APPLICATION

The T834C, T8034C Heating-Cooling Triple Fuel Thermostats, see Fig. 1, control 24 to 30 Vac single-stage heating-cooling systems. The adjustable heat anticipator setting range of 0.15A to 1.2A and the two jumpers included make the T834C and T8034C Thermostats applicable to almost all single-stage heating applications. See Table 1 for specific models and applications. An spdt mercury switch makes R to W on a temperature fall for heating, and R to Y on a temperature rise for cooling.

Table 1. Thermostat Models and Specifications.

<table>
<thead>
<tr>
<th>Model</th>
<th>Application</th>
<th>Mounting</th>
<th>Heat Anticipation</th>
<th>Switching System</th>
<th>Fan</th>
<th>Figure Reference</th>
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</thead>
<tbody>
<tr>
<td>T834C</td>
<td>For use in gas or oil-fired, heat pump or central electric heat systems, a,b</td>
<td>vertically</td>
<td>0.15A to 1.2A</td>
<td>HEAT-OFF-COOL</td>
<td>AUTO-ON</td>
<td>3, 4</td>
</tr>
<tr>
<td>T8034C</td>
<td>horizontally</td>
<td></td>
<td></td>
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</table>

a In electric heat applications without fan sequencers, jumper terminals 1 and 2 to control the fan from the thermostat during heating.

b Two jumpers included.

T834C

MOUNTING HOLE (THERMOSTAT TO WALL OR OUTLET BOX)

MERCURY BULB

BIOMETAL ELEMENT BEHIND SCALE

ADJUSTABLE HEAT ANTICIPATOR INDICATOR

SYSTEM SWITCH

MOUNTING HOLE

TEMPERATURE SETTING LEVER

T8034C

MOUNTING HOLE (THERMOSTAT TO WALL OR OUTLET BOX)

BIOMETAL ELEMENT BEHIND HEAT ANTICIPATOR SCALE

MERCURY BULB

SYSTEM SWITCH

ADJUSTABLE HEAT ANTICIPATOR INDICATOR

FAN SWITCH

TEMPERATURE SETTING LEVER

Fig. 1. Internal view of T834C and T8034C.
MERCURY NOTICE

If this control is replacing a control that contains mercury in a sealed tube, do not place your old control in the trash. Dispose of properly.

Contact your local waste management authority for instructions regarding recycling and the proper disposal of this control.

INSTALLATION

When Installing this Product...

1. Read these instructions carefully. Failure to follow them could damage the product or cause a hazardous condition.
2. Check the ratings given in the instructions and on the product to make sure the product is suitable for your application.
3. Installer must be a trained, experienced service technician.
4. After installation is complete, check out product operation as provided in these instructions.

CAUTION

Disconnect power supply before beginning installation. Can cause electrical shock or equipment damage.

LOCATION

Locate the thermostat about 5 ft (1.5m) above the floor on an inside wall in an area with good air circulation at average temperature.

Do not mount the thermostat where it can be affected by:
- drafts or dead spots behind doors or in a corner.
- hot or cold air from ducts.
- radiant heat from the sun, fireplaces or appliances.
- unheated (uncooled) areas such as outside walls behind the thermostats.

This thermostat is a precision instrument and was carefully adjusted at the factory. Handle it carefully.

Wiring and Mounting

CAUTION

Disconnect power supply before beginning installation. Can cause electrical shock or equipment damage.

All wiring must comply with local codes and ordinances.

The T834C Thermostat can be mounted directly on a wall or on a vertical or horizontal outlet box. The 209649A (taupe) Mounting Plate Assembly allows mounting on a vertical or horizontal outlet box and can also be used to cover wall marks.

If the mounting plate assembly is used, review the instructions provided with the assembly before wiring and mounting the thermostat.

