**Installation, Operation & Application Guide**

**Parts Diagram**

**Icon Descriptions**

- **Fan operation icon**
- **Cooling operation icon**
- **Heating operation icon**
- **Heat set point when blinking**
- **Cool set point when blinking**

**Specifications**

- **Electrical rating:**
  - 24 VAC (18-30 VAC)
  - 1 amp maximum per terminal
  - 3 amp maximum total load
- **Temperature control range:** 45°F to 90°F (7°C to 32°C)
- **Accuracy:** ±1°F (±0.5°C)
- **System configurations:** 2-stage heat, 1-stage cool, heat pump, electric
- **Timing:** Anti-short cycle: 4 minutes (by pass anti-short cycle delay by returning to OFF mode for 5 seconds)
- **Backlight Operation:** 10 seconds

**Note:** Please refer to the following section for instructions on how to install this thermostat.

**Package Contents/Tools Required**

- RT6 thermostat base
- Screws
- Mounting screws
- Instructions

**Configuration Mode**

**Tradeline Thermostat**: To change the configuration:

1. Select the configuration mode.
2. Press the configuration button until the desired configuration displays.
3. Confirm by pressing the configuration button again.

**To Install Thermostat**

1. **Preparation:**
   - Turn off power to the heating and cooling system by removing the fuse or switching the appropriate circuit breaker off.
   - To remove cover, pull gently at the seams at the top.
2. **Temperature Calibration:**
   - Put thermostat base and cover against the wall where you plan to mount it (be sure wires will feed through the wire opening in the base of the thermostat).
3. **Mounting:**
   - Align thermostat base with mounting holes and feed the control wires through the wire opening in the base and into wire opening.
4. **Final Preparation:**
   - Use supplied screws to mount thermostat base to wall.
   - Insert stripped, labeled wires into matching wire terminals.
5. **Thermostat Installation:**
   - Use supplied screws to mount thermostat base to wall.
6. **Installation:**
   - Insert stripped, labeled wires into matching wire terminals.
   - Use supplied screws to mount thermostat base to wall.

**To Remove Existing Thermostat**

1. Turn off power to the heating and cooling system by removing the fuse or switching the appropriate circuit breaker off.
2. Remove cover of old thermostat. This should expose the wires.
3. Label the existing wires with the enclosed wire labels before removing wires.
4. After labeling wires, remove wires from wire terminals.
5. Remove existing thermostat base from wall.
6. Refer to the following section for instructions on how to install this thermostat.

**Important Safety Information**

- **WARNING:** Always turn off power at the main service panel before installing, cleaning, or removing thermostat.
- **Thermostat Installation:**
  - This thermostat is for 24 VAC applications only; do not use on voltages over 30 VAC
  - All wiring must conform to local and national electrical and building codes
  - Do not use air conditioning when the outdoor temperature is below 50 degrees; this can damage your A/C system and cause personal injuries.
  - Use this thermostat only as described in this manual

**Notes:**

- **Mount the thermostat about five feet above the floor.**
- **Indoor placement:** Do not mount the thermostat on an intrusion barrier and into wire opening.

**Package includes:**

- RT6 thermostat on base, thermostat cover, wall anchors, Instruction, Operation and Application Guide

**Tools required for Installation:**

- Drill with 3/16" bit, hammer, screwdriver

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**RT6 Output Chart**

<table>
<thead>
<tr>
<th>Configuration</th>
<th>1st Cool</th>
<th>1st Heat</th>
<th>2nd Heat</th>
<th>ELC</th>
<th>HP O config</th>
<th>HP B config</th>
</tr>
</thead>
</table>

**To Configure the Thermostat:***

- **Note:** Refer to the previous page for instructions on how to configure the thermostat.

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**Electrical Shock Hazard:**

- Turn off power at the main service panel before removing the existing thermostat.

