** or **Cool**, momentarily press the **Hold** button. **Hold** will be displayed. Use **▲** or **▼** to adjust the temperature. The thermostat will hold the room temperature at the selected setting until you press **Run** to start program operation again.
- **Program Override (Temporary Hold)** – Press **▲** or **▼** until the desired temperature is displayed. The thermostat will override the schedule until the next programmed time period with a minimum override of 2 hours. Then the thermostat will automatically revert to the program.

## THERMOSTAT SCHEDULE / PROGRAMMING



For tips on programming your thermostat to receive optimal comfort, convenience and energy savings go to: [thermostathelper.com](http://thermostathelper.com)

### Energy Saving Factory Schedule

This thermostat is programmed with the energy saving settings shown in the table below for all days of the week.

	P1/Wake	P2/Leave	P3/Return	P4/Sleep
Heating Schedule	6:00 AM - 70°F	8:00 AM - 62°F	5:00 PM - 70°F	10:00 PM - 62°F
Cooling Schedule	6:00 AM - 78°F	8:00 AM - 85°F	5:00 PM - 78°F	10:00 PM - 82°F

*Note: Thermostat can be programmed on or off the subbase*

## ENTERING YOUR PROGRAM

### Set Current Time and Day

1. Press **SET TIME** button once. The display will show the hour only.

EXAMPLE:  P

2. Press and hold either **▲** or **▼** until you reach the correct hour and AM/PM designation (AM begins at midnight; PM begins at noon).
3. Press **SET TIME** once again. The display window will show the minutes flashing.

EXAMPLE:  P

4. Press and hold either **▲** or **▼** until you reach the correct minutes.
5. Press **TIME** once again. The display will show the day of the week.
6. Press **▲** or **▼** until you reach the current day of the week.
7. Press **RUN/HOLD** once. The display will show the correct time, room temperature and set-point temperature.

### Entering Heating Program (7-Day)

1. Move the **SYSTEM** switch to **HEAT**
2. Press **Program** once. "Mon" (indicating weekday program) will appear in the display. Also displayed are the current programmed start temperature for the 1st heating period and the currently programmed set time (flashing). This display window shows that for the 1st weekday period, the start time is 6:00 AM, and 70° is the programmed temperature (this example reflects factory preprogramming).
3. Press **▲** or **▼** to change the displayed time to your selected time for the 1st heating program period. Note that the time will change in 15 minute increments.

4. Press PROGRAM once (the programmed temperature will flash). Press ▲ or ▼ until your selected temperature appears.
5. Press PROGRAM once. The currently programmed start time and setpoint temperature for the 2nd heating program period will appear.
6. Repeat steps 3 and 4 to select the start time and heating temperature for the 2nd heating program period.
7. Repeat steps 3 through 5 for the 3rd and 4th heating program periods.
8. Press PROGRAM once. "Tue" (indicating Tuesday program) will appear in the display, along with the start time for the 1st heating period and the currently programmed temperature.
9. Repeat steps 3 through 7 to complete Tuesday heating programming.
10. Press PROGRAM once to change to Wed (Wednesday) heating programming and repeat steps 3 through 7 to complete Wednesday through Sunday programming.
11. When you have completed entering your heating program, press RUN/HOLD.
12. To Exit Program press the Run/Hold button.

#### **Entering Cooling Program (7-Day)**

13. Move SYSTEM switch to Cool position
14. Follow Entering Cooling Program (7-Day) for entering your cooling program using selected cooling times and temperatures.
15. To Exit Program press the Run/Hold button.

#### **CAUTION**

If the outside temperature is below 50°F, disconnect power to the cooling system before programming. Energizing the air conditioner compressor during cold weather may cause personal injury or property damage.

