SAFETY PRECAUTIONS

Improper wiring or installation may damage thermostat. Wiring must conform to local and national electrical codes.

WARNING: Before installing thermostat, turn off all power to unit. There may be one or more power disconnects. Electrical shock can cause personal injury or death.

INTRODUCTION

The thermostat is a wall mounted, low voltage thermostat which maintains room temperature by controlling the operation of a heating and air conditioning system. Batteries are not required; temperature and mode settings are preserved with the power off.

INSTALLATION CONSIDERATIONS

The thermostat requires no batteries. The best pump thermostat is not a power steering device and MUST have both R and C powered.

INSTALLATION

I. THERMOSTAT LOCATION

Thermostat should be mounted:
- Approximately 5 ft. (1.5 m) from floor.
- Close to or in a frequently used room, preferably on an inside partitioning wall.
- On a section of wall without pipes or duct work.

Thermostat should NOT be mounted:
- Close to a window, on an outside wall, or next to a door leading to the outside.
- Exposed to direct light and heat from a lamp, sun, fireplace, or other temperature-regulating object which may cause a false reading.
- Close to or in direct airflow from supply registers and return-air grilles.
- In areas with poor air circulation, such as behind a door or in an above.

II. INSTALL THERMOSTAT

1. Turn off all power to unit.
2. If an existing thermostat is being replaced:
   A. Remove existing thermostat from wall.
   B. Disconnect wires from existing thermostat, one at a time. Be careful not to allow wires to fall back into the wall.
   C. As each wire is disconnected, record wire color and terminal marking.
   D. Discard or recycle old thermostat.

NOTE: Mercury is a hazardous waste and MUST be disposed of properly.

3. Suspend the front and back plates of plastic.
4. Route thermostat wires through hole in back piece of plastic. Level plastic against wall (for aesthetic value only; thermostat need not be level for proper operation) and mark wall through 3 mounting holes.
5. Drill two 3/16-in. mounting holes in wall where marked. (Note: Mounting holes on thermostat are designed to fit on a horizontal J-box).
6. Secure back piece of wall to J-box and screws provided. Make sure two wires extending through hole in plastic.
7. Connect wires to proper terminal of the connector block in the front piece.
8. Push any excess wire back into wall. Exposed wire inside the thermostat plastic case can interfere with proper air flow across the temperature sensor. Seal hole (if wall) to prevent air leaks. Leaks can affect operation.
9. Snap front and back pieces of plastic together.
10. Turn on power to the unit.

III. SET THERMOSTAT CONFIGURATION (NOT ALL OPTIONS AVAILABLE ON ALL MODELS)

While in configuration mode, TWELVE option choices can be made:
- Anticipator Value Adjustment
- Display temperature Fahrenheit/Celsius selection
- Fan on with W (emergency heat)
- Reversing Valve on with C (ata21u01 only)
- Offset Adjustment for Room Temperature
- Set V2 on for two stage heat pump (ata22u01 only)
- Auto change over selected
- Dead band setting for air temperature settings
- Extended fan operation with Y
- Display temperature of set point
- Cruise Rate, Cycles per hour
- Safety Settings

TO ENTER THE CONFIGURATION MODE:

Press and hold the FAN button for approximately 10 sec until room temperature disappears and the display reads "79."

NOTE: If the FAN button is pressed again or if a button is pressed for 2 minutes, thermostat will exit the configuration mode and return to normal operation. To re-enter this configuration mode, the FAN button must be pressed and held for 10 sec. again.

IN CONFIGURATION MODE, THE FOLLOWING OPTIONS ARE AVAILABLE:

A. ANTICIPATOR - VALUE ADJUSTMENT

This adjustment controls the sensitivity and cycle rate of the thermostat. Higher numbers increase the sensitivity and slow the cycle rate. Lower numbers increase the sensitivity and increase cycle rate. However, a limiting feature will not allow more equipment cycles per hour than is set in CR, regardless of setting. Values can range from 1 to 3. Factory default setting is 2. This default selection will provide optimum performance in nearly all installations. Try 1 first. Do not change setting unless there is evidence of need to do so. Unlike conventional anticipators, this setting is not determined by overheat draw. There is no need to measure, know, or compensate for current.

TO ADJUST:
1. Enter configuration mode (if not already there).
2. Use up and down buttons to display A.
3. Press MODE button once to display current value.
4. Use up and down buttons to move between values.
5. Press MODE button to return to A. Up and down buttons now move between option choices A, d, etc. or press FAN to exit configuration mode.

