

# T874/Q674 Thermostat/Subbase Combinations

Installation Instructions for the Trained Service Technician.

## Application

The T874/Q674 Thermostat/Subbase combinations provide 24 to 30 Vac control for heat pump systems. See Table 1.

TABLE 1—T874/Q674 THERMOSTAT/SUBBASE COMBINATIONS.

Thermostat/ Subbase <sup>a</sup> Model	Number of Stages		Changeover Stage		Type of Switching System		See Fig.
	Heating	Cooling	Heating	Cooling	System	Fan	
T874N/Q674C	2	1	1	—	OFF-AUTO	AUTO-ON	5
T874N/Q674F	2	1	—	1	OFF-EM. HT.- HEAT-AUTO-COOL	AUTO-ON	6
T874R/Q674L	2	1	—	2 <sup>b</sup>	EM. HT.-HEAT- OFF-COOL	AUTO-ON	7

<sup>a</sup> Q674 Subbase provides the wiring terminals, system switch and fan switch for system operation.

<sup>b</sup> Provides manual changeover with the subbase system switch in COOL position.

## Operation

On a two-heat thermostat, the two stages of heat *make* sequentially as the temperature drops. *Make* refers to the mercury switch initiating a call for heat or cool.

There are about 2° F [1° C] between stages so that the second stage makes only when the first stage cannot handle the load. This is the *interstage differential*.

One or two LEDs (light emitting diodes) are included on your subbase. Refer to the list below for specific meaning.

The CHECK LED lights when something needs to be checked or done to maintain efficient operation of the system. See your heating system instructions for the specific meaning.

The EM. HT. LED lights when the system switch is placed in the EM. HT. position. Emergency heat is operating; in most systems, the compressor has failed and the heat pump is not operating.

The AUX. HT. LED lights when the auxiliary heat stage is operating. The weather is cold enough that the first stage cannot handle the load alone.

LEDs are not field replaceable or addable.



## Recycling Notice

This control contains mercury in a sealed tube. Do *not* place 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 of an old control containing mercury in a sealed tube.

If you have questions, call Honeywell at 1-800-468-1502.

## Installation

### WHEN INSTALLING THIS PRODUCT...

1. Read these instructions carefully. Failure to follow them could 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

1. Disconnect power supply to prevent electrical shock and 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 subbase. Push excess wire back into the hole and plug hole to prevent drafts from affecting thermostat operation.
3. Do not overtighten thermostat captive mounting screws because damage to subbase threads may result.
4. Do not short across coil terminals on the relay. This may burn out the thermostat heat anticipator.

**IMPORTANT:** *Thermostats are calibrated at the factory using subbases mounted at true level. An inaccurately leveled subbase will cause thermostat control deviation.*

## LOCATION

Install the thermostat about 5 ft [1.5 m] above the floor in an area with good air circulation at average temperature.

Do not install 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 or appliances.
- concealed pipes and chimneys.
- unheated (uncooled) areas such as an outside wall behind the thermostat.

## MOUNTING THE SUBBASE

The thermostat subbase can be mounted on a vertical outlet box, horizontal outlet box or directly on the wall.

1. If you must mount the subbase on a vertical outlet box, order 193121A Adapter Assembly (Fig. 1). The assembly includes an adapter ring, two screws and a cover plate to cover marks on the wall. Install the ring and cover plate on the vertical outlet box.

For a wall installation, hold subbase in position and mark holes for anchors (Fig. 2). Obtain wall anchors locally. Take care that the wires do not fall back into the wall opening. Set aside subbase. Drill four 3/16 in. [4.8 mm] holes and gently tap anchors into the holes until flush with the wall.

2. Pull wires through the cover plate (if used) and subbase cable opening (Fig. 3).

3. Secure the cover plate (if used) and subbase with the screws provided. Do not fully tighten the subbase screws.

4. Level the subbase using a spirit level, as shown in Fig. 3, and firmly tighten the subbase mounting screws. The subbase mounting holes provide for minor out-of-level adjustments.

**IMPORTANT:** An incorrectly leveled subbase will cause the temperature control to deviate from set point.

## WIRING THE SUBBASE

**IMPORTANT:** Use 18-gauge color-coded thermostat cable for proper wiring.

Disconnect power supply before beginning installation to prevent electrical shock or equipment damage.

