**Installation and Operating Instructions**

**80 Series Heat Pump Thermostat**

Battery Powered or Hardwired with Common

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**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.

<table>
<thead>
<tr>
<th>Terminal Designations</th>
<th>Terminal Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>R</td>
<td>Power (24V)</td>
</tr>
<tr>
<td>O/B</td>
<td>Changeover Terminal-Energized in Cool (O) or Heat (B) for Heat Pump or Damper Systems</td>
</tr>
<tr>
<td>Y</td>
<td>Heat and Cool Mode 1st Stage Compressor</td>
</tr>
<tr>
<td>G</td>
<td>Fan Relay</td>
</tr>
<tr>
<td>E*</td>
<td>Auxiliary only Heat Mode (Emergency Heat)</td>
</tr>
<tr>
<td>C</td>
<td>Common wire for 24V (optional with batteries)</td>
</tr>
<tr>
<td>L</td>
<td>Heat Pump malfunction / Diagnostic terminal (input signal requires common)</td>
</tr>
<tr>
<td>W2*</td>
<td>Heat Mode – 2nd stage</td>
</tr>
</tbody>
</table>

*Cut W2/E jumper when separate heat sources are used for W2 and E.*

**IMPORTANT:** For Dual Fuel Heat Pump applications, be sure to turn on the Duel Fuel Logic option (found in the Installer’s Menu)

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**LEVELING THERMOSTAT**

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

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**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
- **Rated Differentials (@ 6°F/HR):**
  - Fast: 0.9°F, 1.2°F, 1.7°F
  - Med: 0.9°F, 1.2°F, 1.7°F
  - Slow: 0.9°F, 1.2°F, 1.7°F
- **Operating Ambient:**
  - 32°F to +105°F (0°C to +41°C)
  - Display Temperature Range: 32°F to +99°F (0°C to 37°C)
  - Operating Humidity: 90% non-condensing maximum
  - Shipping Temperature Range: -20°F to +150°F (-29°C to +65°C)
  - Thermostat Dimensions: 3-3/4” H x 6” W x 1-1/8” D

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**INDEX**

- Optional Accessory: Wall Cover-Up Plate F61-2663, 6 3/4” W x 4 1/2” H

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**Thermostat Applications**

<table>
<thead>
<tr>
<th>Maximum Stages</th>
<th>Heat/Cool</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Stage Compressor, Heat Pump Systems (air source or geothermal) – 2 Stage Aux/Emergency Heat</td>
<td>2/1</td>
</tr>
</tbody>
</table>

**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 for information on disposing of products containing mercury.

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**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 handing or distorting components could cause the control to malfunction.

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**WARNING**

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

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**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 when C-wire is not available. When C-wire is available, the batteries provide a back-up source of power (this will maintain the clock in the event of a power outage).

1.) W/E Jumper Wire
This thermostat electrically connect the W and E terminals so that you do not need to do this with a jumper wire. If your system has separate W and E wires, clip the W/E jumper located on the back of the thermostat. This will isolate both terminals so they can be used independently.

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

INSTALLER MENU
To prevent changes that may affect system performance, this thermostat has an INSTALLER’S MENU and a USER MENU. The INSTALLER’S MENU provides access to every option, while the USER MENU provides access to items that will not affect system performance. To access the INSTALLER’S MENU press the Menu button for 8 seconds. The display will show item 30 in the table below. Use Next and Back to navigate through menu items. Press ▲ or ▼ to change a menu setting.

<table>
<thead>
<tr>
<th>Installer’s Menu # (Hold Menu 8 Seconds)</th>
<th>Description</th>
<th>Default Setting (flashing icons)</th>
<th>Settings (Press ▲ or ▼)</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 CR</td>
<td>Heat Cycle Rate (how often the heat will turn on)</td>
<td>MED</td>
<td>SLO – slow MEd – medium FAS – fast</td>
</tr>
<tr>
<td>32 CR</td>
<td>Aux Cycle Rate (how often the auxiliary heat will turn on)</td>
<td>MED</td>
<td>SLO – slow MEd – medium FAS – fast</td>
</tr>
<tr>
<td>35 CR</td>
<td>Cool Cycle Rate (how often the cooling will turn on)</td>
<td>MED</td>
<td>SLO – slow MEd – medium FAS – fast</td>
</tr>
<tr>
<td>50 CL</td>
<td>Compressor Lockout (protects the compressor from short cycling)</td>
<td>OFF</td>
<td>On – 5 minute delay OFF – no delay</td>
</tr>
<tr>
<td>60 dF</td>
<td>Dual Fuel Logic (Turn On when using gas as the auxiliary heat source)</td>
<td>OFF</td>
<td>On-gas auxiliary heat OFF-electric auxiliary heat</td>
</tr>
<tr>
<td>65</td>
<td>Maximum Heat Limit (maximum set point for heat mode)</td>
<td>99</td>
<td>47 to 99</td>
</tr>
<tr>
<td>66</td>
<td>Minimum Cool Limit (maximum set point for cool mode)</td>
<td>45</td>
<td>45 to 97</td>
</tr>
<tr>
<td>74</td>
<td>Schedule Type (set as either 7-Day, 5-1-1 Day or Non-Programmable)</td>
<td>5</td>
<td>7 – 7 Day 5 – 5-1-1 Day 0 – Non Programmable</td>
</tr>
<tr>
<td>76</td>
<td>Early Start (starts heating or cooling early so your programmed temperature is reached by the programmed time)</td>
<td>OFF</td>
<td>On – start early OFF – start at program period time</td>
</tr>
</tbody>
</table>

