

T841A Heating-Cooling Heat Pump Thermostat

TRADELINE®

INSTALLATION INSTRUCTIONS

APPLICATION

The T841A Heating-Cooling TRADELINE® Thermostat provides 24 Vac control of two-stage heating and one-stage cooling in heat pump systems, using manual changeover. This thermostat provides SYSTEM switch selections of EM. HEAT-HEAT-OFF-COOL and FAN switch selections of AUTO-ON. See Fig. 1. See Table 1 for T841A TRADELINE® specifications.

Test holes are provided on the front of the thermostat to accommodate test meter probes without removing the thermostat from the wall. Remove the cover of the thermostat to expose the test holes, which are labeled to correspond with the terminals on the back of the thermostat.

Table 1. T841A TRADELINE® Specifications.

OS Number	LED Indication	Changeover	Heat Anticipation	Terminal Designations	Remarks	System Switch	Auto Fan in EM. HEAT
T841A1308	EM. HEAT ^a , AUX. HEAT	Manual Cool or Heat	Stage 2 fixed, 0 to 1.5A	G, R, W ₂ , E, L, B, X, Y, O	Use when E and W ₂ are jumpered.	EM. HEAT, HEAT, OFF, COOL	No
T841A1316				G, R, E, L, X W ₂ , B, W ₁ , Y ₁ , O	Does not replace T841A1068.		
T841A1423 ^b	EM. HEAT, AUX. HEAT, CHECK ^d	Manual Cool or Heat	Stage 2 adjustable, 0.1 to 1.2A	W ₃ , G, R, W ₂ , E, L, B, X, Y, O	Not for systems with E to W ₂ jumper	EM. HEAT, HEAT, OFF, COOL	Yes
T841A1464 ^{b,c}			Stage 2 fixed, 0 to 1.5A	G, R, W, H, B, X, O, Y	Exact replacement for York model no. 2TH11703324		
T841A1498	EM. HEAT						
T841A1506 ^b							

^a EM. HEAT LED also indicates compressor malfunction.

^b Premier White® color.

^c Sold only in Australia: degrees C.

^d CHECK LED indicates compressor malfunction.

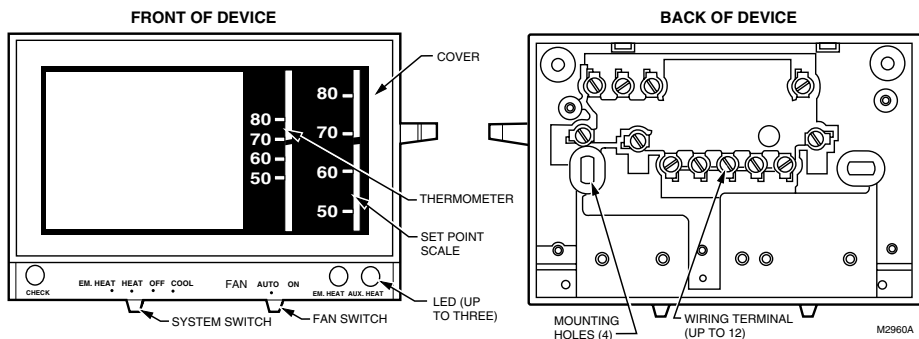


Fig. 1. External view of T841A.



OPERATION

The stages of heat *make* sequentially as the temperature drops. *Make* refers to the mercury switch initiating a call for heat or cool.

There is about 1°F (0.6°C) between stages so the second stage (auxiliary heat) makes only when the first stage cannot handle the load. This 1°F is the *interstage differential*.

The LED indicators on certain thermostat models light up when something specific happens within the system. When the green or amber LED lights, the auxiliary heat (second stage heat) is operating because the weather is so cold, the heat pump alone cannot handle the load. When the red EM. HEAT LED lights, the emergency heat is operating (usually electric strip heaters), because the homeowner has physically switched to the EM. HEAT position. See heating/cooling manufacturer instructions for specific meaning.



RECYCLING NOTICE

This control contains mercury in a sealed tube. Do *not* place the control in the trash at the end of its useful life. If this control is replacing a control that contains mercury in a sealed tube, do *not* place your old control in the trash.

Contact your local waste management authority for instructions regarding recycling and the proper disposal of this control, or any control containing mercury in a sealed tube.

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 technician.
4. After installation is complete, check out product operation as provided in these instructions.



