

## T7200, T7300 and Q7300 Programmable Commercial Thermostats and Subbases

The T7200, T7300 Thermostats and Q7300 Subbases control commercial single zone heating, ventilating and air conditioning (HVAC) equipment.



- One model can be used for single-stage and multi-stage applications.
- 7-day programming—two occupied/unoccupied periods per day.
- Individual temperature setpoints for:
  - Occupied heat and cool.
  - Unoccupied heat and cool.
- Proportional plus integral control—eliminates temperature fluctuations and thermostat tampering.
- Intelligent Recovery™—automatically optimizes start time depending on building load.
- Intelligent Fan™—energizes fan on call for heating or cooling only. Fan can be configured to run continuously in occupied mode.
- Automatic heat/cool changeover.
- Universal Versaguard™ Thermostat Guard available for T7200 and T7300/Q7300.
- Locking setpoints and schedules eliminate tampering (use keyboard security).
- One thermostat can be used for heat pump or conventional control.
- Optional remote sensors.
- Configurable to vary fan and reversing valve operation.

- Use with Q7300 to interface with C7400/W7459 Economizer System for total integration of rooftop control.
- Convenient overrides allow temporary changes.
- Battery backup saves program and maintains clock time during power failure.
- Auxiliary contacts available for use with economizer.

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# Specifications

**IMPORTANT:** *The specifications given in this publication do not include normal manufacturing tolerances. Therefore, this unit may not exactly match the listed specifications. This product is tested and calibrated under closely controlled conditions, and some minor differences in performance can be expected if those conditions are changed.*

## T7200 AND T7300 THERMOSTATS

- T7200A is an autochangeover programmable commercial thermostat to be used with a single stage conventional heat/cool system.
- T7200B is an autochangeover programmable commercial thermostat to be used with a single stage heat pump system.

- T7300A is a fully configurable programmable commercial thermostat to be used with a Q7300 Subbase.
- T7300B is a fully configurable programmable commercial thermostat with the 3-HOUR OVERRIDE key in the cover, to be used with a Q7300 Subbase. (See Fig. 2).
- T7300C is a fully configurable programmable commercial thermostat with limited access cover for easy programming. Cover includes Set Heat, Set Cool, Warmer, Cooler and Occupied/Unoccupied keys. Use with Q7300 Subbase. (See Fig. 3).

## Q7300 SUBBASE

Q7300 Subbases provide features listed in Table 1.

TABLE 1—Q7300 SUBBASE FEATURES.

Model	System Switch	Fan Switch	LEDs	Application	Selectable Output
Q7300A <sup>a,b</sup>	None	None	None	Conventional	1 heat-1 cool; 1 heat-2 cool
Q7300B	Heat-Off-Cool-Auto	Auto-On			2 heat-1 cool; 2 heat-2 cool
Q7300C	Em. Ht.-Heat-Off-Cool-Auto		Em. Ht., Aux. Ht.	1 stage heat pump compressor with auxiliary heat	1 heat-1 cool; 2 heat-1 cool
				2 stage heat pump compressor with auxiliary heat	1 heat-1 cool; 2 heat-1 cool; 3 heat-1 cool
Q7300D			None	1 stage heat pump compressor with auxiliary heat	1 heat-1 cool; 2 heat-1 cool
			2 stage heat pump compressor with auxiliary heat <sup>c</sup>	1 heat-1 cool; 2 heat-1 cool; 3 heat-1 cool	
Q7300E	None	None	Aux. Ht.	1 stage heat pump compressor with auxiliary heat	1 heat-1 cool; 2 heat-2 cool
Q7300F				2 stage heat pump compressor with auxiliary heat	1 heat-1 cool; 2 heat-1 cool; 3 heat-1 cool
Q7300G	Heat-Off-Cool-Auto		None	Conventional 1 stage heat with 3-stage cool	1 heat-3 cool (fixed)
Q7300L	None	Auto-On	Heat Cool	2 stage heat (ML984 actuator/V5013 Valve) 1 stage cool	1 heat-1 cool; 2 heat-1 cool

<sup>a</sup> Select models do not have auxiliary relay output. The auxiliary relay output is used with an economizer for minimum position control based on programmed time schedule. Can also be used for switching other external equipment.

<sup>b</sup> Q7300A1000 model configures for 1 heat-1 cool only (fixed).

<sup>c</sup> Uses conventional terminal designations. Compressor changeover is controlled by the heat pump equipment.

# Ordering Information

When purchasing replacement and modernization products from your TRADELINE<sup>®</sup> wholesaler or distributor, refer to the Tradeline Catalog or price sheets for complete ordering number, or specify—

1. Order number.
2. Accessories, if desired.
3. Order additional system components and system accessories separately.

If you have additional questions, need further information, or would like to comment on our products or services, please write or phone:

1. Your local Home and Building Control Sales Office (please check the white pages of your phone directory).
2. Home and Building Control Customer Relations  
 Honeywell, 1885 Douglas Drive North  
 Minneapolis, Minnesota 55422-4386

In Canada—Honeywell Limited/Honeywell Limitée, 35 Dynamic Drive, Scarborough, Ontario M1V 4Z9. International Sales and Service Offices in all principal cities of the world. Manufacturing in Australia, Canada, Finland, France, Germany, Japan, Mexico, Netherlands, Spain, Taiwan, United Kingdom, U.S.A.

**THERMOSTAT**

ELECTRICAL RATING: 24 to 30 Vac, 50/60 Hz.  
SYSTEM CURRENT DRAW: 6 VA maximum at 30 Vac,  
50 or 60 Hz.  
OUTPUT RELAY DRAW: See Table 2.

TABLE 2—MAXIMUM AMPS AT 30 VAC.

Relay	Running (A)	Inrush (A)
Fan	1.6	3.5
Heat	1.6	3.5
Cool	1.6	7.5
Auxillary (Economizer)	1.6	3.5

**TEMPERATURE:**

Ratings:

Ambient: 40°F to 110°F (4°C to 43°C).  
Shipping: -30°F to +150°F (-34°C to +65°C).  
Display Accuracy: ±1°F (±1°C).

Setpoint:

Range: 45°F to 95°F (7°C to 35°C).  
Differential: 2°F (1°C).  
Default Settings: See Table 3.

TABLE 3—DEFAULT SETPOINTS.

Control	Occupied	Unoccupied
Heating	68°F (20°C)	55°F (13°C)
Cooling	78°F (26°C)	90°F (32°C)

REMOTE SENSOR WIRING TEMPERATURE OFFSET:  
Temperature offset occurs with 500 ft (157m) to 1000 ft  
(305m) of 2-wire cable. See Table 4.

TABLE 4—TEMPERATURE OFFSET.

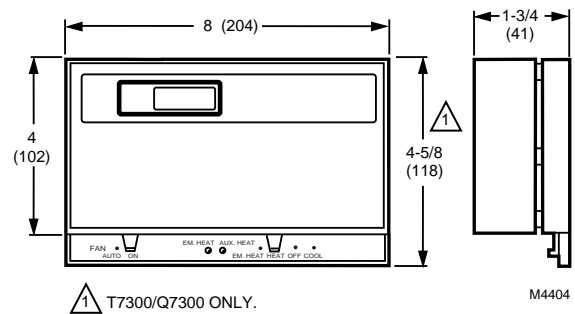
Temperature Range	18 AWG	20 AWG	22 AWG
50-90°F	-0.4°F	-0.7°F	-1.0°F
10-32°C	-0.3°C	-0.4°C	-0.6°C

**MINIMUM STAGE OPERATION TIME:**

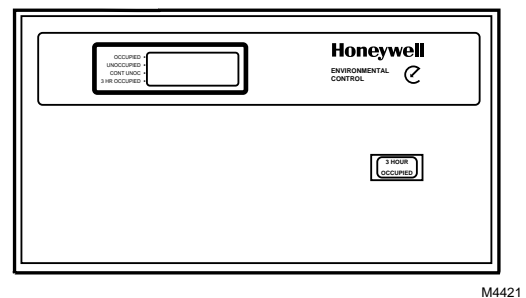
Conventional Heat: Two minutes On or Off.  
Compressor: Two minutes On and four minutes Off.

HUMIDITY RATINGS: 5% to 90% RH, noncondensing.  
CLOCK ACCURACY: ±1 minute per month.  
BATTERY BACKUP: Up to 60 hours with fresh 9-volt  
alkaline battery. Mallory MN11604™ or equivalent.  
FINISH: Beige thermostats with brown subbases or Premier  
White™ thermostats with light gray subbases.  
DIMENSIONS: See Fig. 1.  
T7300 Doors: See Fig. 2.  
MOUNTING MEANS: T7200 Thermostat mounts on a  
wallplate. The T7300 mounts on the Q7300 Subbase. The  
Q7300 and wallplate mount horizontally on a wall or  
outlet box with two no. 6 x 32 screws (included).

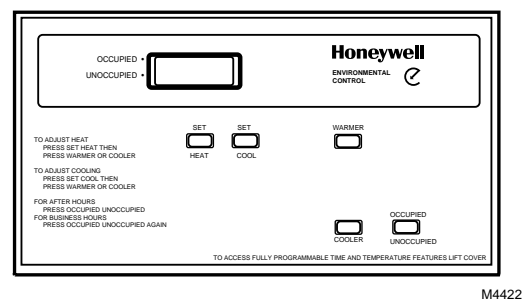
**Fig. 1—Thermostat and subbase dimensions in in. (mm).**



**Fig. 2—T7300B door.**



**Fig. 3—T7300C door.**



**ACCESSORIES:**

- 229997BU T7300B Conversion Kit. (See Fig. 2).
- 229997BY T7300A Conversion Kit. (See cover photo).
- 229997CE T7300C Conversion Kit. (See Fig. 3).
- 231054AA White Door Assembly for T7300C. (See Fig. 3).
- 231055AA White Door Assembly for T7300B. (See Fig. 2).
- 231056AA White Door Assembly for T7300A. (See cover photo).
- 4074EEP Hardware for door and hinge pin assembly.