To wire and mount the thermostat:

1. In replacement applications, check the existing thermostat wires for cracked or frayed insulation. Replace any wires in poor condition. If the wire is plastered into the wall, make a hole next to the wires and loosen the wires so they can be pushed back into the wall later.
2. In new installations, run wiring (if necessary) to the thermostat location.
3. Connect the wires to the terminals on the back of the thermostat. See Fig. 3 and 4 for internal schematic and typical wiring diagrams. If using electric-heat compatible thermostats in electric heat applications without fan sequencers, jumper terminals 1 and 2 to control fan operation from the thermostat during heating. See Fig. 2.
4. Remove the thermostat cover by pulling outward on the right edge of the cover until it snaps free of the thermostat base. Carefully remove and discard the foam plastic shipping insert protecting the switch and bimetal assembly.
5. Set the adjustable heat anticipator indicator to match the current draw of the primary heating control (see Heat Anticipator Settings section).
6. Push the excess wire back through the hole and plug any opening with insulation to prevent drafts that may affect thermostat performance.
7. Loosely fasten the thermostat (with wallplate, if applicable) to the wall or outlet box with a screw through the left mounting hole. Adjust the thermostat so that it is approximately level and fasten the second screw through the right mounting hole. Do not tighten.
IN ELECTRIC HEAT AND HEAT PUMP APPLICATIONS, JUMPER TERMINALS 1 AND 2 FOR AUTOMATIC FAN CONTROL IN HEATING AND COOLING.

IN GAS- AND OIL-FIRED APPLICATIONS, JUMPER TERMINALS 1 AND Y FOR AUTOMATIC FAN CONTROL IN COOLING.

JUMPER W-Y FOR SINGLE STAGE HEAT PUMP APPLICATIONS.

**Fig. 2.** Jumpering T834C and T8034C terminals for fan control.

![Diagram](image)

**Fig. 3.** Internal schematic and typical wiring diagram for gas- or oil-fired, or single-stage heat pump systems.

POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED.

JUMPER 1-Y FOR AUTO FAN IN COOLING ONLY.
**Fig. 4. Internal schematic and typical wiring diagram for central electric heat systems.**

**IMPORTANT**
An incorrectly leveled thermostat causes the temperature control to deviate from setpoint.

1. For optimum performance, level the thermostat using a spirit level or plumb line. Tighten the mounting screws.
2. Adjust the temperature setting lever so the mercury bulb is in a horizontal position as shown in Fig. 1.
3. Carefully replace the thermostat cover.

**SETTING AND ADJUSTMENT**

**Temperature Setting**
Push the temperature setting lever to the desired control point on the temperature scale. The same lever controls the temperature setting for both heating and cooling.

**System and Fan Switching**
The T834C and T8034C feature SYSTEM and FAN switches for control of the heating-cooling and fan systems.

The SYSTEM switch controls system operation as follows:
- **HEAT:** The thermostat controls the heating system.
- **OFF:** Both heating and cooling are off.
- **COOL:** The thermostat controls the cooling system.

The FAN switch controls fan operation as follows:
- **AUTO:** For gas- or oil-fired systems, the fan operates in response to the thermostat in cooling and in response to the plenum fan control in heating. For electric heat or heat pump systems, the fan operates in response to the thermostat in both heating and cooling.
- **ON:** The fan runs continuously.

To switch positions, slide the lever to the desired position. Stop the switch lever in detent directly over the desired setting.

**Heat Anticipator Setting**

**IMPORTANT**
The T834C and T8034C Thermostats have an adjustable heat anticipator and operate properly ONLY IF THE ANTICIPATOR IS ADJUSTED TO MATCH THE CURRENT DRAW OF THE PRIMARY CONTROL. Use this thermostat only on systems with current draws that fall within the range of the heat anticipator. Do not use this device on Powerpile® (millivolt) Systems.

A current rating is usually stamped on the nameplate of the primary control. Set the adjustable heat anticipator indicator to match the value given on the nameplate. For heat pump applications, use the Heat Anticipator Settings.

If the current rating is not available, proceed as follows to determine the rating:
1. Turn off the power.
2. Wire the thermostat, but do not mount it on the wall.
3. Connect an ammeter between the W wire and the W terminal on the thermostat (in series with the primary control).
4. Prepare the system for operation.
5. Turn on the power.
6. Turn the SYSTEM switch to HEAT.
7. Increase the thermostat setpoint as necessary to start the system.
8. With the system operating through the ammeter, wait one minute, then read the ammeter.
9. Turn the SYSTEM switch to OFF and turn off the power.
Adjust the heat anticipator to match the reading on the ammeter.

Disconnect the ammeter, reconnect the W wire, and mount the thermostat. Continue with system checkout.