CAUTION

1. Disconnect power supply to prevent electrical shock or equipment damage.
2. To prevent interference with the thermostat linkage, keep wire length to a minimum and run wires as close as possible to the thermostat base.
3. Do not overtighten the thermostat captive mounting screws, because damage to the threads can result.
4. Do not short across coil terminals on the relay. This can burn out the thermostat heat anticipator.
5. Never install more than one wire per terminal unless a factory-supplied jumper with spade terminal is used.

Location

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

Do not mount the thermostat where it can be affected by:

- drafts, or dead spots behind doors and in corners.
- hot or cold air from ducts.
- radiant heat from sun, appliances or fireplaces.
- concealed pipes and chimneys.
- unheated (uncooled) areas such as an outside wall behind the thermostat.

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

Mounting and Wiring



CAUTION

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

The T841A can be mounted directly to a wall or horizontal outlet box. Choose the method that best fits your installation.

In replacement applications, check the existing thermostat wires for cracked or frayed insulation. Replace wires in poor condition.

All wiring must comply with local codes and ordinances.

SETTINGS

Heat Anticipator Setting

The second stage heat anticipator is adjustable. Move the adjustable indicator to match the current draw of the second stage heating primary control, or the anticipator setting of the old thermostat. See Fig. 6.

Temperature Setting

Move the setpoint lever to the desired control point on the temperature scale.

SYSTEM Switch Setting

The SYSTEM switch positions control the system operation as follows:

EM. HEAT: Emergency heat relay is energized. Cooling system is off. Compressor is de-energized. Fan runs on call for heat if FAN switch is in the AUTO position. EM. HEAT LED is on.

HEAT: Heating system is automatically controlled by the thermostat. Cooling system is off.

OFF: Both the heating and cooling systems are off. If the fan is at the AUTO position, the cooling fan is also off.

COOL: Cooling system is automatically controlled by the thermostat. Heating system is off.

FAN Switch Setting

AUTO: Fan operates in response to thermostat in both heating and cooling.

ON: Fan operates continuously.

Grasp the thermostat cover at the top and bottom with one hand. Pull outward on the bottom edge of the cover until it snaps free of the thermostat base. Carefully remove and save the packing material surrounding the mercury switches.

1. Run the wiring (if necessary) to the location. If the wiring is plastered into the wall, make a hole next to the cable and loosen the wires so that they can be pushed back into the wall later. Thread the wires through the hole in the packing material saved above. Connect the wires to the terminals on the back of the thermostat. See Fig. 2 through 5.
2. Set the second stage adjustable heat anticipator to match the current draw of the primary heating control (see Heat Anticipator Setting section).
3. Push the excess wire back through the hole and plug any opening with packing material to prevent drafts that may affect thermostat performance.
4. Use screws to loosely secure the thermostat to the wall or outlet box through the two mounting holes in the middle of the device.

The sheetmetal screws included with the thermostat are designed for use in plaster walls that do not need anchors.

IMPORTANT

An incorrectly leveled thermostat causes inaccurate temperature control.

5. Level the thermostat using a spirit level or plumb line. Tighten the two mounting screws at the middle of the device.
6. Install the two screws in the top mounting holes and tighten.
7. Replace the thermostat cover.