- 4074EFS Bag Assembly (two sheet metal screws and two machine screws).
- 4074EKA Bag Assembly (Allen wrench and four Allen head screws).
- 4074ENE Hinge Pin Assembly.
- C7400 Enthalpy Sensor.
- M7415 Damper Actuator.
- T675A Temperature Control.
- T7022A1010 Remote Temperature Sensor.
- T7047C1025 Remote Temperature Sensor.
- T7047G1000 Remote Temperature Sensor.
- T7147A1002 Remote Temperature Sensor and Override Module.
- T7147A1010 Remote Temperature Sensor and Override Module.
- T7147A1028 Remote Temperature Sensor and Override Module.
- R8222 Switching Relay.
- W950A System Supervisor.
- W859D Packaged Economizer.
- W7459 Economizer Logic Module.



## Recycling Notice

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.

## 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 on the product to make sure the product is suitable for your application.
3. Installer must be a trained, experienced service technician.
4. Allow thermostat to warm to room temperature before operating.
5. After installation is complete, check out product operation as provided in these instructions.



### CAUTION

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

### LOCATION

#### Thermostat Without Remote-Mounted Temperature Sensor

Install the thermostat about 5 ft (1.5m) above the floor in an area with good air circulation at average temperature. See Fig. 4.

- Do not mount the thermostat where it can be affected by:
- drafts or dead spots behind doors, in corners or under cabinets.
  - hot or cold air from ducts.
  - radiant heat from the sun, fireplace, or appliances.
  - concealed pipes and chimneys.
  - unheated (uncooled) areas such as an outside wall behind the thermostat.

#### Thermostat With Remote-Mounted Temperature Sensor(s)

Install the thermostat in an area that is accessible for setting and adjusting the temperature and settings.

Install the remote-mounted sensor(s) about 5 ft (1.5m) above the floor in an area with good air circulation at average temperature. See Fig. 4.

Do not mount the sensor(s) where it can be affected by:

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

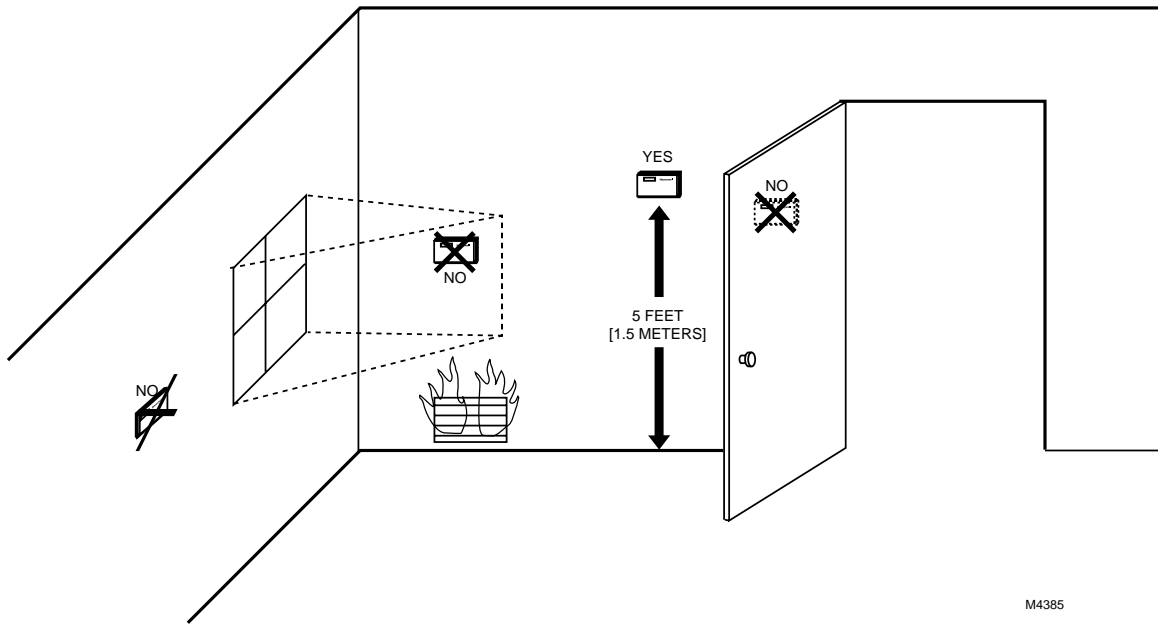
If more than one remote sensor is required, they must be arranged in a temperature averaging network consisting of two, three, four, five, or nine sensors. Instal as shown in Fig. 5-9.

### REPLACE AN EXISTING THERMOSTAT OR NEW INSTALLATION

#### Replace An Existing Thermostat

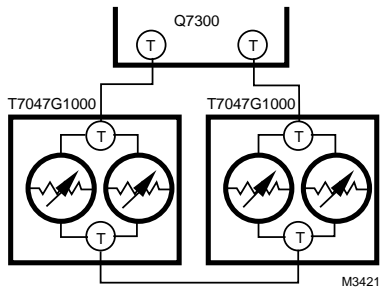
Turn off all sources of power for the thermostat. Remove any existing wallplate or subbase from the wall. To avoid miswiring later, label or write down each wire color with the letter or number on the wiring terminal as the wire is removed.

Fig. 4—Location for installing thermostat or remote-mounted sensor.



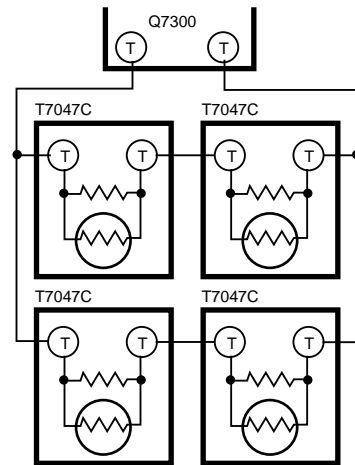
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Fig. 5—Two T7047G1000 Sensors providing a temperature averaging network for a T7300/Q7300 Thermostat/Subbase.



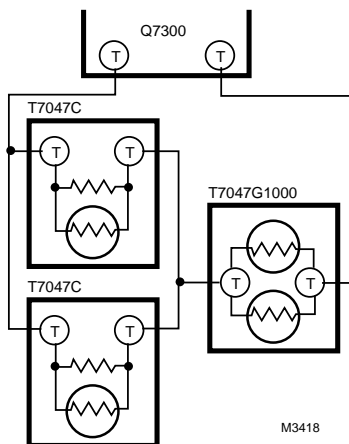
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Fig. 7—Four T7047C1025 Sensors providing a temperature averaging network for a T7300/Q7300 Thermostat /Subbase.



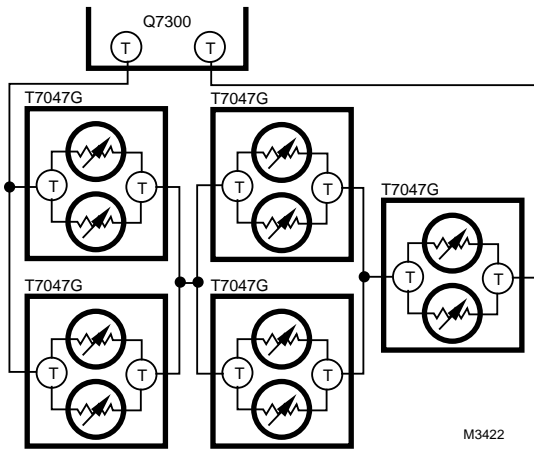
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Fig. 6—Two T7047C1025 and one T7047G1000 Sensors providing a temperature averaging network for a T7300/Q7300 Thermostat/Subbase.



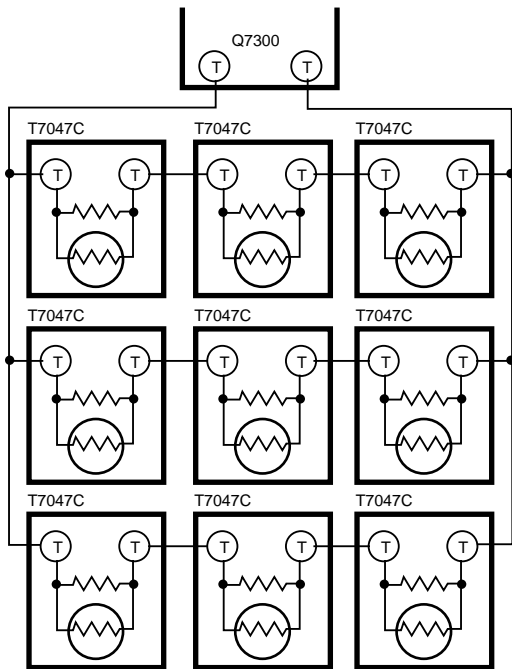
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**Fig. 8—Five T7047G1000 Sensors providing a temperature averaging network for a T7300/Q7300 Thermostat/Subbase.**



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**Fig. 9—Nine T7047C1025 Sensors providing a temperature averaging network for a T7300/Q7300 Thermostat/Subbase.**



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**New Installation**

Run cable to a hole at the selected wall location for the thermostat and pull about 3 in. (76 mm) of wire through the opening. Color-coded, 18-gauge thermostat cable with at least one conductor for each wiring terminal is recommended. Good service practice recommends selecting a cable with one or two extra conductors than the immediate application requires.