**Important:** Thermostat installation must conform to local and national building and electrical codes and ordinances.

**CAUTION:** The thermostat must be installed in a location that is protected from moisture and dust.

**WARNING:** Do not operate the thermostat with the cover removed.

**Testing the Thermostat:**

1. **Testing:**
   - Use this thermostat only as described in this manual
   - The thermostat is configured to match the system you have.

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**System configurations:**

- **2-stage heat, 1-stage cool, heat pump, electric**
- **1-Stage Heat/1-Stage Cool Systems**
- **1-Stage Cool Systems**

**Maintenance:**

- Regular maintenance is recommended to ensure the thermostat operates properly.
- Check the thermostat regularly for any issues or malfunctions.

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**Terminals:**

- **R:** 24 VAC hot
- **C:** 24 VAC common
- **O/B:** Configurable
- **G:** Cool active reversing valve
- **Y:** 1st stage cool, 1st stage heat for heat pumps

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**Temperature Control Range:**

- **45°F to 90°F (7°C to 32°C)**
- **±1°F (±0.5°C)**

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**Heat/Cool Systems:**

- **1-Stage Cool Systems**
- **2-Stage Cool Systems**

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**Electrical Rating:**

- **24 VAC (18-30 VAC)**
- **3 amp maximum total load**

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**Temperature Control Range:**

- **45°F to 90°F (7°C to 32°C)**
- **±1°F (±0.5°C)**

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**Configuration Mode:**

- **Heat pump with electric backup**
- **Heat pump with electric backup**
- **Heat pump with electric backup**

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**Heat pump with electric backup System configurations:**

- **2-stage heat pump, electric heat pump, heat pump, air conditioning, or electric heat systems**
- **3-stage heat pump, 3-stage cool, heat pump, electric heat pump, air conditioning, or electric heat systems**

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**Heat pump with electric backup System configurations:**

- **2-stage heat pump, electric heat pump, heat pump, air conditioning, or electric heat systems**
- **3-stage heat pump, 3-stage cool, heat pump, electric heat pump, air conditioning, or electric heat systems**

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**Heat pump with electric backup System configurations:**

- **2-stage heat pump, electric heat pump, heat pump, air conditioning, or electric heat systems**
- **3-stage heat pump, 3-stage cool, heat pump, electric heat pump, air conditioning, or electric heat systems**

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**Heat pump with electric backup System configurations:**

- **2-stage heat pump, electric heat pump, heat pump, air conditioning, or electric heat systems**
- **3-stage heat pump, 3-stage cool, heat pump, electric heat pump, air conditioning, or electric heat systems**
HP ‘O’
There is a four minute delay to protect the compressor after it.

Minimum Cool Setpoint

The number of degrees between your “setpoint” temperature and your “turn on” temperature.
Press the up or down button to select.
Press the right button to advance to the next screen.

Heat/Cool and Single-Stage Heat Pump Only

ELC N/A

1. **Temperature Scale**
   - Choose Fahrenheit or Celsius.
   - Press the up or down button to select.
   - Press the right button to advance to the next screen.

2. **Auxiliary Delay ON**
   - (0-30 minutes) (For HP 0 and HP B only)
   - Set the delay time in minutes for auxiliary heat to be locked out after a call for second stage. This extra savings feature is used to temporarily lock out auxiliary heat devices, allowing just heat pump to try to satisfy heat call.
   - Press the up or down button to select.
   - Press the right button to advance to the next screen.

3. **1st Stage Temperature Differential**
   - (1°F to 5°F) (0.5°C to 2.5°C)
   - Set the number of degrees between your “set point” temperature and your “turn on” temperature.
   - Press the up or down button to set differential value.
   - Press the right button to advance to the next screen.

4. **2nd Stage Temperature Differential**
   - (1°F to 5°F) (0.5°C to 2.5°C) (For HP 0 and HP B only)
   - Set the number of degrees between when stage 1 turns on and when stage 2 turns on.
   - Press the up or down button to set differential value.
   - Press the right button to advance to the next screen.