All wiring must comply with local electrical codes and ordinances. Follow equipment manufacturer wiring instructions when available. To wire subbase, proceed as follows:

1. Connect the system wires to the subbase as shown in Figs. 5-7. A letter code located near each terminal is for identification. The terminal barrier permits straight or conventional wraparound wiring connection (Fig. 4).

2. Firmly tighten each terminal screw.

3. Fit wires as close as possible to the subbase. Push excess wire back into the hole.

4. Plug hole with nonflammable insulation to prevent drafts from affecting the thermostat.

## MOUNTING THE THERMOSTAT

1. Remove the thermostat cover by pulling the bottom edge of the cover outward and away from the base until it snaps free of the mounting slots.

**NOTE:** The cover is hinged at the top and must be removed by pulling outward at the bottom.

Fig. 1—Installation of Q674 Subbase on outlet box.

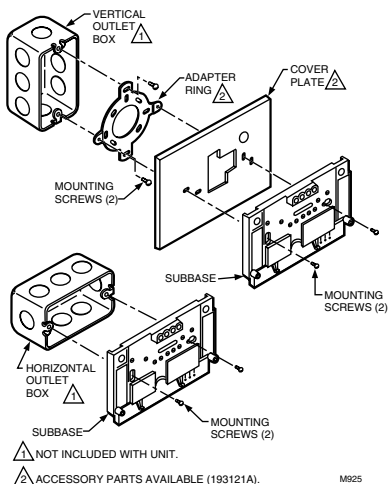


Fig. 2—Installation of Q674 Subbase on wall.

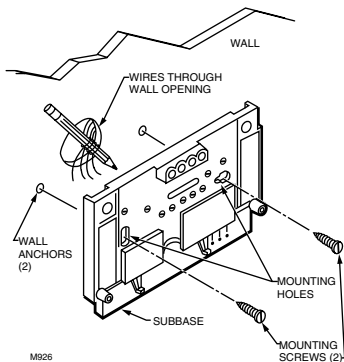
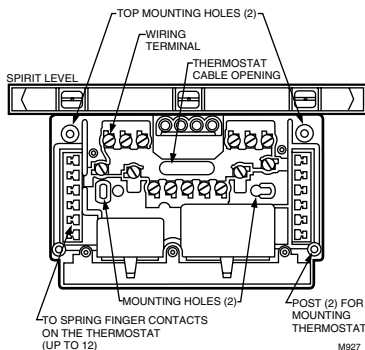


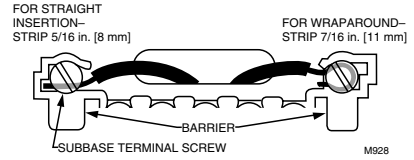
Fig. 3—Subbase components and leveling procedure.



2. Carefully remove and discard the polystyrene packing insert that protects the mercury switches during shipment.

3. If LED indication (EM.HT., CHECK, etc.) is to be used with the Q674 Subbase, install the preprinted insert under the thermostat set point scale (Fig. 8). To install, push both thermostat set point levers to the far ends of the thermostat. Use index finger to gently pull out the plastic set point scale about 1/4 in. [6 mm]. Drop insert into recessed area behind set point scale so that selected LEDs show. Make sure insert is completely seated in recessed area. Let set point scale pop back, and set levers to desired positions.