(The Installer Menu continued on next page)

INSTALLER MENU (Continued)

<table>
<thead>
<tr>
<th>Installer’s Menu # (Hold Menu 8 Seconds)</th>
<th>Description</th>
<th>Default Setting (flashing icons)</th>
<th>Settings (Press ▲ or ▼)</th>
</tr>
</thead>
<tbody>
<tr>
<td>79</td>
<td>Temperature Display Adjustment (adjust the displayed “Room Temperature”)</td>
<td>°F</td>
<td>°F – Fahrenheit °C – Celsius</td>
</tr>
<tr>
<td>81</td>
<td>Continuous Display Light (keep the backlight always on – “C” wire required)</td>
<td>OFF</td>
<td>On – always on OFF – momentarily</td>
</tr>
<tr>
<td>83</td>
<td>Change Air Filter (set up a monthly reminder)</td>
<td>OFF</td>
<td>1 to 12 – reminder time (months) OFF – no filter reminder</td>
</tr>
<tr>
<td>99</td>
<td>Keypad Lock (prevent unwanted changes to the thermostat)</td>
<td>OFF</td>
<td>On – disable buttons OFF – all buttons are active</td>
</tr>
</tbody>
</table>

TEST EQUIPMENT
Turn on power to the system.

Fan Operation
If your system does not have a G terminal connection, skip to Heating System.
1.) Move fan switch to On position. The blower should begin to operate.
2.) Move fan switch to Auto position. The blower should stop immediately.

Heating System
1.) Move System Switch to Heat position. If the auxiliary heating system has a standing pilot, be sure to light it.
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.

Auxiliary System
1.) Move System Switch to Aux position. If the auxiliary heating system has a standing pilot, be sure to light it.
2.) Press ▲ to adjust thermostat setting to 1° above room temperature. The auxiliary heating system should begin to operate and the thermostat will indicate Heat On Auxiliary.
3.) Press ▼ to adjust thermostat setting 1° below room temperature. The auxiliary heating system should stop operating and the thermostat should indicate Heat Auxillary.

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 on high speed, 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 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.
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.

<table>
<thead>
<tr>
<th>THERMOSTAT BUTTONS AND SWITCHES</th>
<th>THE DISPLAY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.) Fan Switch</td>
<td>10.) Thermostat is protecting the equipment from short cycling (5-minute delay)</td>
</tr>
<tr>
<td>2.) System Switch</td>
<td>11.) 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.)</td>
</tr>
<tr>
<td>3.) Backlight Button (located on the top of the thermostat)</td>
<td>12.) Displays the current time</td>
</tr>
<tr>
<td>4.) Set Correct Time</td>
<td>13.) Battery status indicator</td>
</tr>
<tr>
<td>5.) Hold a Permanent Temperature</td>
<td>14.) Low battery indicator</td>
</tr>
<tr>
<td>6.) Cancels Hold – Returns to Programmed Schedule</td>
<td>15.) Day of the week used when programming a schedule</td>
</tr>
<tr>
<td>7.) Raises Temperature Setting</td>
<td>16.) Permanent hold (bypasing the schedule)</td>
</tr>
<tr>
<td>8.) Access Menu Options</td>
<td>17.) Temperature setpoint</td>
</tr>
<tr>
<td>9.) Lowers Temperature Setting</td>
<td>18.) Appears when the keypad is locked (to prevent unwanted changes)</td>
</tr>
<tr>
<td>19.) Next (Menu button) is used to navigate within a menu</td>
<td></td>
</tr>
<tr>
<td>20.) Access the schedule and customize thermostat features</td>
<td>21.) Back (Run button) is used to navigate within a menu</td>
</tr>
<tr>
<td>22.) Exit (Hold button) returns to the home screen</td>
<td></td>
</tr>
<tr>
<td>23.) SEE TROUBLESHOOTING</td>
<td></td>
</tr>
</tbody>
</table>

USER MENU

To customize thermostat settings, press the Menu button from the home screen. Use the ▲ or ▼ buttons to highlight Settings and press Next. Use Next and Back to navigate through menu items. Press ▲ or ▼ to change the setting.