If using remote temperature sensor(s) or LAN override switch module, refer to the mounting instructions included with the device for wiring cable requirements. Route cable away from sources of electrical noise.

**IMPORTANT:** *The remote sensor(s) or override switch wires must be in a shielded cable if bundled or placed in the same conduit with the cooling control wires. Earth ground the shield at the thermostat.*

**SET Q7300 SUBBASE DIP SWITCHES**

NOTE: Subbase dip switches are not available on the T7200 Wallplate.

The Q7300 Subbase provides the T7300 Thermostat with an interface to the single zone HVAC system. See Table 5 for DIP switch settings. The subbase DIP switches are located on the front and to the right of the wiring terminals. See Fig. 10. Set the DIP switches for the system being controlled.

TABLE 5—SUBBASE DIP SWITCH SETTINGS.

Switch	Setting	Function
1 <sup>a</sup>	OFF	1 stage heat
	ON <sup>b</sup>	2 stage heat
2 <sup>a</sup>	OFF	1 stage cool
	ON <sup>b</sup>	2 stage cool
3	OFF	Proportional control (allows droop)
	ON <sup>b</sup>	Proportional plus integral (P+I) control (droopless)
4 <sup>c</sup>	ON <sup>b</sup>	Energizes fan on cool only
	OFF	Energizes fan on heat and cool
5	ON <sup>b</sup>	Use internal sensor
	OFF	Use remote sensor

<sup>a</sup> No effect on 1 heat/1 cool (Q7300A) or 1 heat/3 cool (Q7300G) models.

<sup>b</sup> Factory setting.

<sup>c</sup> No effect on heat pump systems.

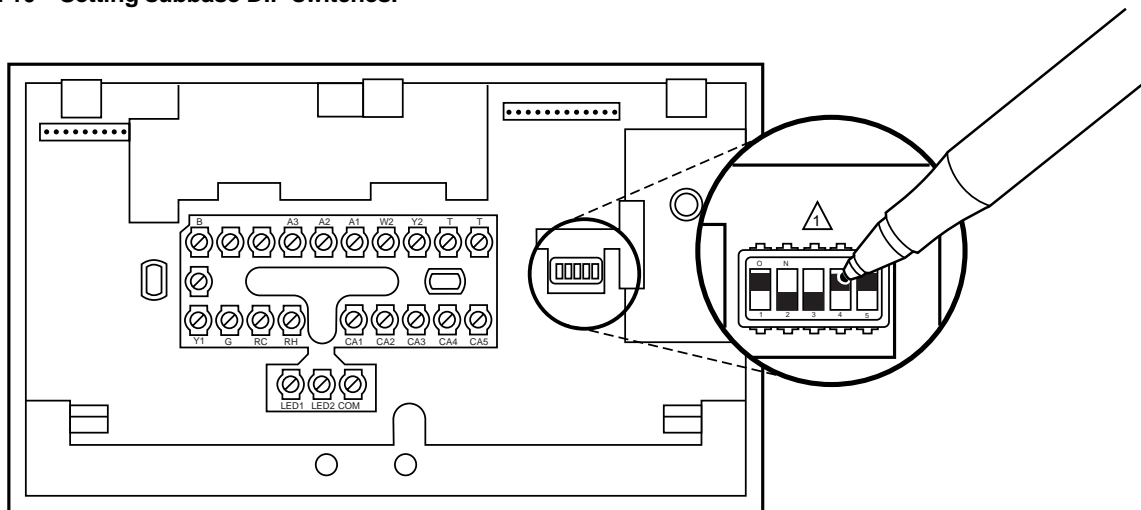
**MOUNT SUBBASE OR WALLPLATE**

The subbase or wallplate can be mounted on a horizontal outlet box or directly on the wall. For an outlet box installation, go to step 3.

1. For a wall installation, hold subbase or wallplate in position and mark holes for the anchors. See Fig. 4. Wall anchors must be obtained locally. Be careful that the wires do not fall back into the wall opening. Set aside subbase or wallplate.

2. Drill four 3/16 in. (4.8 mm) holes and gently tap anchors into the holes until flush with the wall.  
 3. Pull wires through the cable opening. See Fig. 11.

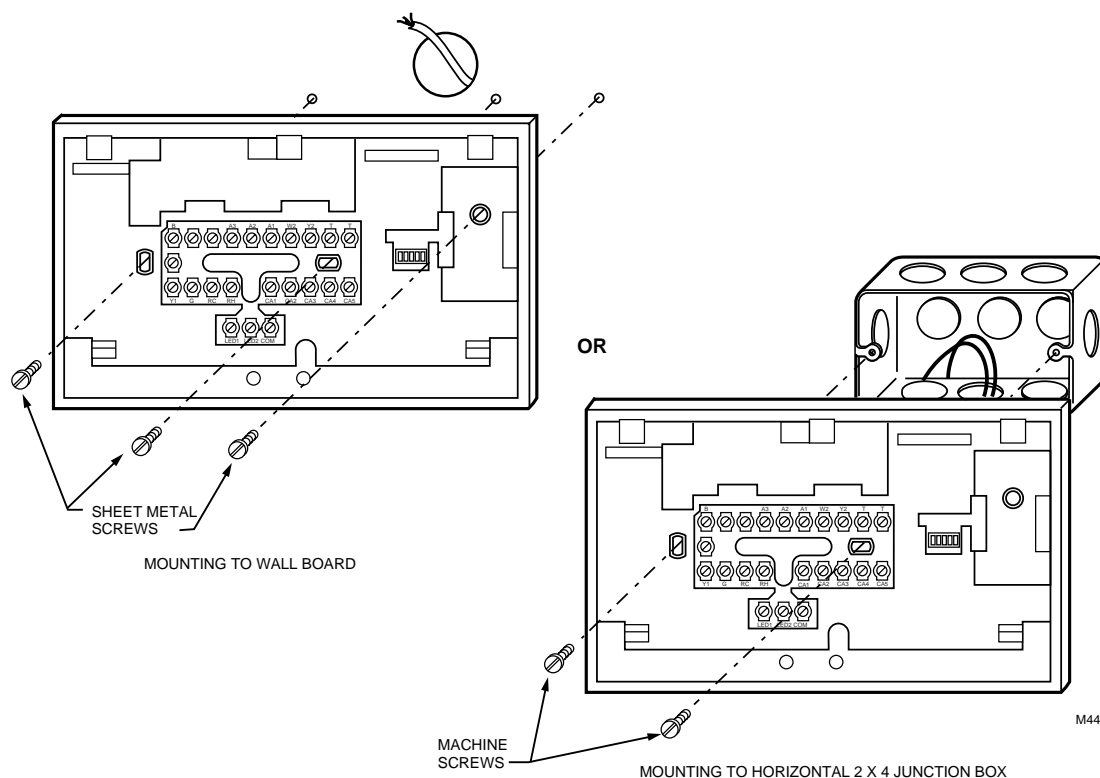
**Fig. 10—Setting subbase DIP switches.**



⚠ CONFIGURATION OF ILLUSTRATED SWITCH IS:  
 1 – ON  
 2 – OFF  
 3 – OFF  
 4 – ON  
 5 – ON

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**Fig. 11—Installing subbase on outlet box or on wall.**



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4. Secure the subbase or wallplate with the screws provided. Do not fully tighten the screws.
5. Level the subbase or wallplate for appearance only. Leveling is not required for operation. Securely tighten the screws.

### WIRE SUBBASE OR WALLPLATE

**IMPORTANT:** Most equipment manufacturers size system transformers for the equipment installed at the factory. Before connection, be sure that the system transformer can supply the T7200 OR T7300 and Q7300 with adequate power (6 VA). If less than 6 VA is available, install a separate 24 Vac transformer.



### CAUTION

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

All wiring must comply with local electrical codes and ordinances.

**IMPORTANT:** Use 18 gauge, solid-conductor wire whenever possible. If using 18 gauge stranded wire, no more than 10 wires can be used. Do **not** use larger than 18 gauge wire.

Follow equipment manufacturer's wiring instructions when available. See Fig. 23-46 for wiring diagrams. To wire subbase, proceed as follows:

1. Connect the correct wires to the terminals as shown in applicable diagram; the terminal barrier allows straight or wraparound wiring connection. See Fig. 12. A letter code is located near each terminal for identification. Typical terminal designation and wiring connections are listed in Table 6. Connect remote temperature sensor or override switch module.

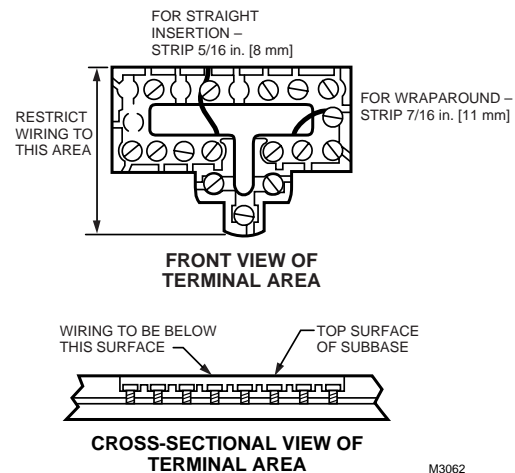
**NOTE:** If a remote sensor is used, be sure that the Q7300 DIP switch 5 is placed in the OFF position.



### CAUTION

Never install more than one wire per terminal unless using factory-supplied jumper with spade terminal.

**Fig. 12—Barrier configuration. Keep wiring restricted to recessed area surrounding terminals.**



2. Firmly tighten each terminal screw. Loose or intermittent wire connections can cause inconsistent system operation.
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.

Refer to Fig. 23-46 for typical hookups. When system installation is complete, perform the initial power up procedure in the Checkout section.



