



WARNINGS AND CAUTIONS

- Read and understand all instructions. Follow all warnings and instructions marked on the product.
- Do not use this product near water - e.g., near a tub, wash basin, kitchen sink or laundry tub, in a wet basement, or near a swimming pool.
- Never push objects of any kind into this product through openings, as they may touch dangerous voltages.
- Never install communications wiring or components during a lightning storm.
- Never install communications components in wet locations unless the components are designed specifically for use in wet locations.
- Never touch uninsulated wires or terminals unless the wiring has been disconnected at the network interface.
- Use caution when installing or modifying communications wiring or components.
- SAVE THESE INSTRUCTIONS.

DESCRIPTION

The RC-1000 is a precision digital thermostat designed for 24 VAC heating and cooling systems.

The RC-1000 will support the following systems:

- Single Stage Heat/Cool Conventional
- Heat Pump (2 Stage Heat / 1 Stage Cool)
- Dual Fuel Heat Pump (2 Stage Heat / 1 Stage Cool)

The RC-1000 has the capability of being controlled both locally and by remote control. It offers programmability, stand-alone operation, and robust, optically isolated communications with automation systems, utility control systems, and personal computers.

Electrical rating: 24 V; 2 A; 50/60 Hz

Maximum current: 2 A on any circuit, 3 A total

The following requirements must be observed for installation in Europe: CE

1. This equipment must be installed in accordance with National wiring rules for the country in which it is installed.
2. All product labels, instructions and markings relating to safety must be translated to a language, which is acceptable in the country in which this equipment is to be installed.

1

Single Stage Conventional

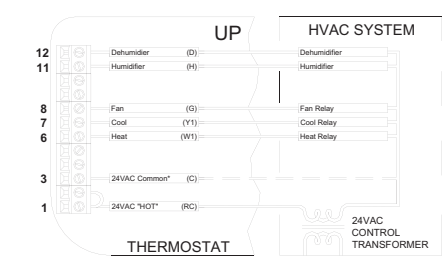


Figure 6 – Connections for single stage heat/cool thermostat

CONFIGURATION

From the factory, the RC-1000 is configured as a single stage conventional heat/cool thermostat. In the default configuration, this thermostat does not turn the fan on with a call for heat. If the furnace does not turn the fan on with a call for heat, the thermostat must be configured to do so under "System Options".

POWER UP

1. Double check wiring, be sure that there are no stray wires or wire strands at the connections.
2. Connect power to the transformer and system. The display will show the current thermostat settings.
3. Press [FAN] and select "On". The fan should come on.
4. Press [FAN] and select "Auto". The fan should go off.
5. Set the Mode to "Heat". Raise the desired heat setting above the current temperature. Ensure that the heating unit comes on. Set the mode to "Off". Ensure that the heating unit goes off.
6. Set the Mode to "Cool". Lower the desired cool setting below the current temperature. Ensure that the cooling unit comes on. Set the mode to "Off". Ensure that the cooling unit goes off.

The RC-1000 thermostat is designed to work with most single state conventional 4-wire HVAC systems (without a transformer common). However, if the RC-1000 "resets" when calling for heat or cool, or if the heat, cool, or fan relay cannot supply 15mA to power thermostat without the relay activating, the transformer common wire or the LEVITON Thermostat Power Supply Module (Part Number: 30A00-1) is required.

6

INSTALLATION

Before installing this thermostat:

1. Read all of the Installation Instructions carefully.
2. Read the Owner's Manual carefully.
3. Ensure that this product is suitable for your application.
4. Ensure that wiring complies with all codes and ordinances.
5. Disconnect power to the control transformer to prevent electrical shock and damage to equipment.
6. Select an appropriate location to ensure an accurate temperature reading.

Location

When replacing an existing thermostat, install the RC-1000 in the same location. If the existing location doesn't meet the following criteria, choose a new location to mount the RC-1000. When choosing a location for the thermostat:

1. Ensure that the thermostat is mounted 5 feet above the floor and is at least 2 feet from an outdoor wall.
2. Ensure that the thermostat is located in an area where there is adequate air circulation.
3. Do not mount in the path of direct sunlight or of radiant heat generated by appliances.
4. Do not mount behind an outdoor wall, near a fireplace, or in the path of any air ducts.