<table>
<thead>
<tr>
<th>User’s Menu # (Press Menu button and release)</th>
<th>Description</th>
<th>Default Setting (flashing icons)</th>
<th>Settings (Press ▲ or ▼)</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Schedule Type (set as either 7-Day, 5-1-1 Day or Non Programable)</td>
<td>5</td>
<td>7 – 7 Day 5 – 5-1-1 Day 0 – Non-Programable</td>
</tr>
<tr>
<td>02</td>
<td>Early Start (starts heating or cooling early so your programmed temperature is reached by the programmed time)</td>
<td>OFF</td>
<td>On – start early OFF – start at program period time</td>
</tr>
<tr>
<td>03</td>
<td>Fahrenheit or Celsius</td>
<td>°F</td>
<td>°F – Fahrenheit °C – Celsius</td>
</tr>
<tr>
<td>04</td>
<td>Temperature Display Adjustment (adjust the Room Temperature)</td>
<td>0</td>
<td>-5 to +5</td>
</tr>
<tr>
<td>05</td>
<td>Continuous Display Light (keep the backlight always on – “C” wire required)</td>
<td>OFF</td>
<td>On – always on OFF – momentarily</td>
</tr>
<tr>
<td>06</td>
<td>Change Air Filter (set up a monthly reminder)</td>
<td>OFF</td>
<td>1 to 12 – reminder time (months) OFF – no filter reminder</td>
</tr>
<tr>
<td>07</td>
<td>Keypad Lock (prevent unwanted changes to the thermostat)</td>
<td>OFF</td>
<td>On – disable buttons OFF – all buttons are active</td>
</tr>
</tbody>
</table>

THERMOSTAT OPERATION

Set Current Time and Day
Note: Time icons will flash at initial power up or after a reset.

1.) Press Set Time
2.) Use ▲ or ▼ to adjust the hour
3.) Press Next to advance to set the minutes and day of the week
4.) Press Exit when finished.

The default program is 5-1-1 Day, but can be setup as a 7-Day or Non-Programmable thermostat (refer to the User Menu above)

- **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.

- **Keypad Lockout** – To prevent unwanted changes, the buttons can be disabled. To turn this feature On, press and hold ▲ and the Menu button until the icon appears (this can also be turned on in the menu). To turn Off, press and hold ▲ and the Menu button for 3 seconds.

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

**Energy Saving Factory Schedule**
This thermostat is programmed with the energy saving settings shown in the table below for all days of the week.

<table>
<thead>
<tr>
<th>Wake</th>
<th>Leave</th>
<th>Return</th>
<th>Sleep</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heating</td>
<td>6:00 AM - 70°F</td>
<td>8:00 AM - 62°F</td>
<td>5:00 PM - 70°F</td>
</tr>
<tr>
<td>Cooling</td>
<td>6:00 AM - 75°F</td>
<td>8:00 AM - 83°F</td>
<td>5:00 PM - 75°F</td>
</tr>
</tbody>
</table>

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

#### Modify the Heating Schedule
1.) Slide the system switch to Heat
2.) Press Menu
3.) Press Next to enter the schedule
4.) The time icons will flash – use ▲ or ▼ to set the time for the start of a period
5.) Press Next – the set point icons will flash – use ▲ or ▼ to set the temperature for the current period
6.) Continue to press Next to advance through all periods (Wake, Leave, Return, Sleep) for all days of the week.

*Note: Press Back to return to the previous setting. Once all days of the week have been programmed the thermostat will display End. Press Exit at any time to save changes and return to home screen.*

#### Modify the Cooling Schedule
1.) Slide the system switch to Cool
2.) Repeat steps 2-6 from the heating schedule

### TROUBLESHOOTING

#### Symptom: 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
5.) System Switch not set to Cool or system
6.) Cooling System requires service or thermostat requires replacement

#### Corrective Action
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
5.) See corrective action for “No Heat”
6.) See corrective action for “No Cool”

#### Symptom: Thermostat Display & Thermostat Disagree
1.) Thermostat display requires adjustment
2.) 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.

#### Symptom: “Call for Service” icon appears on displayed
1.) System Switch not set to Cool or system
2.) Cooling System requires service or thermostat requires replacement
3.) Loosen connection to thermostat or system

#### Corrective Action
1.) Verify thermostat and system wires are securely attached.
2.) 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.

#### Symptom: Homeowner Help Line: 1-800-284-2925

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www.white-rogers.com
www.emersonclimate.com