TABLE 6—TERMINAL DESIGNATIONS.

Standard Terminal Designation	Alternate Designations Or Customer Specials	Typical Connection	Function	Terminal Type
B		Heating damper motor; changeover valve/relay	Output	24 Vac powered contact
E	K	Emergency heat relay	Output	24 Vac powered contact
G	F	Fan relay coil	Output	24 Vac powered contact
O	R	Cooling damper motor; changeover valve/relay	Output	24 Vac powered contact
R	V	Power connection to transformer (internally connected for heating and cooling)	Input	
RC		Power connection to cooling transformer	Input	
RH		Power connection to heating transformer	Input	
W1	H1, R3	Stage 1 heating control	Output	24 Vac powered contact
W2	H2, Y, R4	Stage 2 heating control	Output	24 Vac powered contact
W3		Stage 3 heating control	Output	24 Vac powered contact
Y1	C1, M	Stage 1 cooling control	Output	24 Vac powered contact
Y2	C2	Stage 2 cooling control	Output	24 Vac powered contact
Y3 <sup>a</sup>		Stage 3 cooling control <sup>a</sup>	Output	24 Vac powered contact
X	X1,X2,C	Common connection	Input	
T		Remote sensor <sup>b</sup>	Input	
	L, C, H	HSII control panel		
	O	Momentary circuit, changeover		
LED1, LED2, COM	A,A1,A2,Z,C,L	LEDs	Annunciation	
	T	External temperature readout, T relay		
	R1, R2	LO and HI speed fan relays		
	RS	Cooling contactor		
Y	M	Compressor contactor		
A1, A2, A3		Auxiliary relay	Output	Dry contact
CA1-CA5		Remote override <sup>b</sup>	Input	Low power

<sup>a</sup> Q7300G only.

<sup>b</sup> Shielded cable can be required in some installations where electrical interference (noise) can cause control problems.

### SET THERMOSTAT DIP SWITCHES

The thermostat DIP switches provide the thermostat with an interface to the single zone HVAC system. See Table 7 for DIP switch settings. The thermostat DIP switches are located on the back of the thermostat. See Fig. 13. Set the DIP switches for the desired thermostat features and the system being controlled.

**IMPORTANT:** *The thermostat configuration must match the application, or the control logic will not function properly.*

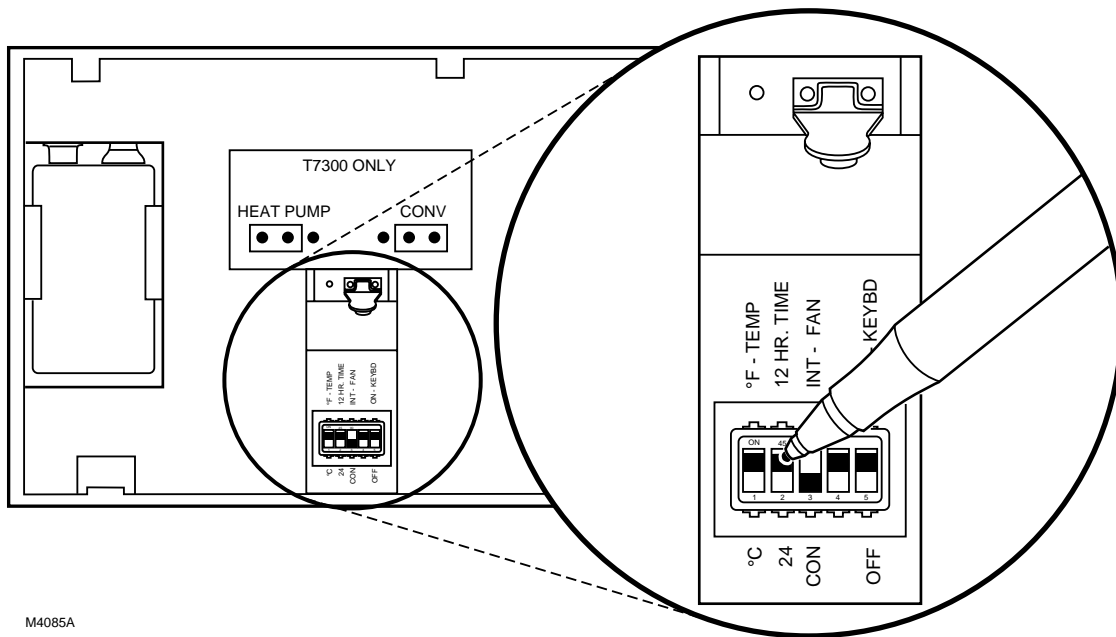
TABLE 7—THERMOSTAT DIP SWITCH SETTINGS

Switch	Setting	Function
1	ON <sup>a</sup>	°F display
	OFF	°C display
2	ON <sup>a</sup>	12 hour clock display
	OFF	24 hour clock display
3	ON <sup>a,b</sup>	Intermittent fan operation in occupied period
	OFF	Continuous fan operation in occupied period
4		Nonfunctional switch
5	ON <sup>a</sup>	Keyboard is used for programming
	OFF	Keyboard disabled, but can be used to review program, perform overrides and make clock changes.

<sup>a</sup> Factory setting.

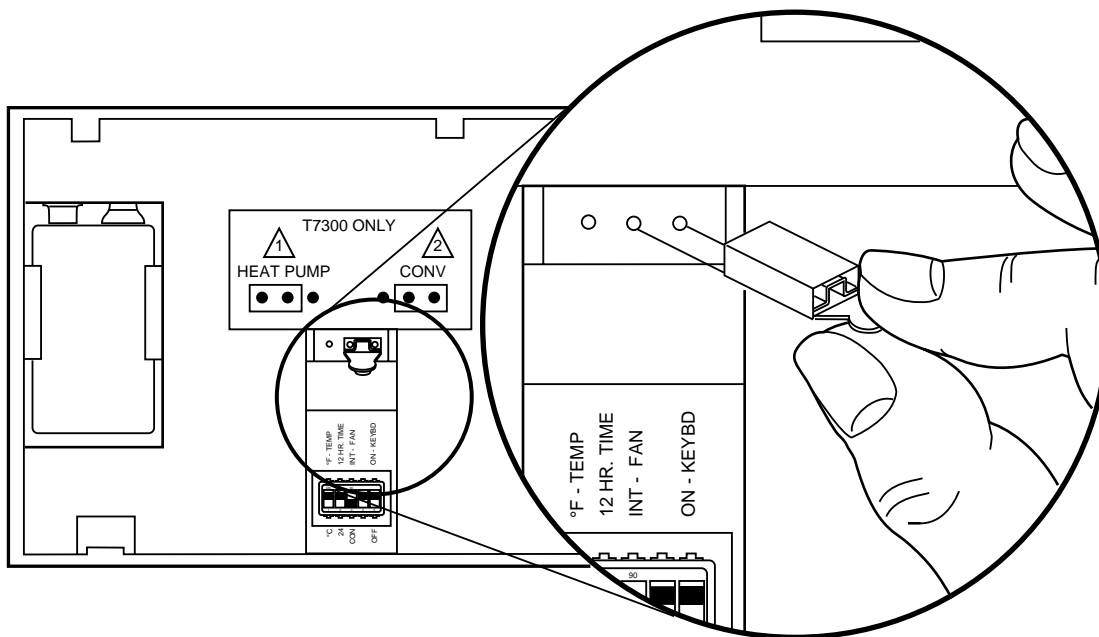
<sup>b</sup> Q7300B,C,D,E,L: fan switch will override this switch setting.  
Q7300A,F,G: no override is available.

Fig. 13—Setting thermostat DIP switches.



M4085A

Fig. 14—Setting thermostat mini-jumper for conventional or heat pump system.



1 ONLY PUT MINI-JUMPER IN THIS POSITION WHEN USING Q7300C,D, OR F SUBBASES.

2 ONLY PUT MINI-JUMPER IN THIS POSITION WHEN USING Q7300A,B,E, OR G SUBBASES.

M4086A

## SET THERMOSTAT MINI-JUMPER

**NOTE:** This operation must be done prior to installing the batteries. If batteries are installed prior to this operation, remove battery for 15 minutes and begin.

The T7300 is factory-set for conventional system control using the Q7300A,B,E,G. If using with a heat pump and Q7300C,D,F, locate the mini-jumper on the back of the T7300. See Fig. 14. Pull the mini-jumper off the two CONV pins and move to the two HEAT PUMP pins. This changes the thermostat to the heat pump algorithm.

If you wish to change the control of the thermostat because a new subbase has been purchased, remove battery for 15 minutes, change mini-jumper position, and re-install battery.

## MOUNT THERMOSTAT



### CAUTION

Always disconnect power supply and remove battery from the T7300 before connecting the ribbon cables to prevent electrical shock and equipment damage.

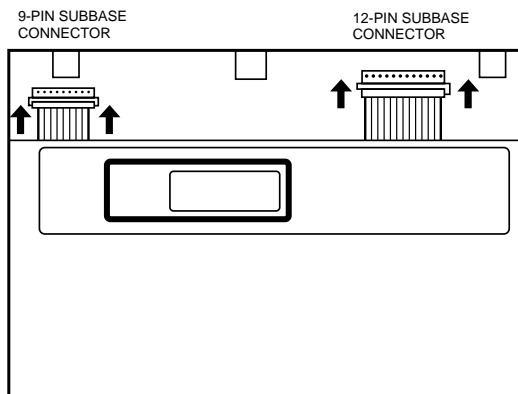
Use the following procedure to connect the T7300 ribbon cables to the Q7300.

1. Check that the 24 Vac power supply is disconnected from the Q7300.
2. Check that the 9 Vdc battery is *not* installed in the T7300.