Removing an existing thermostat

1. Disconnect the power to the control transformer.
2. Remove the cover to the existing thermostat.
3. Disconnect the wires going to the thermostat. Label each wire with the letter or number at the terminal.
4. Remove the existing plate or base from the wall.

MOUNTING

When mounting the RC-1000, grasp the thermostat by the sides, avoiding the keys, and unsnap the base from the face. Holding the base to the wall so that the word "UP" is upright and facing you:

1. Mark the two mounting holes on the wall using a pencil.
2. Drill a hole using a 3/16" bit at each mounting hole marking.
3. Install the two wall anchors supplied.
4. Slide the system wires through the opening in the base.
5. Mount the base to the wall using the two #6 x 1/2" self-tapping screws supplied - See Figure 1.

2

About Heat Pump Systems

- 1) Terminal 5 (O) is energized for cooling Terminal 6 (B) is energized for heating. In most applications, the reversing valve is energized for cooling and should be connected to the "O" terminal. If the heat pump requires the reversing valve to be energized for heating, connect the reversing valve to the "B" terminal.
- 2) To temporarily disable Energy Efficient Control and heat as quickly as possible, press [HOLD] and select "On". The RC-1000 will use the Auxiliary Heat as needed to reach the heat setting.
- 3) Terminal 9 (L) is used to indicate a fault with the heat pump compressor. When there is a compressor fault, the display will flash red and the "Heat Pump Fault" error message is shown.
- 4) The Emergency Heat Relay (E Terminal) and outdoor thermostats (usually accessories to a heat pump), are not used. The RC-1000 automatically controls auxiliary heat efficiently. If the heat pump is equipped with an outdoor thermostat, it should be removed from the auxiliary heat circuit.

About Dual Fuel Heat Pump Systems

A dual fuel heat pump typically has a gas furnace combined with a heat pump. The gas furnace is used as auxiliary heat unless the outdoor temperature is very low, in which case it is used as the primary heat source.

- 1) When used with dual fuel heat pumps, the RC-1000 requires a method for obtaining the outdoor temperature. A temperature sensor can be physically connected to the "Remote Temp. Sensor" terminals on the thermostat or the RC-1000 can obtain the outdoor temperature from a remote system. If the RC-1000 can not obtain the outdoor temperature, the heat pump compressor will not operate and the thermostat will only call for the auxiliary heat until the problem is resolved. When this occurs, the display will flash red and the "Problem With Outdoor Temperature Sensor. Some Heat Stages May Be Disabled" error message is displayed. After the error has been acknowledged, "Outdoor Sensor Fault" will be displayed in the Message Bar until the problem is resolved.
- 2) Balance Setpoint Limits: If the outdoor temperature is above the "Upper Balance Setpoint" (45°F by default), the heat pump is used exclusively. If the outdoor temperature falls below the "Upper Balance Setpoint" but is above the "Lower Balance Setpoint" (35°F by default) and if the heat pump is unable to heat at a rate of 5 degrees per hour or better, the heat pump will turn off and auxiliary heat will be used until the call for heat has been satisfied. If the outdoor temperature falls below the "Lower Balance Setpoint", the heat pump will turn off and the auxiliary heat will be used until the call for heat has been satisfied. The Balance Setpoint Limits can be adjusted according to the manufacturer's specifications under "Balance Setpoint" – See Installation Settings.
- 3) When the RC-1000 makes a call for auxiliary heat, the heat pump compressor is turned off and the auxiliary heat is used exclusively.

7

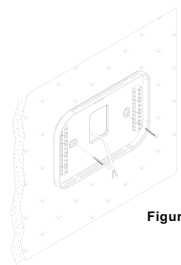


Figure 1

Connect each wire to the terminal strip(s) on the thermostat base per the wiring diagram for your system application - See Figures 4 - 7. Form the thermostat wiring so that the cable lies flat between the terminal strip(s) and the center of the base - See Figure 2.