**Fig. 4—Wiring connections.**



**Fig. 5—Internal schematic and typical wiring diagram for T874N and Q674C.**

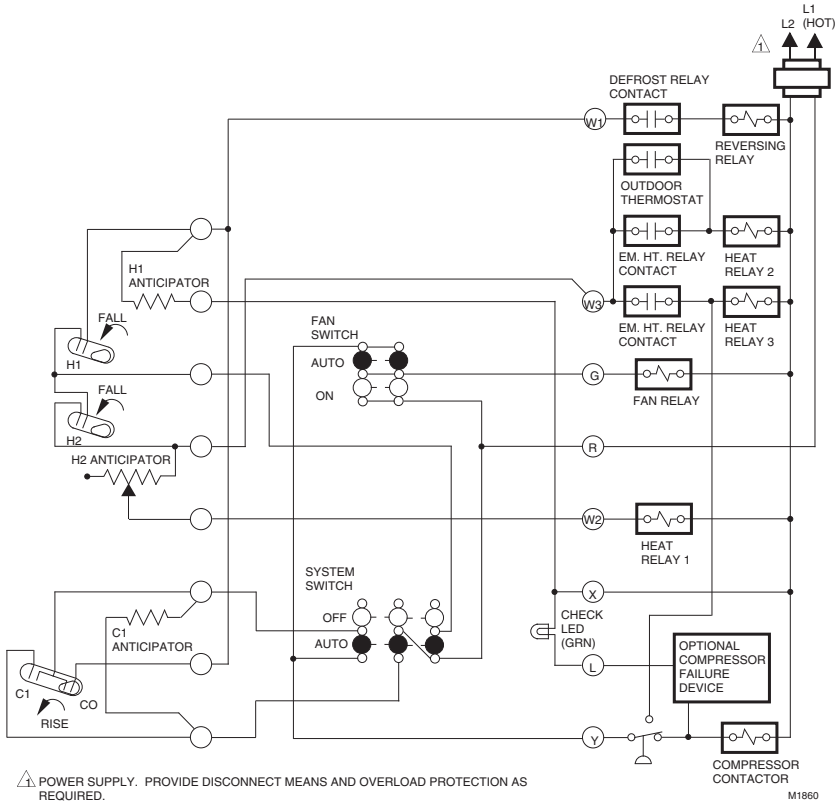
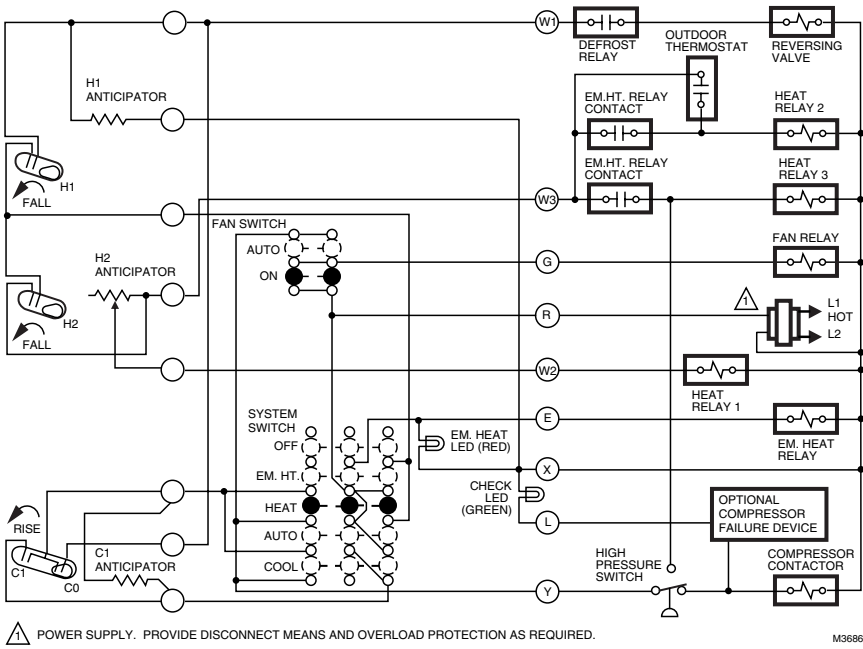
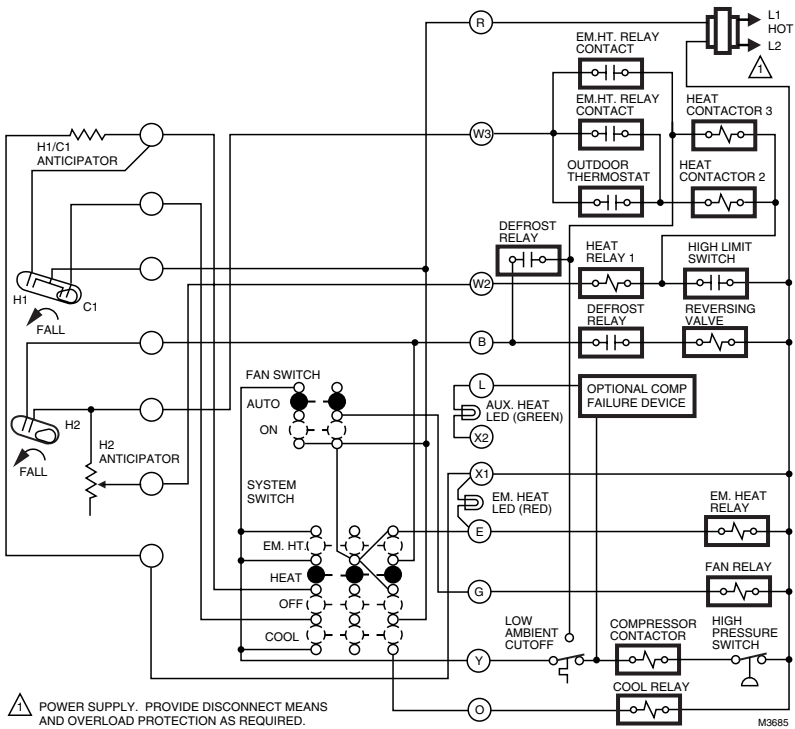