**IMPORTANT:** First be sure to connect the 12 pin ribbon cable to the Q7300.

3. Connect the 12 pin (larger) ribbon cable to the Q7300. See Fig. 15.
4. Connect the 9 pin (smaller) ribbon cable to the Q7300.
5. If using a 9 Vdc battery, go to the Install Battery Backup section for installation instructions.

**Fig. 15—Connecting the pin ribbon cables to the subbase connectors.**



M4403

## INSTALL BATTERY (OPTIONAL)

The 9 volt battery is not necessary for the operation of the thermostat, but holds the program during power outages. When the power is restored, the system will resume normal operation. Without the battery, the system will follow the default setpoints. See Table 3. Use the following steps to install a battery:

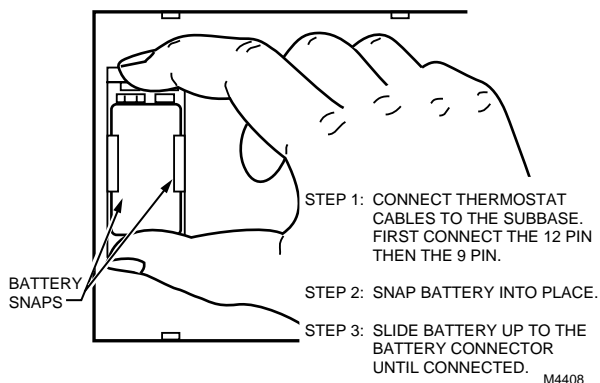
1. Locate the battery holder on the back of the thermostat.
2. Slide the battery up to the connector until it is firmly seated. See Fig. 16.

**NOTE:** Observe the polarity when snapping a 9 volt alkaline battery into the holder.

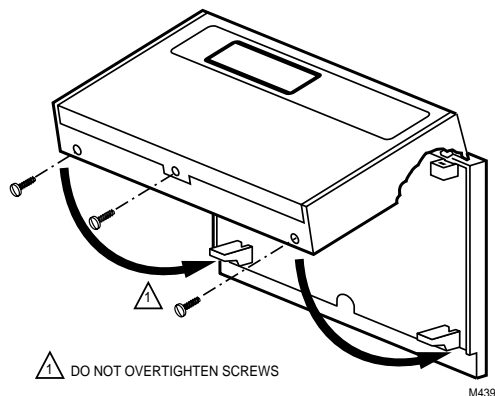
**NOTE:** The plugs must be firmly seated on the connectors for the thermostat to work properly.

6. Hang the top edge of the thermostat on the subbase hooks. See Fig. 17.
7. Swing down and press on the lower edge until the thermostat snaps in place.
8. Insert and tighten three Allen head screws on the bottom of the thermostat. See Fig. 17.

**Fig. 16—Installing optional 9 volt battery.**



**Fig. 17—Mounting thermostat on subbase.**



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# Program the Thermostat

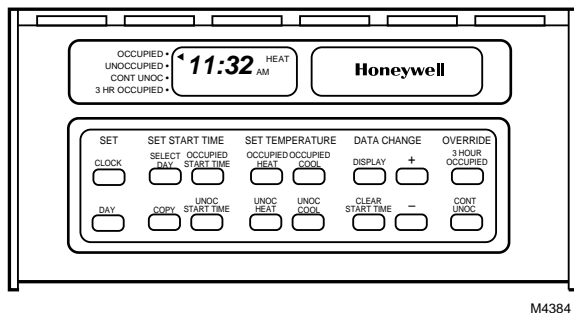
## OVERVIEW

The keyboard is located behind the thermostat flip-up cover. See Fig. 18. There are 16 keys to set, review and modify programmed times and temperatures. The liquid crystal display (LCD) shows day, time or temperature and which programming period is operating.

The thermostat can be set for two occupied and two unoccupied time and temperatures for each day of the week (28 independent settings). The two override keys provide quick temporary programming changes for increased occupant comfort.

**IMPORTANT:** *To program the thermostat, 24 Vac is required (turn on system power) and the keyboard lock-out switch (see Fig. 27) must be in the ON-KEYBD position.*

**Fig. 18—Thermostat programming keys and LCD display.**



## SET CURRENT TIME/DAY

1. Set the current time by pressing and releasing the **CLOCK** key once.
2. Press the + or - key until the current time appears on the LCD.
3. Set the current day by pressing and releasing the **DAY** key once.
4. Press the + or - key until the current day appears on the LCD.

NOTE: Su=Sunday; Mo=Monday; Tu=Tuesday; We=Wednesday; Th=Thursday; Fr=Friday; Sa=Saturday.

## SET PROGRAM TIMES

**IMPORTANT:** *The thermostat will remain in occupied mode from the point of initial programming until it encounters the first unoccupied start time. To avoid the unnecessary occupied period following initial programming, set a 12:00 AM unoccupied start time on the thermostat when programmed.*

NOTE: The programming times are in intervals of ten minutes; i.e., 8:00, 8:10, 8:20.

1. Press the **SELECT DAY** key. The display shows the abbreviation for a day.
2. Press and hold the + or - key until the desired day appears.
3. Press the **OCCUPIED START TIME** key. The program indicator will point to OCCUPIED.
4. Press and hold the + or - key until the desired start time appears.

NOTE: Anytime a start time is not required, press the **CLEAR START TIME** key.

5. Press the **UNOC START TIME** key. The program indicator will point to UNOCCUPIED.
6. Press and hold the + or - key until the desired start time appears.
7. To program a second occupied start time for the selected day, repeat Step 3 until four dashes (----) are displayed or the second start time (if previously programmed) is displayed. Then repeat Step 4.
8. To program a second unoccupied start time for the selected day, repeat Step 5 until four dashes (----) are displayed or the second start time (if previously programmed) is displayed. Then repeat Step 6.
9. Repeat Steps 1 through 8 for each remaining day of the week or refer to the following section, COPY A DAY.

## COPY A DAY

1. Press the **SELECT DAY** key. The display shows the abbreviation for a day.
2. Press and hold the + or - key until the day to be copied *from* appears.
3. Press the **COPY** key.
4. Press and hold the + or - key until the day to be copied *to* appears.

NOTE: The day to be copied *from* will remain on the display.

5. Press the **COPY** key a second time to perform the copy.
6. Repeat Steps 3 to 5 to copy to another day.

## SET PROGRAM TEMPERATURE SETPOINTS

NOTE: The setpoint temperature range is 45°F (unoccupied heat) to 95°F (unoccupied cool). The occupied heat setpoint must be at least 2°F less than the occupied cool setpoint.

1. Press the SET TEMPERATURE key (**OCCUPIED HEAT**, **OCCUPIED COOL**, **UNOC HEAT**, or **UNOC COOL**). The program indicator will point to OCCUPIED or UNOCCUPIED and the LCD will indicate HEAT or COOL.

2. Press and hold the + or - key until the desired temperature appears.
3. Repeat Steps 1 and 2 until all four temperatures are set.

### SET OPERATING DISPLAY

The LCD can show time or temperature. To change the current display, press the **DISPLAY** key until the desired operating display appears.

### CLEAR START TIME

1. Press the **SELECT DAY** key.
2. Press and hold the + or - key until the desired day appears.
3. Press and hold the **OCCUPIED START TIME** or the **UNOC START TIME** key until the time to clear appears.
4. Press and hold the **CLEAR START TIME** key until the display shows four dashes (----).

NOTE: If there is a second OCCUPIED setting, the start for time this setting will appear instead of four dashes (----).

### TEMPORARILY OVERRIDE PROGRAM

There are three overrides available. The 3 hour occupied overrides can be initiated from a remote location or the thermostat. The 3 hour occupied override *without* + or - keys can also be initiated from the T7300B cover.

NOTE: Pressing the **DISPLAY** key at anytime will return the thermostat to the program.

### 3 Hour Occupied

The **3 HOUR OCCUPIED** key is used to override the unoccupied program when people need to use the area temporarily (working late, weekends or holidays).

1. Press the **3 HOUR OCCUPIED** key to change the unoccupied temperature setting to the occupied setpoint for three hours.

NOTE: The program indicator will point to 3 HR OCCUPIED while the override is in effect.

### 3 Hour Occupied with + or - Key

### SET + OR - KEY VALUE

When using the + or - key with the **3 HOUR OCCUPIED** key, the + or - key has a preassigned value of 0 to 5°F (default is 0). Use the following steps to check or change the value:

1. Press the **3 HOUR OCCUPIED** key. The program indicator will point to 3 HR OCCUPIED.
2. Press the **DISPLAY** key. The LCD will show a number from 0 to 5.
3. Press the + or - key to change the value.
4. Press the **DISPLAY** key to return to the program.

### Set 3 Hour Occupied Override With + or - Key

The **3 HOUR OCCUPIED** key with the + or - key will override the unoccupied program for three hours with the occupied temperature setpoint ± the preassigned key value (see Set + or - Key Value section).

1. Press the **3 HOUR OCCUPIED** key to change the unoccupied temperature setting to the occupied setpoint for three hours.
2. Press the + key to increase or press the - key to decrease the occupied setpoint by the key value.

EXAMPLE: Unoccupied setpoint is 62°F, occupied setpoint is 70°F and key value is 3°F. Pressing the **3 HOUR OCCUPIED** key and the + key will change the setpoint from 62°F to 70°F plus 3°F or 73°F. Pressing the - key would change the setpoint to 70°F minus 3°F or 67°F.

NOTE: The program indicator will point to 3 HR OCCUPIED while the override is in effect. The LCD will not reflect the key value.

### Cont Unoc

The continuous unoccupied override feature holds the setpoint at the unoccupied temperature setpoint until the **DISPLAY** or **CONT UNOC** key is pressed. This override is used when the area will be closed for a temporary closing such as a long holiday.