If a remote system or temperature sensor is being used with the thermostat, connect the remote system or temperature sensor wiring per the diagram for the application - See Figures 8 - 11.

Upon completion of wiring the thermostat, push all excess wiring into the hole in the wall. Plug the hole with the supplied insulating foam to ensure an accurate temperature reading by the thermostat.

Align the tabs of the thermostat face with the slots of the thermostat base. Gently push the thermostat face into the thermostat base locking it into place - See Figure 2.

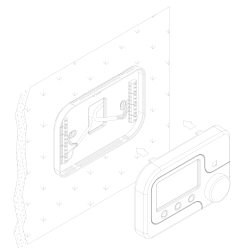


Figure 2

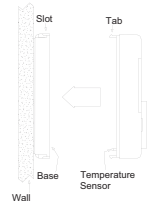


Figure 3

NOTE: Be sure that the thermostat temperature sensor is standing up, and that it has not been damaged during installation - See Figure 3.

3

Heat Pump (2 Stage Heat / 1 Stage Cool)

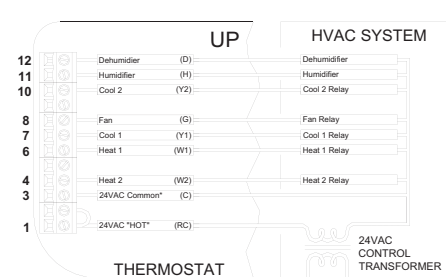


Figure 7 – Connections for heat pump thermostat

CONFIGURATION

The "System Type" for this thermostat must be set to "Heat Pump" under "System Options". The "System Type" for this thermostat must be set to "Dual Fuel Heat Pump" for a dual fuel system (Terminal "W2" is connected to the "W" or "W1" on the furnace).

POWER UP

1. Double check wiring, be sure that there are no stray wires or wire strands at the connections.
2. Connect power to the transformer and system. The display will show all of the thermostat settings.
3. Press [FAN] and select "On". The fan should come on.
4. Press [FAN] and select "Auto". The fan should go off.
5. Press [HOLD] and select "On" to override Energy Efficient Control.
6. Set the Mode to "Heat". Raise the desired heat setting 1 degree above the current temperature. Ensure that the heat pump comes on, in heating mode. After a few minutes, raise the desired heat setting 3 degrees above the current temperature. Auxiliary heat should come on. After a few minutes, set the mode to "EM Heat". The heat pump should stop but the auxiliary heat should remain on. Set the mode to "Off". Ensure that both the heat pump and auxiliary heat go off.
7. Set the Mode to "Cool". Lower the desired cool setting below the current temperature. Ensure that the heat pump comes on, in cooling mode. Set the mode to "Off". Ensure that the cooling unit goes off.
8. Press [HOLD] and select "Off" to enable Energy Efficient Control.

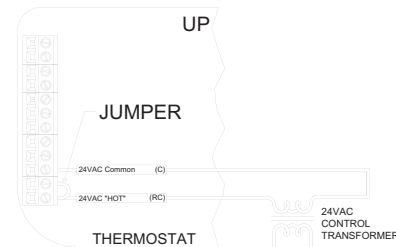
8

TYPICAL WIRING DIAGRAMS

CAUTION: Do not short gas valve, fan, heat relay, or cool relay... even momentarily.

Do not attempt to hook up to live circuits. An accidental connection to a component on the thermostat circuit board could cause damage to the thermostat.

For HVAC systems with a single transformer, the metal jumper between Terminal 1 (RC) and Terminal 2 (RH) on the left terminal strip must remain in place.



For HVAC systems with a single transformer, the metal jumper between Terminal 1 (RC) and Terminal 2 (RH) on the left terminal strip must remain in place.

Figure 4 – Thermostat power-up for test or configuration purposes

Important Notes:

1. For HVAC systems with a single transformer for heating and cooling, the metal jumper between Terminal 1 (RC) and Terminal 2 (RH) on the left terminal strip must remain in place – See Figure 4.
2. From the factory, the RC-1000 is configured to control a single stage conventional HVAC system.