Fig. 6—Internal schematic and typical wiring diagram for T874N and Q674F.



**Fig. 7—Internal schematic and typical wiring diagram for T874R and Q674L.**



4. Turn over thermostat base and note the spring fingers that engage the subbase contacts. Make sure the spring fingers are *not* bent flat. Flat fingers prevent proper electrical contact with the subbase.

5. Set the second stage heat anticipation indicator to match the current rating of the controlled equipment. See Heat Anticipator Setting section. The first stage heat anticipator and the cooling anticipator are nonadjustable.

6. Note the two tabs on the top inside edge of the thermostat base. The tabs fit into corresponding slots on top of the subbase. Mount the thermostat on the subbase.

7. Align the two captive mounting screws in the thermostat base with the posts on the subbase (Fig. 9). Tighten both screws. *Do not overtighten screws* because damage to subbase posts can result.

**Fig. 8—LED space location and adjustable lever stops.**

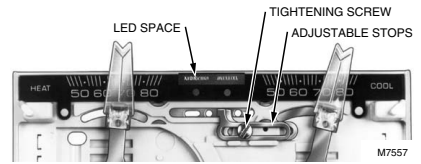


Fig. 9—Mounting thermostat on subbase.

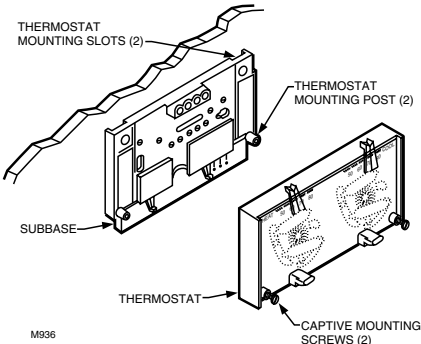
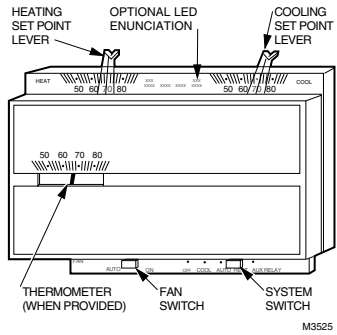


Fig. 11—Location of external components (T874N shown).



## Settings

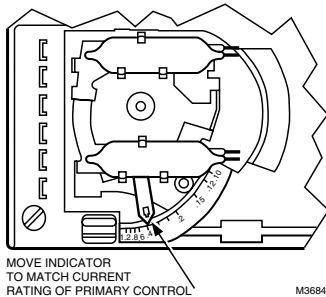
### HEAT ANTICIPATOR SETTING

Set the adjustable heat anticipator to match the current draw of the second stage heating primary control (Fig. 10). If the primary control nameplate has no rating or if further adjustment is necessary, use the following procedure to determine the current draw of the second stage.

NOTE: The current draw of the heating stage must be measured with the thermostat removed and the power on.

1. Connect an ac ammeter of appropriate range between the W2 and R terminals on the subbase.
2. Move the system switch to HEAT or AUTO.
3. After one minute, read the ammeter and record the reading.
4. After mounting the thermostat, set the adjustable heat anticipator to match the reading measured in step 3.