WIRING DIAGRAMS

All excess wire should be pushed back into the wall as far as possible. Excess wire inside the thermostat plastic case may interfere with the air flow across the temperature sensor.
d. *FAHRENHEIT/Celsius* Selection

This selection operates the thermostat in either Fahrenheit or Celsius.

**TO SELECT:**

1. Enter configuration mode (if not already there).
2. Use up and down buttons to display f.
3. Press MODE button once to display current selection of °F or °C.
4. Use up and down buttons to change between °F and °C.
5. Press MODE button to return to f. Up and down buttons now move between option choices or press FAN button to exit configuration mode.

**e. G/L/ON with W (HEAT) Selection**

This selection determines whether the G (fan) output is to be ON or OFF when the W (fan) is used. This is to avoid the fan running when the G (fan) output is OFF. When the W (fan) is used, the G (fan) output is OFF.

**TO SELECT:**

1. Enter configuration mode (if not already there).
2. Use up and down buttons to display W.
3. Press MODE button once to display current selection of ON or OFF.
4. Use up and down buttons to change between ON and OFF.
5. Press MODE button to return to W. Up and down buttons now move between option choices or press FAN button to exit configuration mode.

**f. Q (RVS) On with Heat or Cool Selection (64/2421U01 ONLY)**

This selection is only available on heat pump thermostats. This selection determines the lowest indoor temperature allowed when heating or cooling.

The factory default is "C" for energized in cooling.

**TO SELECT:**

1. Enter configuration mode (if not already there).
2. Use up and down buttons to display C.
3. Press MODE button once to display current selection of "H" for energized in heating or "C" for energized in cooling.
4. Use up and down buttons to change between "H" and "C".
5. Press MODE button to return to C. Up and down buttons now move between option choices or press FAN button to exit configuration mode.

**g. ROOM TEMPERATURE OFFSET ADJUST Selection**

The selected number is the number of degrees, plus or minus, which will be added to the actual temperature. The number range can be between -5 and 5.

Factory default is 0. This adjusted value will be used as actual temperature for display and control action. The effect is that a positive number selection will make the thermostat temperature lower than the actual room temperature. The thermostat is calibrated within an accuracy of plus or minus 2 degrees when shipped from the factory. This adjustment will provide the best accuracy when set to 0.

**TO SELECT:**

1. Enter configuration mode (if not already there).
2. Use up and down buttons to display 0.
3. Press MODE button once to display current offset value.
4. Use up and down buttons to select a value between -5 and 5.
5. Press MODE button to return to 0. Up and down buttons now move between option choices or press FAN button to exit configuration mode.

**h. Y2/W output (Single or Two Stage Heat Pump) (64/2422U1 ONLY)**

This selection allows the Y2/W output to be selected or Second Stage compressor output (Y2:ON) or Heating Stage 3 with electric heat output (Y2:OFF). If Y2:ON, then Y2/W will turn on when there is a demand for second stage compressor, whether heating or cooling. If Y2:OFF, then Y2/W will turn on when there is a demand for second stage heating.

**TO SELECT:**

1. Enter configuration mode (if not already there).
2. Use up and down buttons to display Y2.
3. Press MODE button once to display current selection of Y2:ON or Y2:OFF.
4. Use up and down buttons to change.
5. Press MODE button to return to Y2. Up and down buttons now move between option choices or press FAN button to exit configuration mode.

**i. Auto Change over select**

This selection allows the thermostat to be configured as Auto changeover or manual changeover. When in Manual changeover mode (M5:ON), the "Auto" icon will not be visible on the display.

**TO SELECT:**

1. Enter configuration mode (if not already there).
2. Use up and down buttons to display M5.
3. Press MODE button once to display current selection of Off or On.
4. Use up and down buttons to change.
5. Press MODE button to return to M5. Up and down buttons now move between option choices or press FAN button to exit configuration mode.

**j. Dead band Set for Auto Mode**

This selection selects the minimum difference between the heating setpoint and the cooling setpoint. This will be used when the thermostat is configured for Auto changeover mode.

**TO SELECT:**

1. Enter configuration mode (if not already there).
2. Use up and down buttons to display E.
3. Press MODE button once to display current selection of 0.1° to 4.
4. Use up and down buttons to change.
5. Press MODE button to return to E. Up and down buttons now move between option choices or press FAN button to exit configuration mode.

**k. Extended function with Y selection**

This selection enables extended fan operation when Y turns off. The fan will run for 90 seconds after Y turns off.

**TO SELECT:**

1. Enter configuration mode (if not already there).
2. Use up and down buttons to display Y.
3. Press MODE button once to display current selection of 0 or 60.
4. Use up and down buttons to change.
5. Press MODE button to return to Y. Up and down buttons now move between option choices or press FAN button to exit configuration mode.