1. Press the **CONT UNOC** key to hold the temperature at the unoccupied setpoint.
2. Press the **CONT UNOC** key again to return to the program.

## Checkout

### OVERVIEW

Check that all wiring is correctly completed and all sensors are installed. The thermostat should be mounted on the wallplate or subbase. If the thermostat has not been programmed, when the power is first turned on, the LCD will show four dashes (----). Without programming, the thermostat will operate from default temperature setpoints (see OPERATION section).

NOTE: It is helpful to program the thermostat before using the Checkout procedure. Refer to the Programming section to set a program.

If the display has two dashes and a degree sign (--°), wait sixty seconds and press the **DISPLAY** key twice. If the display does not change or is blank, refer to the Troubleshooting section.

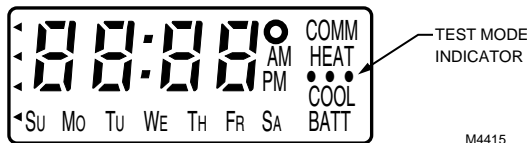
### TEST MODE

The thermostat has a test mode that aids the installer in performing the checkout. The test mode overrides the minimum on and off times so the checkout can be quickly performed. Press the **CLOCK** and **DAY** keys at the same time to start the test mode. All the display segments will appear. See Fig. 19

## **CAUTION**

Do not use the test mode for longer than 10 minutes. The test mode overrides the minimum on and off times that protect the system. Equipment damage can result if the thermostat remains in the test mode.

**Fig. 19—All segments on display.**



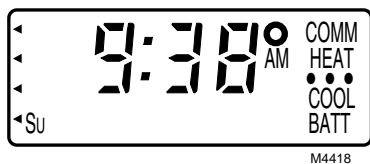
To discontinue the test mode at any time, press the **CLOCK** and **DAY** keys at the same time. The Test Mode Indicators will no longer show on the screen.

### HEAT

**NOTE:** When the thermostat is used with a subbase with subbase and fan switches, set the switches to **AUTO**.

1. Press the **CLOCK** and **DAY** keys at the same time. This starts the test mode.
2. Press the **DISPLAY** key. See Fig. 20.

**Fig. 20—Display when starting test sequence.**



3. Press the **OCCUPIED HEAT** key.
4. Press the + key to raise the setpoint 5°F (3°C) above the room temperature. The heating should start (both stages if multistage), and the fan should run (may be a short delay on forced air systems).

**NOTE:** It can be necessary to change the **OCCUPIED COOL** setpoint. However, be aware that **OCCUPIED HEAT** and **OCCUPIED COOL** setpoints must have a 2°F difference.

5. Press the **OCCUPIED HEAT** key.
6. Press the - key to lower the setpoint 5°F (3°C) below the room temperature. The heating should shut off, followed by the fan shutoff.

When the thermostat has a system switch, move the switch to the **HEAT** position and repeat steps 3 through 6.

### COOL

Move switch to auto.

## **CAUTION**

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

**NOTE:** When cooling setting changes, thermostat will wait up to five minutes before turning on the cooling equipment. This delay is to protect the compressor.

1. Press the **OCCUPIED COOL** key.
2. Press the - key to lower the setpoint 5°F (3°C) below the room temperature. The cooling should start (both stages if multistage), and the fan should run.

**NOTE:** It can be necessary to change the **OCCUPIED HEAT** setpoint. However, be aware that the **OCCUPIED HEAT** and **OCCUPIED COOL** setpoints must have a 2°F difference.

3. Press the **OCCUPIED COOL** key.
4. Press the + key to raise the setpoint 5°F (3°C) above the room temperature. The cooling and fan should shut off. When the thermostat has a system switch, move the switch to the **COOL** position and repeat Steps 1 through 4. Move the system switch to the **OFF** position. All heating or cooling should stop.

### FAN

#### Thermostat

Fan Switch (located on the back of the thermostat):

- **CON:** Fan operates continuously in the occupied mode.
- **INT-FAN:** Fan operates directly with the thermostat call for heating or cooling in the occupied mode.

#### Subbase

**NOTE:** Subbase fan switch overrides the thermostat fan switch.

Subbase Dip Switch No. 4:

- **ON:** Fan operates only with cool.
- **OFF:** Fan operates with heat and cool.

Q7300E Fan Switch:

- **ON:** Fan operates continuously.
- **AUTO:** Fan operates directly with the thermostat call for heating or cooling.

**IMPORTANT:** Press the **CLOCK** and **DAY** keys at the same time to discontinue the test mode. The Test Mode Indicators will no longer show on the screen. See Fig. 19.

# Operation

## T7200/T7300 RELAY LOGIC

The T7300 contains three switching relays. When the mini-jumper is set for conventional applications, the relays control first stage cooling, first stage heating, and fan. When the mini-jumper is set for heat pump applications, the relays control the heat pump compressor, auxiliary heat, and fan. Because of this change in switching logic, it is important to use Q7300C,D, or F subbases when the T7300 is set for heat pump applications and use Q7300A,B,E,G subbases when the T7300 is set for conventional applications.

The T7200A Relay Logic is for conventional applications. The T7300B Relay Logic is for heat pump applications.

## T7200/T7300 AND CONVENTIONAL THERMOSTATS

### P+I Control

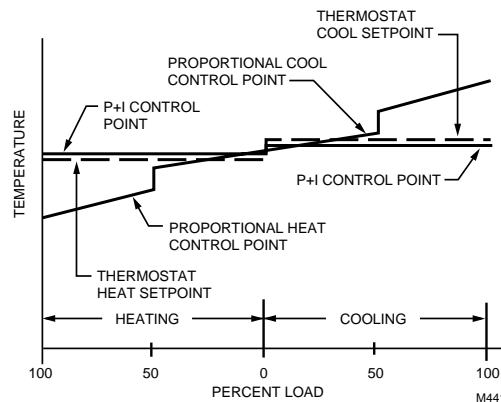
The T7200/T7300 microprocessor based control requires that the user understands temperature control and thermostat performance. A conventional electromechanical or electronic thermostat does not control temperature precisely at setpoint. Typically, there is an offset (droop) in the control point as the system load changes. This is a phenomenon that most people in the industry know and accept. Many factors contribute to offset including switch differential, thermal lag, overshoot, cycle rates and system load.

The thermostat microprocessor simultaneously gathers, compares and computes data. Using this data, it controls a wide variety of functions. The special proprietary algorithm (program) in the thermostat eliminates the factors causing offset. This makes temperature control more accurate than the conventional electromechanical or electronic thermostats. The temperature control algorithm is called proportional plus integral (P+I) control.

The thermostat sensor, located on the thermostat or remote, senses the current space temperature. The proportional error is calculated by comparing the sensed temperature to the programmed setpoint. The deviation from the setpoint is the proportional error.

The thermostat also determines integral error, which is a deviation based on the length of error time. The sum of the two errors is the (P+I) error. The cycle rate used to reach and maintain the setpoint temperature is computed using the P+I. The addition of the integral error is what differentiates the thermostat from many other electronic and electromechanical thermostats. See Fig. 21.

**Fig. 21—Proportional temperature control versus P+I temperature control.**



While the thermostat is designed to eliminate droop, allowing droop can be desirable in applications where building visitors are dressed for the weather and their stays are brief. Examples of these applications include fast food restaurants and convenience stores. The droopless feature of the thermostat can be overridden by placing the droop/droopless select switch located on the subbase in the OFF position. This removes the integral calculation from the thermostat control scheme, allowing only the proportional control to occur.

## EQUIPMENT PROTECTION

As part of the operational sequence, the T7200/T7300 microprocessor also incorporates minimum On and Off times for all heating and cooling stages. Minimum On and Off times assure that rapid cycling of equipment will not occur, extending equipment life. Minimum On/Off times for compressor stages are two minutes On and four minutes Off. Minimum On/Off times for heat (electric resistive or gas) are two minutes.

## T7200/T7300 THERMOSTAT OPERATION

### Startup

When power to the thermostat is turned on, a startup and initialization program begins. The startup takes place after total loss of power (24 Vac and battery backup). At this time, the system default values are put into memory (replacing the user program that was lost). Default values are heating 68°F (20°C) and cooling 78°F (26°C) for the occupied modes. Unoccupied default values are heating 55°F (13°C) and cooling 90°F (32°C).

**NOTE:** These unoccupied defaults are only used if an unoccupied start time is entered or the CONT UNOC key is pressed. Immediately following initialization, the user can enter new setpoints to be used in place of the default values.

If the battery backup was operating during a power failure, and 24 Vac power comes back on, the user-entered time and temperature program saved in memory is used. If 24 Vac is lost, and no battery backup exists, the default temperatures is placed into memory when the power comes back on. These default values are then used for temperature control.

### Occupied

When the thermostat is operating in the occupied mode, the temperature is controlled to the occupied heat or cool setpoint. The normally open (A1) auxiliary relay contacts are closed and the normally open contacts (A3) auxiliary relay contacts are opened during the occupied modes (if the subbase being used has this option). The fan operates as follows:

- No switching subbase used: Operation of the fan is continuous (fan always energized) unless the fan option switch on the back of the T7300 (#3) is set to intermittent (cycles with Y1 or W1).
- Switching subbase used: Q7300 fan switch can be set to ON (always energized) or AUTO (cycles with Y1 or W1).

**NOTE:** If subbase configuration switch no. 4 (on any Q7300 conventional subbase) is set to the ON position, the fan cycles on a call for cooling only; switch no. 4 has no effect on heat pump subbases (Q7300C, D, F).

