**1F85U-22PR (Programmable)**
**Installation and Operating Instructions**
80 Series Universal Thermostat
Battery Powered or Hardwired with Common

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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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**SPECIFICATIONS**

**Thermostat Applications**

- Conventional Gas, Oil, Electric (mV and 24V), Heat only, Cool only or Heat/Cool Systems
- Heat Pump (Air Source or Geothermal) with Aux. Heat

**Maximum Stages Heat/Cool**

- 2/2
- 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 for information on disposing of products containing mercury.

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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. Wiring will change when dedicated emergency heat is on (See Installer Menu #15).

<table>
<thead>
<tr>
<th>Terminal Designations</th>
<th>Terminal Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>RC</td>
<td>Power (24V) - Cooling</td>
</tr>
<tr>
<td>RH</td>
<td>Power (24V) - Heating</td>
</tr>
<tr>
<td>O/B</td>
<td>Reversing Valve or output for 3 wire zone valves Configurable as “O” or “B” Reversing Valve or 3 wire zone heat (power close)</td>
</tr>
<tr>
<td>G</td>
<td>1st Stage Compressor (conventional or heat pump)</td>
</tr>
<tr>
<td>W/E</td>
<td>1st Stage Heat (conventional); 1st Stage Auxiliary Heat (heat pump) Can operate as Emergency Heat only (See Installer Menu #15)</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>Y2</td>
<td>2nd Stage compressor (conventional only)</td>
</tr>
<tr>
<td>W2</td>
<td>2nd Stage Heat (Conventional) Can operate as 1st Stage Auxiliary Heat (See Installer Menu #15)</td>
</tr>
</tbody>
</table>

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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 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.

**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.

**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.

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**THERMOSTAT INSTALLATION**

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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: mV 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, 2.5A maximum all terminals combined

**Setpoint Range:**
- Conventional: 45°F to 99°F (7°C to 37°C)
- Heat Pump: 32°F to +105°F (0°C to +41°C)

**Display Temperature Range:**
32°F to +99°F (0°C to 37°C)

**Operating Ambients:**
- 90°F non-condensing maximum
- 5°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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**white-rodgers.com**

**emersonclimate.com**

**PART NO. 37-7555B-EN**

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**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
INSTALLED MENU

To prevent changes that may affect system performance, this thermostat has an INSTALLED MENU and a USER MENU. The INSTALLED MENU provides access to every option, while the USER MENU provides access to items that will not affect system performance. To access the INSTALLED MENU press the Menu button for 8 seconds. The display will show item 05 in the table below. Use Next and Back to navigate through menu items. Press ▲ or ▼ to change a menu setting.

### Installer's Menu Settings

<table>
<thead>
<tr>
<th>Installer Menu #</th>
<th>Description</th>
<th>Default Setting (flashing icons)</th>
<th>Settings (Press ▲ or ▼)</th>
</tr>
</thead>
<tbody>
<tr>
<td>05</td>
<td>Outdoor Equipment: selects air conditioner (AC) or heat pump (HP) equipment as well as the number of stages</td>
<td>AC2</td>
<td>AC0, AC1, AC2, HP1</td>
</tr>
<tr>
<td>10</td>
<td>Indoor Equipment: selects whether the equipment is a gas furnace, electric furnace or fan only</td>
<td>EL2</td>
<td>FAN, GA1, GA2 (conventional only), EL1, EL2 (conventional only)</td>
</tr>
<tr>
<td>15</td>
<td>Dedicated Emergency: W/E only operates in Emergency Aux mode. W2 becomes 1st stage Aux. Heat</td>
<td>OFF</td>
<td>On, OFF</td>
</tr>
<tr>
<td>20</td>
<td>O2 or 3 Wire Zone Valve Selection</td>
<td>O</td>
<td>B 1, B 3</td>
</tr>
<tr>
<td>30</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</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</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</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>65</td>
<td>Max 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: minimum set point for cool mode</td>
<td>45</td>
<td>45 to 97</td>
</tr>
</tbody>
</table>

 тест equipment

**Turn on power to the system.**

### Fan Operation

If your system does not have a G terminal connection, skip to Heating System.

1. Press the fan button to select the On position. The blower should begin to operate.
2. Press the fan button to select the Auto position. The blower should stop immediately.

### Heating System

1. Press the System button to select the Heat position. Heat Pumps only - 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 heating system should begin to operate and the thermostat will indicate Heat On.
3. For heat pump with auxiliary: Press ▲ to adjust thermostat setting to 3° above room temperature. The auxiliary heat should begin to operate and the thermostat will indicate Heat On Aux.
4. Press ▼ to adjust thermostat setting 1° below room temperature. The heating system should stop operating and the Heat On icon will disappear.

### Auxiliary System (only for heat pumps with auxiliary)

1. Press the System button to select the Aux position.
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 Aux.
3. Press ▼ to adjust thermostat setting 1° below room temperature. The auxiliary heating system should stop operating and the Heat On Aux icon will disappear.

### Cooling System

1. Press the System button to select the 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 to 1° above room temperature. The cooling system should stop operating and the Cool On icon will disappear.