**l. Display Temperature**

If d=0, then the actual room temperature is displayed. If d=OFF, then the temperature setpoint is displayed.

**TO SELECT:**

1. Enter configuration mode (if not already there).
2. Use up and down buttons to display d.
3. Press MODE button once to display current selection of "d=0" or "d=OFF".
4. Use up and down buttons to change.
5. Press MODE button to return to d. Up and down buttons now move between option choices or press FAN button to exit configuration mode.

**m. Cycle Rate Selection**

This selection selects the cycle rate maximum in cycles per hour.

**TO SELECT:**

1. Enter configuration mode (if not already there).
2. Use up and down buttons to display C.
3. Press MODE button once to display current selection of 0 or 80.
4. Use up and down buttons to change.
5. Press MODE button to return to C. Up and down buttons now move between option choices or press FAN button to exit configuration mode.

**n. Safety SetPoint Selection**

This selection enables or disables the safety setpoint feature. If S=On, then if the room temperature goes beyond the Safety setpoint limits (90°F for heating and 90°F for Cooling), then the Heat Pump will run even if the thermostat is in the ON OFF mode. If S=OFF, then the Heat Pump will not run in these situations.

**TO SELECT:**

1. Enter configuration mode (if not already there).
2. Use up and down buttons to display S.
3. Press MODE button once to display current selection of ON or OFF.
4. Use up and down buttons to change.
5. Press MODE button to return to S. Up and down buttons now move between option choices or press FAN button to exit configuration mode.

**IV. CHECK THERMOSTAT OPERATION**

**1. Fan Operation**

A. Press FAN button, starting fan operation. Fan annunciator turns on.
B. Press FAN button, stopping fan operation. Fan annunciator turns off.

**2. Heating Operation**

A. Press and release MODE button until HEAT is displayed.
B. Press up button until LCD readout reads 10 degrees above room temperature. Heating system should begin to operate within 5 minutes of the HEAT icon turning red.
C. If there is a Demand for Second Stage Heat the second stage will turn on after a delay and the HEAT icon will flash fast.

**3. Cooling Operation**

A. Press and release MODE button until COOL is displayed.
B. Press down button until LCD readout reads 10 degrees below room temperature. A change of temperature system should begin to operate within 5 minutes and the COOL icon will flash.
C. If there is a Demand mode option is set to Y2=On, the second stage COOL will come on after a delay and the COOL icon will flash fast.

**4. Auto Change Over Operation**

A. Press and release MODE button until AUTO is displayed.
B. Press DOWN button. LCD readout reads The set temperature and the mode set. Press the MODE button to switch between AUTO HEAT and AUTO COOL settings and use the UP and DOWN buttons to select the temperature setting. The LCD will display SET and THE COOL or HEAT label for the setting being changed. The AUTO COOL temperature MUST be set above the AUTO HEAT setting to keep system from cycling between HEAT and COOL. The degree of difference depends on the setting in the Install mode. The thermostat will automatically make this adjustment.

**Emergency Heating Operation**

A. Press and release MODE button until EMHEAT is displayed.
B. Press up button until LCD readout reads 15 degrees above room temperature. Heating system should begin to operate within 5 minutes and the EMHEAT icon will flash.

**V. THERMOSTAT OPERATION**

**1. TEMPERATURE DISPLAY**

The thermostat will display room temperature or setpoint, depending on the Install mode option selected. When the UP or DOWN button is pressed, the control will always be displayed. The next setpoint appears when these buttons are pressed and the current setpoint is displayed. In auto changeover mode, the mode being set (HEAT or COOL) will also appear. If no buttons are pressed for 5 seconds, the display will change back to show room temperature.

**2. TIMEGATE TIMER**

A. A timegate timer is built into the thermostat immediately upon power up, and any time the compressor turns off. The compressor will not turn on until the timegate has expired. Pressing UP and FAN button simultaneously will override the timed interval for 1 cycle.

**3. CYCLE TIMER**

In normal heating and cooling operation the thermostat will not allow more equipment cycles per hour than is set in the Install mode (2 - 11). Both the Y and Y2/W outputs have a timer that starts counting down when it is turned on. The next cycle can not start until the timer is satisfied. However, pressing UP and FAN buttons simultaneously or changing the set point will override the timer for 1 cycle.

**4. MINIMUM ON TIMER**

Once the equipment has turned on, it will remain on for a minimum of 2 minutes regardless of demand unless there is a change in setpoint, or a change in mode.

**5. ERROR MESSAGES**

The thermostat is designed to display any error message, if any, that is available.