If the HVAC system is a heat pump or dual fuel heat pump, before operating the thermostat, the "System Type" settings under "System Options" must be configured – See Installation Settings.

4

REMOTE SYSTEM WIRING DIAGRAMS

This thermostat has been pre-programmed with energy saving program schedules. When used with a remote system, it is recommended that the Program Mode be configured as "None" or "Occupancy". This will disable the internal program schedules.

SETTING THE COMMUNICATIONS JUMPER

This thermostat comes from the factory with the communications jumper (J8) labeled "COMM JUMPER" on the thermostat printed circuit board installed - See Figure 8.

When connecting to an LEVITON Home Control system or remote switch, this jumper must be installed.

When connecting to a PC or other device with a serial port, this jumper must be removed.

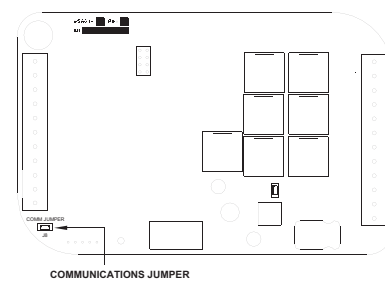


FIGURE 8 – COMMUNICATIONS JUMPER

9

3. When configured as a conventional thermostat, by default this thermostat does not turn the fan on with a call for heat. If the furnace requires the thermostat to turn the fan on with a call for heat, configure the "System Mode" to "Fan On With Heat" under "System Options".

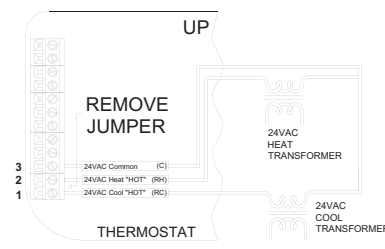
4. A conventional thermostat can be configured for automatic changeover heat/cool, manual changeover heat/cool, heat only, or cool only thermostat.

5. To disable the Task Buttons and Scroll Wheel to prevent local control of the thermostat, the buttons jumper (J6) labeled "BUTTONS" on the thermostat printed circuit board must be removed.

6. Refer to the "Configuration" steps under the wiring diagram for the respective HVAC system type.

7. If the thermostat or HVAC system does not perform as stated in the "Power Up" steps under the wiring diagram for the respective HVAC system, recheck all wiring - See Troubleshooting Tips.

8. For HVAC systems with separate heating and cooling transformers, the metal jumper between Terminal 1 (RC) and Terminal 2 (RH) on the left terminal strip must be removed – See Figure 5.



For HVAC systems with separate heating and cooling transformers, the metal jumper between Terminal 1 (RC) and Terminal 2 (RH) on the left terminal strip must be removed.

Figure 5 – Connections for heat and cool transformers - applies to all systems

5

LEVITON HOME CONTROL SYSTEMS

The thermostat can be connected to an LEVITON Home Control system. The controller can send commands to the thermostat to change mode, cool setting, heat setting, status of fan and hold, and other items.

Run a 3 (or 4) conductor wire from the LEVITON system to the thermostat location. All thermostats on an LEVITON Home Control system are connected to Ground, Zone +16, and Output 8 - See Figure 9.

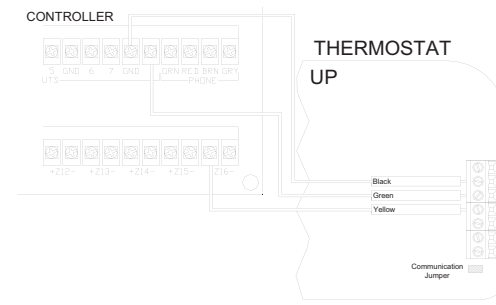


Figure 9 – Connections to LEVITON Home Control System

Notes:

1. Additional thermostats are connected in parallel. They may be connected in home-run or daisy cLevitonn configuration.
2. When connecting to an LEVITON Home Control System, the communications jumper (J8) labeled "COMM JUMPER" on the thermostat printed circuit board must be in place.
3. All thermostats on an OmniLT controller are connected to the GRN (Green), BLK (Black), and YEL (Yellow) terminals under the section marked "TSTAT".

10

WEB VERSION