*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).*
**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 Button</td>
<td>8.) <strong>Next</strong> (Menu button) is used to navigate within a menu</td>
</tr>
<tr>
<td>2.) Hold a permanent temperature or press again to cancel hold (return to programmed schedule)</td>
<td>9.) Set the correct time, access the schedule and customize thermostat settings</td>
</tr>
<tr>
<td>3.) System Button</td>
<td>10.) <strong>Back</strong> (Fan button) is used to navigate within a menu</td>
</tr>
<tr>
<td>4.) Backlight Button (located on the top of the thermostat)</td>
<td>11.) <strong>Exit</strong> (Hold/Run button) returns to the home screen</td>
</tr>
<tr>
<td>5.) Raises Temperature Setting</td>
<td>12.) Thermostat is protecting the equipment from short cycling (5-minute delay)</td>
</tr>
<tr>
<td>6.) Access Menu Options</td>
<td>13.) Indicates that the system is running in Cool, Heat or Auxiliary mode. (Heat Pump Only - The auxiliary will run in Heat mode when the heat pump cannot maintain the set temperature.)</td>
</tr>
<tr>
<td>7.) Lowers Temperature Setting</td>
<td>14.) <strong>SEE TROUBLESHOOTING</strong></td>
</tr>
<tr>
<td>15.) Battery status indicator</td>
<td>15.) <strong>Replace</strong> battery indicator</td>
</tr>
<tr>
<td>16.) Day of the week used when programming a schedule</td>
<td>17.) Permanent hold (bypassing the schedule)</td>
</tr>
<tr>
<td>18.) Temperature setpoint</td>
<td>19.) <strong>Temperature Display Adjustment:</strong> adjust the Room Temperature</td>
</tr>
<tr>
<td>20.) Appears when the keypad is locked (to prevent unwanted changes)</td>
<td>21.) <strong>Continuous Display Light:</strong> keep the backlight always on – “C” wire required</td>
</tr>
<tr>
<td></td>
<td>22.) <strong>Change Air Filter:</strong> set up a monthly reminder</td>
</tr>
<tr>
<td></td>
<td>23.) <strong>Auto-Changeover:</strong> thermostat automatically switches between heat and cool</td>
</tr>
<tr>
<td></td>
<td>24.) <strong>Keypad Lock:</strong> prevent unwanted changes to the thermostat</td>
</tr>
</tbody>
</table>

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.

**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 Programmable</td>
<td>5</td>
<td>7 – 7 Day 5 – 5-1-1 Day 0 – Non-Programmable</td>
</tr>
<tr>
<td>02</td>
<td>Defines periods per day</td>
<td>4</td>
<td>2 - leave, return 4 - wake, leave, return, sleep</td>
</tr>
<tr>
<td>03</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>04</td>
<td>Fahrenheit or Celsius</td>
<td>°F</td>
<td>°F – Fahrenheit °C – Celsius</td>
</tr>
<tr>
<td>05</td>
<td>Temperature Display Adjustment: adjust the Room Temperature</td>
<td>0</td>
<td>-5 to +5</td>
</tr>
<tr>
<td>06</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>07</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>08</td>
<td>Auto-Changeover: thermostat automatically switches between heat and cool</td>
<td>OFF</td>
<td>On - enable auto OFF - disable auto</td>
</tr>
<tr>
<td>09</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 **Menu**
2.) The time icon will be flashing. Press **Next** to advance and set the time
3.) Use ▲ or ▼ to set the correct time
4.) Press **Next** and use ▲ or ▼ to set the correct day
5.) 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** set to Heat or Cool, momentarily press the **Hold/Run** 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 **Hold/Run** again to start program operation (cancels permanent Hold).
- **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.

**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></th>
<th>Wake</th>
<th>Leave</th>
<th>Return</th>
<th>Sleep</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Heating Schedule</strong></td>
<td>6:00 AM - 70°F</td>
<td>8:00 AM - 62°F</td>
<td>5:00 PM - 70°F</td>
<td>10:00 PM - 62°F</td>
</tr>
<tr>
<td><strong>Cooling Schedule</strong></td>
<td>6:00 AM - 75°F</td>
<td>8:00 AM - 83°F</td>
<td>5:00 PM - 75°F</td>
<td>10:00 PM - 78°F</td>
</tr>
</tbody>
</table>

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

**Modify the Heating Schedule**

1.) Use the **System** button to select **Heat**
2.) Press **Menu**
3.) Use the ▼ button to select **Schedule** and 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.) Use the **System** button to select **Cool**
2.) Repeat steps 2-6 from the heating schedule

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**TROUBLESHOOTING**

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<thead>
<tr>
<th>Symptom</th>
<th>Possible Cause</th>
<th>Corrective Action</th>
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</table>
| 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 Heat           | 1.) System not set to Heat  
2.) Loose connection to thermostat or system  
3.) Heating System requires service or thermostat requires replacement | 1.) Set thermostat to Heat.  
2.) Verify thermostat and system wires are securely attached.  
3.) Diagnostic: Set System 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. |

**Call for Service** icon appears on displayed

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| No Cool           | 1.) System not set to Cool  
2.) Loose connection to thermostat or system  
3.) Cooling System requires service or thermostat requires replacement | 1.) Verify thermostat and system wires are securely attached.  
2.) Diagnostic: Set System 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 5D) |
| 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**

<table>
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<tr>
<th>Symptom</th>
<th>Possible Cause</th>
<th>Corrective Action</th>
</tr>
</thead>
</table>
| No Cool           | 1.) System not set to Cool  
2.) Loose connection to thermostat or system  
3.) Cooling System requires service or thermostat requires replacement | 1.) Verify thermostat and system wires are securely attached.  
2.) Diagnostic: Set System 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 5D) |
| 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. |

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**Reseting 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 set 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 **Menu** and **Backlight** buttons at the same time and hold until the display goes blank and resets.

**HOMEOWNER HELP LINE:** 1-800-284-2925

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