## **TROUBLESHOOTING**

Symptom	Possible Cause	Corrective Action
No Heat/ No Cool/ No Fan (common problem)	1.) Blown fuse or tripped circuit breaker 2.) Furnace power switch to OFF 3.) Furnace blower compartment door panel loose or not properly installed 4.) Loose connection to thermostat or system	1.) Replace fuse or reset breaker 2.) Turn switch to ON 3.) Replace door panel in proper position to engage safety interlock or door switch 4.) Tighten Connections
No First Stage Heat	1.) System Switch not set to Heat 2.) Loose connection to thermostat or system 3.) Heating System requires service or thermostat requires replacement 4.) Misconfiguration between menu item 20 and jumper wire 5.) O/B Switch set incorrectly	Verify thermostat and system wires are securely attached. Diagnostic: Set System Switch to Heat and raise the setpoint above room temperature. Within five minutes the thermostat should make a soft click sound and "Heat On" should appear on display. This sound indicates the thermostat is operating properly. If the thermostat does not click, try the reset operation listed below. If the thermostat does not click after being reset, contact your heating and cooling service person or place of purchase for a replacement. If the thermostat clicks, contact the furnace manufacturer or a service person to verify the heating system is operating correctly. Make sure that menu item 20 and the jumper wire match.

(Troubleshooting continued on next page)

## TROUBLESHOOTING (Continued)

Symptom	Possible Cause	Corrective Action
No Cool	1.) System Switch not set to Cool 2.) Loose connection to thermostat or system 3.) Cooling System requires service or thermostat requires replacement 4.) O/B Switch set incorrectly	Verify thermostat and system wires are securely attached. Diagnostic: Set System Switch to Cool and lower setpoint below room temperature. Same procedures as diagnostic for "No Heat" condition except set the thermostat to Cool and lower the setpoint below the room temperature. There may be up to a five minute delay before the thermostat clicks in Cooling if the compressor lock-out option is selected in the installer menu. (see INSTALLER MENU, item 50)
Heat, Cool or Fan Runs Constantly	Possible short in wiring, thermostat, heat, cool or fan system	Check each wire connection to verify they are not shorted or touching other wires. Try resetting the thermostat. If the condition persists contact your HVAC service person.
Thermostat Display & Thermometer Disagree	Thermostat display requires adjustment	Display can be adjusted +/- 5°. See User Menu item 04
Furnace (Air Conditioner) Cycles Too Fast or Slow (narrow or wide temperature swing)	The location of the thermostat and/or the size of the Heating System may be influencing the cycle rate	Digital thermostats provide precise control and cycle faster than older mechanical models. The system turns on and off more frequently, but runs for a shorter time. If you would like to increase cycle time, choose SLO for slow cycle in the Installer menu. (Reference menu items 30 & 35) If an acceptable cycle rate is not achieved, contact your HVAC service person.
"Call for Service" icon appears on displayed	1.) Heating system is not able to heat the space to within 10 degrees of the setpoint within 2 hours 2.) Cooling system is not able to cool the space to within 10 degrees of the setpoint within 2 hours 3.) If "--" is displayed for the Room Temperature, a replacement thermostat is needed 4.) None of the buttons operate on the thermostat 5.) If "Call for Service" is flashing, compressor self diagnostic is detecting an issue with the outdoor unit	1.) See corrective action for "No Heat"  2.) See corrective action for "No Cool"  3.) Replace thermostat  4.) Check for a stuck button  5.) Contact a service person to verify the equipment is operating correctly

### Resetting the Thermostat or Thermostat Settings

If the thermostat has good batteries, but has a blank display or does not respond to key presses, the thermostat should be reset by removing the batteries for 2 minutes. This reset will not change the menu settings or program. If the condition persists after reinstalling the batteries, replace the thermostat.

To conveniently reset only the schedule and user settings back to factory defaults, press **▲**, **▼** and **Set Time** buttons at the same time and hold until the display goes blank and resets.

**NOTE:** This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

CAN ICES-003 (B) / NMB-003 (B)

TECHNICAL SUPPORT: 1-888-725-9797