NOTE: For best performance, the heat anticipator may require further adjustment. To lengthen the burner-on time, move the indicator toward the LONGER settings in the direction of the arrow shown. Do not adjust the anticipator more than one-half scale marking at a time. See Fig. 1. To shorten the burner-on time, move the indicator in the opposite direction.

Heat Anticipator Settings
Heat pump systems (for about 3 cycles per hour):
Using B terminal:
Set adjustable anticipator to 130 percent of combined current draw of compressor and fan relays.
Using O terminal:
Set adjustable anticipator to maximum scale setting. Limit combined load current of compressor and fan relays to 0.8 ampere because cooling anticipator provides anticipation during heat cycle in this hookup.

Electric systems (with auto fan in heat):
Set adjustable anticipator to combined current draw of heating and fan relays.

Other systems (without auto fan in heat):
Set adjustable anticipator to current draw of heat relay or valve.

CHECKOUT

CAUTION
Do not check operation by shorting across terminals of system controls. Can cause damage to heat anticipator.

IMPORTANT
To assure accurate temperature control, do not touch or breathe on the bimetal or thermometer.

Heating
With SYSTEM switch set at HEAT and FAN switch at AUTO, move the temperature setting lever about 10°F (6°C) above the room temperature:

Gas- or oil-fired systems: heating should start; fan should start after a short delay.

Central electric heat or heat pump systems: both heating and fan should start. Move the temperature setting lever about 10°F (6°C) below the room temperature.

Gas- or oil-fired systems: heating and fan should shut off after a short delay.

Electric heat or heat pump systems: heating and fan should shut off.

Cooling

CAUTION
Do not operate cooling if outdoor temperature is below 50°F (10°C). Refer to manufacturer recommendations.

NOTE: To prevent compressor short cycling, some manufacturer equipment includes a minimum off-timer to provide a five-minute time delay from when the thermostat last turned off the compressor, or from when the system first received power. This delay protects the compressor.

With the SYSTEM switch set at COOL and the FAN switch at AUTO, move the temperature setting lever about 10°F (6°C) above the room temperature. Cooling and fan should start (see NOTE above). Move the temperature setting lever about 10°F (6°C) above the room temperature. Cooling and fan should shut off.

Fan
With the SYSTEM switch set at OFF, and the FAN switch at ON, the fan should run continuously. Move the FAN switch to AUTO. In gas- or oil-fired systems, fan operation is controlled by the plenum fan control in heating and by the thermostat in cooling. In central electric heat and heat pump systems, fan operation is controlled by the thermostat in both heating and cooling.

Recalibration
These thermostats are calibrated at the factory and should not require recalibration. If the thermostat needs adjustment, first check for accurate leveling.

Check the calibration as follows:

1. Move the temperature setting lever to the lower end of the temperature scale. Place the SYSTEM switch in the OFF position. Wait at least five minutes.
2. Remove the thermostat cover. Move the setting lever until the switch just makes contact. The mercury in the switch rolls to the left end of the tube.
3. Replace the cover and wait five minutes for the cover and the thermostat to lose the heat it has gained from your hands. If the thermometer pointer and the setting lever indicator read approximately the same, no recalibration is needed.

If needed, perform recalibration as follows:

1. Place the temperature setting lever at the same setting as the thermometer. Remove the cover by pulling outward on the right edge of the cover until it snaps free of the thermostat base.
2. Insert 104994A Calibration Wrench (ordered separately) onto the hex nut under the coil. See Fig. 5. Hold the setting lever tight and turn the wrench clockwise until the mercury rolls to the right end of the tube. Remove the wrench and replace the cover.

NOTE: To assure accurate temperature control, do not touch or breathe on the bimetal or thermometer.
3. Move the setting lever to a lower setting. Wait at least five minutes for the temperature to stabilize.

4. Slowly move the setting lever until it reads the same as the thermometer.

5. Remove the cover. Hold the setting lever tightly, reinsert the wrench and carefully turn it counterclockwise until the mercury rolls to the left end of the tube, but no farther.

6. Recheck the calibration. Set the thermostat SYSTEM switch for the desired operation.

7. Adjust the temperature setting lever so the mercury bulb is in position as shown in Fig. 1.

8. Carefully replace the thermostat cover.

Fig. 5. Recalibration procedure.