Fig. 10—Stage two adjustable heat anticipator.



The T874N has separate heating and cooling set point levers; the T874R has one set point lever for heating and cooling. Move the heating and cooling set point levers (Fig. 10) to the desired comfort positions. The minimum differential between heating and cooling set point is 3° F [2° C] on the T874N.

### SUBBASE SETTING

A description of the subbase switching positions that control the system operation follows (Fig. 11).

SYSTEM SWITCH (some subbases do not have all of the following functions):

- OFF: Both the heating and cooling systems are off. If the fan switch is in AUTO position, the cooling fan is also off.
- AUTO: Thermostat automatically changes between heating and cooling system operation, depending on the indoor temperature.
- HEAT: Heating system is automatically controlled by the thermostat. Cooling system is off.
- COOL: Cooling system is automatically controlled by the thermostat. Heating system is off.
- EM. HT.: Emergency heat relay is automatically controlled by the thermostat. Cooling system is off.

### FAN SWITCH

- ON: Fan operates continuously.
- AUTO: Fan operates automatically with heating and cooling equipment as controlled by the thermostat.

To move the subbase switches to the desired control positions, use thumb and index finger to slide lever. Lever must stop over desired function indicator position for proper circuit operation.

# Checkout

## HEATING

Move the system switch on the Q674 to HEAT or AUTO (if used) and the fan switch to AUTO. Move the heating set point lever on the T874 about 10° F [6° C] above room temperature. Heating equipment should start and the fan should run. Move the heat lever about 10° F [6° C] below room temperature. The heating equipment and fan should shut off.

**NOTE:** In heat pump applications, time delays are involved before the compressor is activated to prevent short cycling. The delays are provided by a timer, which prevents the compressor from starting for several minutes after the thermostat last turned the compressor off, or after the system first received power.

## COOLING

Move the system switch on the Q674 to COOL or AUTO (if used) and the fan switch to AUTO. Move the cooling set point lever on the T874 about 10° F [6° C] below room temperature. The cooling equipment should start (see NOTE above). Move the cool lever about 10° F [6° C] above room temperature. The cooling equipment and fan should shut off.

## FAN

Move the subbase system switch to OFF, and the fan switch to ON. The fan should run continuously. Move the fan switch to AUTO. In this position, fan operation is controlled by the heating or cooling system control circuit.

# Calibration

## THERMOSTAT

T874 Thermostats are accurately calibrated at the factory. They do not have provision for field calibration.

## THERMOMETER

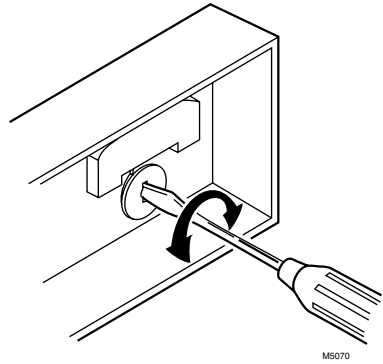
The thermometer in your thermostat has been accurately calibrated at the factory. The thermometer should need adjustment only if it has been dropped or shifted due to mishandling.

If the set point lever and the thermometer reading do not agree:

1. Remove the thermostat cover by pulling up from the bottom of cover until it clears the mounting slots.
2. Set the thermostat cover on a table near an accurate thermometer.
3. Allow 10 or 15 minutes for cover thermometer to sense area temperature; compare the readings. Be careful not to touch the thermometer or breathe on it.
4. If the readings are the same, replace the cover and put the system into operation.
5. If the readings are different, insert a small screwdriver in the thermometer slot (Fig. 12) and turn it until the thermometers have the same reading.
6. Replace thermostat cover and put the system into operation.

**NOTE:** Radiant heat from your hands will offset the thermometer reading. After making each adjustment, wait 10 or 15 minutes for the thermometer to stabilize before comparing.

Fig. 12—Thermometer calibration.



**Honeywell**

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**Automation and Control Solutions**

Honeywell International Inc.  
1985 Douglas Drive North  
Golden Valley, MN 55422

Honeywell Limited-Honeywell Limitée  
35 Dynamic Drive  
Scarborough, Ontario M1V 4Z9





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