### Unoccupied

When the thermostat is operating in the unoccupied mode, the temperature is controlled to the unoccupied heat or cool setpoint. The auxiliary relay contacts is open and the fan operates as follows:

- Switching or non-switching subbase used: Fan is always be intermittent (cycles with Y1 or W1). See NOTE for OCCUPIED.

### Conventional System

#### RECOVERY FROM UNOCCUPIED

Intelligent Recovery™ is a Honeywell trademark for the way the thermostat controls the heating and cooling equipment during recovery from unoccupied to occupied setting. During recovery, the control point ramps up at the rate of 5°F (3°C) per hour rather than jumping from the energy savings setting to the comfort setting all at once. This provides additional energy savings.

When the Intelligent Recovery™ is used in the heating mode, the control point raises 5°F (3°C) per hour, maximizing the use of the more economical first stage heat to bring the sensed temperature to the desired comfort setpoint. This minimizes using the typically more expensive second stage heat.

The advantages are:

- Comfort setting is achieved at the programmed time and maintained regardless of weather conditions; occupants are comfortable.
- Drafts from low temperature discharge air are minimized during occupied periods.
- The thermostat automatically uses the more economical first stage of heat as the primary heat source during heat mode recovery, avoiding the use of the expensive second stage heating.
- Comfort and energy savings can be achieved in both heating and cooling.
- The thermostat reduces heat cycling, extending equipment life.

### Heat Pump Operation

The T7200 is fixed for either heat pump or conventional control applications. The T7300 is configurable for either heat pump or conventional applications, depending on the subbase used. Additional information is required when configured for heat pump.

The heat pump mini-jumper (located on the back of the thermostat) places the thermostat into the heat pump mode. Refer to the Installation section.

### O AND B TERMINALS FOR HEATING OR COOLING CHANGEOVER

The Q7300C and F controls heat pump changeover. The Q7300D is only used in a heat pump application when the heat pump controls the reversing valve changeover. See Table 8 for the operation of the O and B terminals on the Q7300C and F.

TABLE 8—OPERATION OF THE Q7300 O AND B TERMINALS.

System Switch	O	B
Heat	Open	Closed
Cool	Closed	Open
Auto (Heat) <sup>a</sup>	Open	Closed
Auto (Cool) <sup>b</sup>	Closed	Open
Emergency Heat	Open	Closed
Off	c	c

<sup>a</sup> When the system is calling for heat or is de-energized, but the last function was heat.

<sup>b</sup> When the system is calling for cool or is de-energized, but the last function was cool.

<sup>c</sup> When the last function was heating, the operation is the same as Auto (Heat). If the last function was cooling, the operation is the same as Auto (Cool).

### RECOVERY FROM UNOCCUPIED

The heating recovery ramp is 3°F per hour, which differs from the 5°F per hour for conventional systems. The 3°F degree difference helps the system use the economical heat pump more and the expensive auxiliary heat less. The cooling ramp is 5°F, the same as conventional systems.



## FAN OPERATION

When the subbase fan switch is in the ON position, the fan is energized continuously in the occupied mode. The AUTO position energizes the fan with the heating or cooling system. If the subbase is Q7300D, during unoccupied mode, the fan cycles with Y1 and W1.

NOTE: The Q7300 switch no. 4 has no effect when the thermostat is configured for heat pump.

## EMERGENCY HEAT

When the system switch is in the EM. HEAT position (on select Q7300 subbases), the auxiliary heat is stage 1 and the compressor stages are locked off. The fan cycles with the auxiliary heat.

## GENERAL OPERATION INFORMATION

### Cycle Rates

The thermostat control algorithm maintains the temperature by cycling stages of heating or cooling to meet setpoint. See Table 9 for the nominal cycle rates provided.

TABLE 9—NOMINAL CYCLE RATES  
FOR HEATING AND COOLING.

System Type	H1	H2	C1	C2	C3
Conventional	8	8	4	4	4
Heat Pump	4	8	4	4	—

### Subbase Auxiliary Relay

The Q7300 auxiliary relay output acts as a time-of-day switch to be used with an economizer minimum position control. The normally open (A1) auxiliary relay contacts are closed during the occupied period and open during the unoccupied period. The normally closed (A3) auxiliary relay contacts are open during the occupied period and closed during the unoccupied period. The contacts are in the normal state during recovery.

### Interfacing with Electromechanical Economizers (Subbases with Auxiliary Relay)

Mechanical cooling is often used when outside temperatures are in the 50° to 60°F range and humidity is below 50 percent. In central and northern climates, hundreds of hours fall into this temperature category. By permitting 80 to 100 percent outside air into the system, mechanical cooling may not be needed at all, particularly during spring and fall.

An economizer is used to take advantage of the outside air. The typical economizer consists of an outside air damper, motor, outdoor air changeover control and a minimum position potentiometer. The motor controls the dampers. Suitability of the outside air for cooling is determined by the outdoor air changeover control. The potentiometer is used for adjusting the minimum position of the economizer dampers, which provide a minimum amount of fresh air for ventilation.

The economizer reduces compressor run time, thereby saving energy and extending the compressor life. The drawback to the economizer is that during the unoccupied

period, if there is no call for cooling or outdoor air is not suitable for free cooling, the economizer is controlled to minimum position. This position allows some percentage of outdoor air to enter the building, regardless of air suitability. The situation can cause the heating or cooling to run more often than if suitable outdoor air is permitted to enter the building.

The thermostat can take advantage of an economizer by connecting the auxiliary relay contacts (A1 and A2) of the subbase to control the economizer minimum position potentiometer. The contacts close during the occupied period, allowing the economizer to operate normally. The contacts are open during the unoccupied period, disabling the minimum position feature of the economizer. The open contacts cause the economizer to drive dampers fully closed instead of staying at minimum open position. This reduces the possibility of unsuitable outdoor air from entering the building, which lowers the internal load on the HVAC system and saves additional energy.

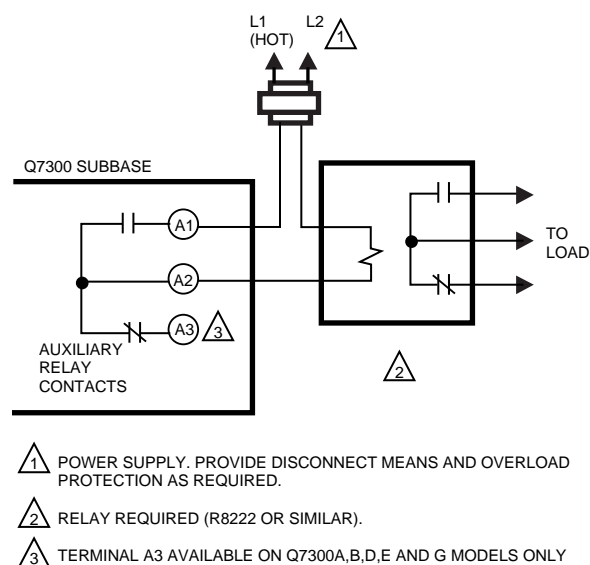
### Other Uses for the Auxiliary Relay

Examples of other uses of the auxiliary relay are hot water heaters, lighting or baseboard heat. The additional loads are connected to the auxiliary relay contacts on the subbase. The contacts are rated for 1.6A at 30 Vac, but can be adapted to higher current applications with the use of an external relay and transformer. See Fig. 22.

### Duty Cycle Interface

Duty cycling HVAC equipment controlled with a T7200 or T7300 is recommended because the thermostat is already maintaining an optimum control cycle rate. Adding another external duty cycle increases the P+I error being sensed and results in degradation of temperature control and equipment efficiency.

Fig. 22—Use of external relay and transformer for auxiliary loads greater than 1.6A.



M4383

# Cross Reference

Refer to Table 10 for thermostat and subbase cross referencing information.

TABLE 10—THERMOSTAT AND SUBBASE CROSS REFERENCE.

Model Number	Fig. No.	Description	Trade Replacement	Remarks
<b>T7200A</b>	<b>7-day programmable thermostat for commercial conventional systems.</b>			
A1006	23,24,25	Tradeline®.	T7200A1006	Beige color
A1022	23,24,25	International faceplate.	T7200A1006	Beige color
<b>T7200B</b>	<b>7-day programmable thermostat for commercial water source heat pump systems.</b>			
B1004	9,26	Tradeline.	T7200B1004	Beige color
B1012	9,26	Mammoth part number 71116701.	T7200B1004	Beige color
B1020	9,26	Carrier part number HH07AX010A.	T7200B1004	Beige color
<b>T7300A</b>	<b>7-day programmable thermostat for commercial conventional systems.</b>			
A1005	△	Tradeline®.	T7300A1005	Beige color
A1013	△	York part no. 025-27506. Used in Y7300B1008, Y7300C1006 and Y7300D1004.	T7300A1005 T7300A1104	Beige color Premier White™ color
A1021	△	Lennox part no. 81G5901.	T7300A1005 T7300A1104	Beige color Premier White™ color
A1039	△	Trane part no. THT-0608.	T7300A1005 T7300A1104	Beige color Premier White™ color
A1047	△	Micrometl part no. 901-114. Used in Y7300A1000 and Y7300C11014.	T7300A1005 T7300A1104	Beige color Premier White™ color
A1054	△	International face plate.	T7300A1005 T7300A1104	Beige color Premier White™ color
A1062	△	Carrier part no. HH07AX005. Used in Y7300A1018.	T7300A1005 T7300A1104	Beige color Premier White™ color
A1070	△	International face plate.	T7300A1005 T7300A1104	Beige color Premier White™ color
A1088	△	Spanish face plate.	T7300A1005 T7300A1104	Beige color Premier White™ color
A1104	△	Tradeline.	T7300A1104	Premier White™ color
<b>T7300B</b>	<b>Fully configurable programmable thermostat with 3-HOUR OVERRIDE key on cover. See figure 2 for view of door.</b>			
B1003	△	Tradeline.	T7300B1003	Beige color
B1011	△	Climate Control part no. 490249B-05.	T7300B1003 T7300B1052	Beige color Premier White™ color
B1029	△	McQuay part no. 490249B-06.	T7300B1003 T7300B1052	Beige color Premier White™ color
B1037	△	Arcoaire part no. 1506746. Used in Y7300B1024.	T7300B1003 T7300B1052	Beige color Premier White™ color
B1045	△	Comfort Maker part no. 1505746. Used in Y7300B1016.	T7300B1003 T7300B1052	Beige color Premier White™ color
B1052	△	Tradeline.	T7300B1052	Premier White™ color

△ See subbase for figure number.