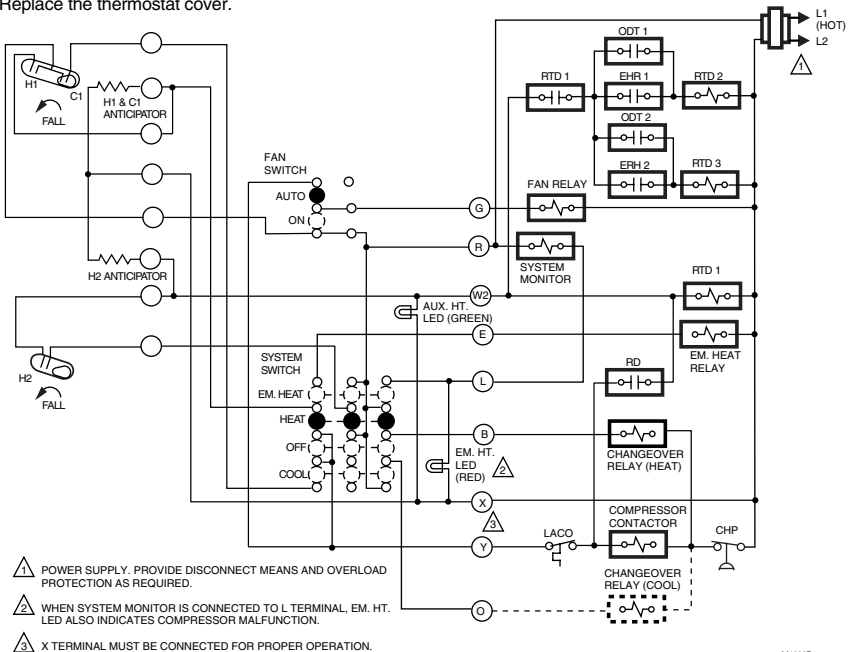
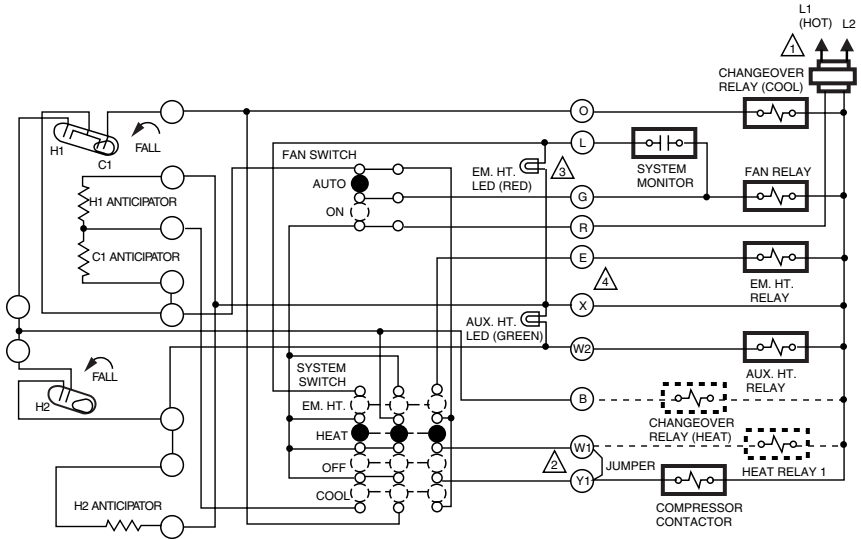


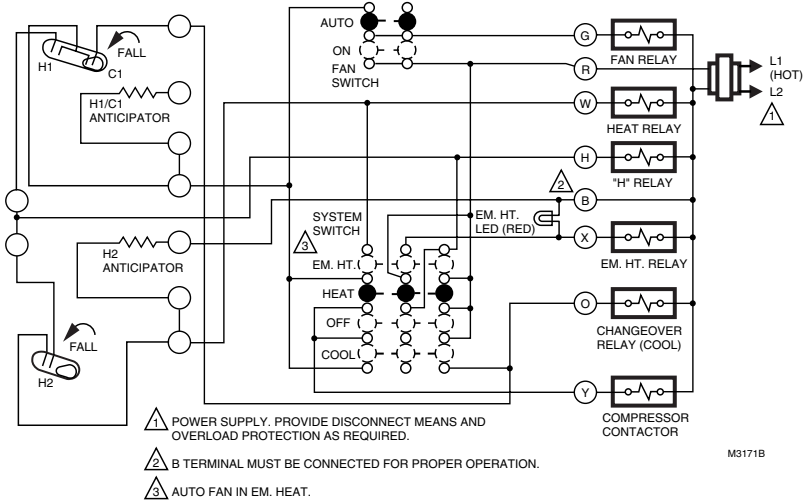
Fig. 2. Internal schematic and typical wiring diagram for TRADELINE® T841A1308 with EM. HEAT and AUX. HEAT LEDs. No fan control in EM. HEAT. Provides heat or cool changeover relay control.



- 1 POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED.
- 2 REMOVE W1-Y1 JUMPER WHEN HEAT RELAY 1 IS USED.
- 3 WHEN L TERMINAL IS CONNECTED TO SYSTEM MONITOR, EM. HEAT LED ALSO INDICATES COMPRESSOR MALFUNCTION.
- 4 X TERMINAL MUST BE CONNECTED FOR PROPER OPERATION.