5. **Staged Off Outputs** (For HP 0 and HP B only)
   - Select whether the outputs for heating and cooling are staged off independently or are satisfied simultaneously.
   - 1 = outputs staged off independently
   - 0 = outputs off simultaneously
   - Press the up or down button to set.
   - Press the right button to advance to the next screen.

6. **Staged On Outputs**
   - (For HP 0 and HP B only)
   - Select whether the outputs for heating and cooling are staged on independently or are satisfied simultaneously.
   - 1 = outputs staged on independently
   - 0 = outputs off simultaneously
   - Press the up or down button to set.
   - Press the right button to advance to the next screen.

7. **Heat Pump Time Delay**
   - (210) 357-4400 • FAX (210) 357-4480
   - Post Office Box 1540 • San Antonio, Texas 78295-1540
   - Friedrich Air Conditioning Co.
   - www.friedrich.com

Press the up or down button to select.
Press the right button to advance to the next screen.

Testing the Thermostat

Once the thermostat is configured, it should be thoroughly tested.

**CAUTION:** Do not energize the air conditioning system when the outdoor temperature is below 50 degrees. It can result in equipment damage or personal injury.

**Test Heat**
1. Press SYS (left) button until heat mode is displayed.
2. Adjust the set temperature so it is 5 degrees above the room temperature.
3. Heat should come on within a few seconds.
4. Adjust the set temperature 2 degrees below the room temperature and the heat should turn off. There may be a fan delay on your system.
   - **Note:** For heat pumps, there is a four-minute delay to protect your compressor after it turns off.
   - To bypass the compressor time delay, go to OFF mode for 5 seconds.

**Test Cool**
1. Press SYS (left) button until cool mode is displayed.
2. Adjust set temperature so it is 5 degrees below room temperature.
3. A/C should come on within a few seconds.
4. Adjust the set temperature 2 degrees above the room temperature and the A/C should turn off. There may be a fan delay on your system.
   - **Note:** There is a four-minute time delay to protect the compressor after it.
   - To bypass the compressor time delay, go to OFF mode for 5 seconds.

**Fan Test**
1. Press FAN (right) button. Fan displays. Indoor fan turns ON.
2. Press FAN (right) button. Indoor fan turns OFF.

**Troubleshooting**

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>No display</td>
<td>Check for 24 VAC at thermostat, display is blank when 24 VAC is not present</td>
</tr>
<tr>
<td>All thermostat buttons are inoperative</td>
<td>Verify 24 VAC is present; until looks out when 24 VAC is not present</td>
</tr>
<tr>
<td>No response with first button press</td>
<td>First button press activates backlight only</td>
</tr>
<tr>
<td>Thermostat turns on and off too frequently</td>
<td>Adjust temperature differential (see Configuration Mode Settings 3 &amp; 4)</td>
</tr>
<tr>
<td>Fan runs continuously</td>
<td>Press FAN (right) button to turn fan off</td>
</tr>
<tr>
<td>Room temperature is not correct</td>
<td>Calibrate thermostat (see Configuration Mode Setting 10)</td>
</tr>
<tr>
<td>Heat or Cool not coming on</td>
<td>Verify wiring is correct, gently push on each wire to verify there is a good connection at terminal block</td>
</tr>
<tr>
<td>HEAT blinking</td>
<td>In heat set point screen, this is normal operation</td>
</tr>
<tr>
<td>COOL blinking</td>
<td>In cool set point screen, this is normal operation</td>
</tr>
</tbody>
</table>

**Note:** There is a four-minute delay for your compressor to restart after it has turned off. To bypass the compressor time delay, go to OFF mode for 5 seconds.

**Heat Mode**
- In this mode, the thermostat controls the heating system. When the heat outputs, the flame icon appears on the display.
  - **Note:** For heat pumps, there is a four minute delay for your compressor to restart after it has turned off. To bypass the compressor time delay, go to OFF mode for 5 seconds.

**Cool Mode**
- In this mode, the thermostat controls the cooling system. When the cooling outputs, the snowflake icon appears on the display.
  - **Note:** There is a four minute delay for your compressor to restart after it has turned off. To bypass the compressor time delay, go to OFF mode for 5 seconds.