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Fig. 3. Internal schematic and typical wiring diagram for SUPER TRADELINE® T841A1316 with AUX. HEAT and EM. HEAT LEDs. Provides heat or cool changeover relay control and automatic fan in EM. HEAT mode.



- 1 POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED.
- 2 B TERMINAL MUST BE CONNECTED FOR PROPER OPERATION.
- 3 AUTO FAN IN EM. HEAT.

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Fig. 4. Internal schematic and typical wiring diagram for TRADELINE® T841A1498 and T841A1506 with EM. HEAT LED. Provides cooling changeover relay control.

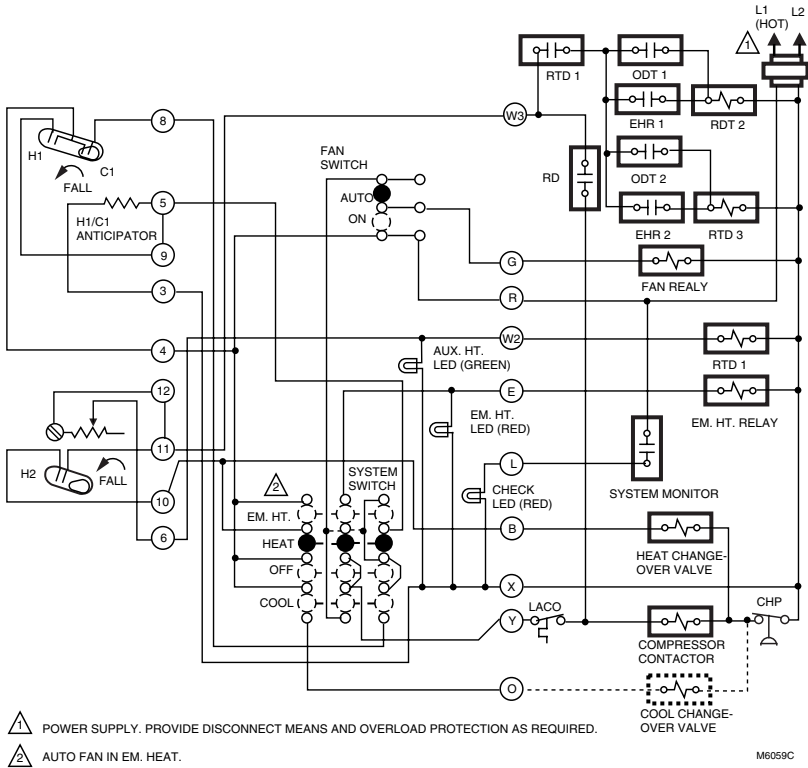


Fig. 5. Internal schematic and typical wiring diagram for TRADELINE® T841A1423 and T841A1464 (sold only in Australia) with AUX. HEAT, EM. HEAT and CHECK LEDs. Provides heat or cool changeover relay control and automatic fan in EM. HEAT mode.

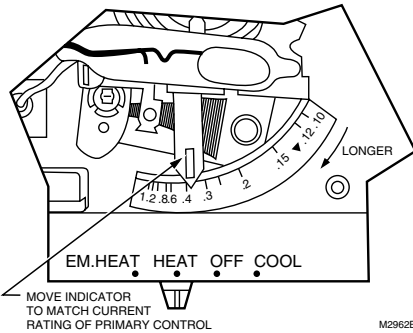


Fig. 6. Second stage adjustable heat anticipator indicator.

CHECKOUT

Heating

Move the SYSTEM switch on the thermostat to HEAT and the FAN switch to AUTO. Move the setpoint lever to about 10°F (6°C) above the room temperature. Heating should start and the fan should run. Move the setpoint lever about 10°F (6°C) below the room temperature. Heating and fan should shut off.

NOTE: To prevent compressor short cycling, a minimum-off timer may be included to prevent the compressor from starting for up to five minutes from when the thermostat last turned the compressor off, or from when the system first received power.

Cooling



CAUTION

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

Move the SYSTEM switch on the thermostat to COOL and the FAN switch to AUTO. Move the setpoint lever about 10°F (6°C) below the room temperature. Cooling and fan should start. Move the setpoint lever about 10°F (6°C) above the room temperature. Cooling and fan should shut off.

Fan

Move the SYSTEM switch to OFF, and the FAN switch to ON. The fan should run continuously. Move the FAN switch to AUTO. In this position, the fan operates in response to the thermostat in both heating and cooling.

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