**Configuration Mode Settings**

<table>
<thead>
<tr>
<th>Mode of Operation</th>
<th>Setting</th>
<th>Reversing Valve Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat Pump</td>
<td>HP ‘O’</td>
<td>O - Energized in Cooling</td>
</tr>
<tr>
<td>Heat Pump</td>
<td>HP ‘B’</td>
<td>B - Energized in Heating</td>
</tr>
<tr>
<td>Heat and Single-Stage Heat Pump Only</td>
<td>ELC</td>
<td>N/A</td>
</tr>
</tbody>
</table>

To set up configurations for configuration mode are as follows:

1. System – For heat pump, non-heat pump, reversing valve operation
2. Temperature Scale (F or C)
3. Fanning or Cooling

**Operating Modes**

- There are three possible operating modes for the RTS. Off, Heat, and Cool modes are accessed by pressing the SYS (left) button.
- **OFF Mode**
  - In this mode, the thermostat will not turn on the heating or cooling devices.
  - **Note:** The indoor fan can be turned on manually in every operating mode by pressing the FAN (right) button. The worst FAN shows on the display and the fan icon appears when the fan operates.

- **Heat Mode**
  - In this mode, the thermostat controls the heating system. When the heat outputs, the flame icon appears on the display.
  - **Note:** For heat pumps, there is a four minute delay for your compressor to restart after it has turned off. To bypass the compressor time delay, go to OFF mode for 5 seconds.

- **Cool Mode**
  - In this mode, the thermostat controls the cooling system. When the cooling outputs, the snowflake icon appears on the display.
  - **Note:** There is a four minute delay for your compressor to restart after it has turned off. To bypass the compressor time delay, go to OFF mode for 5 seconds.

**Set Point Adjustment**

- **Heat Set Point**
  - Use the SYS (left) button to select Heat Mode. Press the up or down button to view the current heat set point larger on the display. When the large set point is displayed, the HEAT icon will blink. The up or down button can be used to adjust the set point. After 5 seconds of inactivity the screen will display the room temperature and the HEAT icon will not blink.

- **Cool Set Point**
  - Use the SYS (left) button to select Cool Mode. Press the up or down button to view the current cool set point larger on the display. When the large set point is displayed, the COOL icon will blink. The up or down buttons can be used to adjust the set point. After 5 seconds of inactivity the screen will display the room temperature and the COOL icon will not blink.

**Mode of Operation**

The RTS is a 1-stage or 2-stage heat thermostat. It functions with air conditioning, heat pumps, or electric heat systems.

The thermostat activates the heating appliance when the room temperature is below the set heat temperature (by the differential temperature). The RTS will stop outputting when the call for heat has been satisfied. With heat pumps, the thermostat will not let the compressor come on for 4 minutes after it turns off. This protects your compressor.

When the room temperature is greater than the set cool temperature (by the differential temperature), the cooling device is activated. The RTS will stop outputting when the call for cooling is satisfied. The thermostat will not let the compressor come on for 4 minutes after it turns off. This protects your compressor.

The RTS has three possible operating modes: OFF, Heat, and Cool modes. In off mode, the thermostat will not turn on heating or cooling devices. The manual fan can be turned on in all operating modes using the fan button. In heat mode, the thermostat controls the heating system. In the cool mode, the thermostat controls the cooling system.

**Troubleshooting**

<table>
<thead>
<tr>
<th>Button Function</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Up button</strong></td>
</tr>
<tr>
<td><strong>Down button</strong></td>
</tr>
<tr>
<td><strong>SYS (left)</strong></td>
</tr>
<tr>
<td><strong>SYStem (right)</strong></td>
</tr>
</tbody>
</table>

**UP** – Used to increase the set temperatures and to adjust configuration settings.

**DOWN** – Used to decrease the set temperatures and to adjust configuration settings.

**SYS (left)** – Used to change from OFF, HEAT, and COOL modes

**FAN (right)** – Used to turn on and off the indoor fan.