(Continued)

TABLE 10—THERMOSTAT AND SUBBASE CROSS REFERENCE (Continued).

Model Number	Fig. No.	Description	Trade Replacement	Remarks
<b>T7300C</b>	<b>Fully configurable programmable thermostat with limited access cover. See Figure 3 for view of door.</b>			
C1001	△	Tradeline.	T7300C1001	Beige color
C1019	△	Tradeline. Premier White™ T7300.	T7300C1019	Premier White™ color
<b>Subbase</b>				
<b>Q7300A</b>	<b>Conventional equipment. System: none. Fan: none.</b>			
A1000	27	Tradeline. 1 heat and 2 cool.	Q7300A1000	Brown color
A1018	28,29, 30,32, 35,36	Tradeline. 2 heat and 2 cool.	Q7300A1018	Brown color
A1034	27,32	Trane part no. BAS-0444.	Q7300A1000	Brown color
			Q7300A1075	Light gray color
A1042	28,29, 30,32, 35,36	Trane part no. BAS-0445.	Q7300A1018	Brown color
			Q7300A1083	Light gray color
A1059	28,29 30,32, 35,36	Micrometl part no. 901-3. Used in Y7300A1000.	Q7300A1018	Brown color
			Q7300A1083	Light gray color
A1067	28,29, 30,32, 35,36	Carrier part no. HH93AX005.	Q7300A1018	Brown color
			Q7300A1083	Light gray color
A1075	27,32	Tradeline. Used with Premier White™ T7300. 1 heat and 1 cool.	Q7300A1075	Light gray color
A1083	28,29, 30,32, 35,36	Tradeline. Used with Premier White™ T7300. 2 heat and 2 cool.	Q7300A1083	Light gray color
<b>Q7300B</b>	<b>Conventional equipment. System: Heat-Off-Cool-Auto. Fan: Auto-On.</b>			
B1008	28,29, 30,32, 35,36	Tradeline. 2 heat and 2 cool.	Q7300B1008	Brown color
B1016	28,29, 30,32, 35,36	Lennox part no. 81G6001.	Q7300B1008	Brown color
			Q7300B1073	Brown color
			Q7300B1081	Light gray color
B1024	28,29, 30,32, 35,36	York part no. 025-227507. Used in Y7300B1008.	Q7300B1008	Brown color
			Q7300B1073	Brown color
			Q7300B1081	Light gray color
B1032	28,29, 30,32, 35,36	Trane part no. BAS-0446.	Q7300B1008	Brown color
			Q7300B1073	Brown color
			Q7300B1081	Light gray color
B1040	28,29, 30,32, 35,36	Carrier part no. HH93AAX004.	Q7300B1008	Brown color
			Q7300B1073	Brown color
			Q7300B1081	Light gray color
B1057	28,29, 30,32, 35,36	Snyder General part no. 1520510. Used in Y7300B1016 and Y7300B10224.	Q7300B1008	Brown color
			Q7300B1073	Brown color
			Q7300B1081	Light gray color
B1065	28,29, 30,32, 35,36	Snyder General part no. 490249B-04.	Q7300B1008	Brown color
			Q7300B1073	Brown color
			Q7300B1081	Light gray color

△ See subbase for figure number.

(Continued)

TABLE 10—THERMOSTAT AND SUBBASE CROSS REFERENCE (Continued).

Model Number	Fig. No.	Description	Trade Replacement	Remarks
B1073	28,29,30,32,35,36	Tradeline. 2 heat and 2 cool.	Q7300B1073	Brown color
B1081	28,29,30,32,35,36	Tradeline. Used with Premier White T7300. 2 heat and 2 cool.	Q7300B1081	Light gray color
<b>Q7300C</b>	<b>Heat pump systems. System: Em. Ht.-Heat-Off-Cool-Auto. Fan: Auto-On.</b>			
C1006	38,42	Tradeline. 1 stage heat pump.	Q7300C1006	Brown color
C1014	40	Tradeline. 2 stage heat pump.	Q7300C1014	Brown color
C1022	40	Lennox part no.81G6901.	Q7300C1014	Brown color
			Q7300C1089	Brown color
			Q7300C1105	Light gray color
C1030	40	York part no. 025-27508. Used in Y7300C1006.	Q7300C1014	Brown color
			Q7300C1089	Brown color
			Q7300C1105	Light gray color
C1048	38,42	Trane part no.BAS-0447.	Q7300C1014	Brown color
			Q7300C1089	Brown color
			Q7300C1105	Light gray color
C1055	40	Trane part no.BAS-0448.	Q7300C1014	Brown color
			Q7300C1089	Brown color
			Q7300C1105	Light gray color
C1063	38,42	Micrometl part no. 901-24. Used in Y7300C1014.	Q7300C1006	Brown color
			Q7300C1097	Light gray color
C1071	40	Obsolete		Brown color
C1089	40	Tradeline. 2 stage heat pump.	Q7300C1089	Brown color
C1097	38,42	Tradeline. Used with Premier White T7300. 1 stage heat pump.	Q7300C1097	Light gray color
C1105	40	Tradeline. Used with Premier White T7300. 2 stage heat pump.	Q7300C1105	Light gray color
<b>Q7300D</b>	<b>Heat pump system. System: Em.Ht.-Heat-Off-Cool-Auto. Fan: Auto-On.</b>			
D1004	41	Carrier part no. HH93AX002.	Q7300D1038	Brown color
			Q7300D1061	Brown color
			Q7300D1079	Light gray color
D1012	39,42	Carrier part no. HH93AX003.	Q7300D1053	Brown color
			Q7300D1087	Light gray color
D1020	41	York part no. 025-27724-000. Used in Y7300D1004.	Q7300D1038	Brown color
			Q7300D1061	Brown color
			Q7300D1079	Light gray color
D1038	41	Tradeline. 2 stage heat pump.	Q7300D1038	Brown color
D1046	41	Lennox part no. 13H7601.	Q7300D1038	Brown color
			Q7300D1061	Brown color
			Q7300D1079	Light gray color

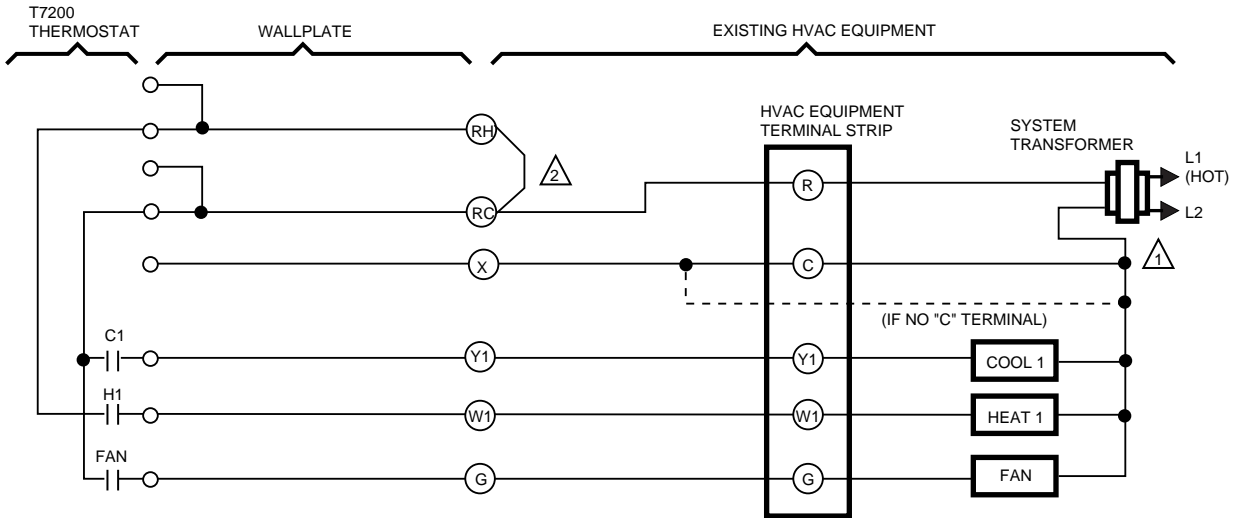
(Continued)

TABLE 10—THERMOSTAT AND SUBBASE CROSS REFERENCE (Continued).

Model Number	Fig. No.	Description	Trade Replacement	Remarks
D1053		Tradeline. 1 stage heat pump.	Q7300D1053	Brown color
D1061	41	Tradeline. 2 stage heat pump.	Q7300D1061	Brown color
D1079	41	Tradeline. Used with Premier White T7300. 2 stage heat pump.	Q7300D1079	Light gray color
D1087	39,42	Tradeline. Used with Premier White T7300. 1 stage heat pump.	Q7300D1087	Light gray color
<b>Q7300E</b>	<b>Conventional equipment. System: none. Fan: none.</b>			
E1001	28,29,30	Tradeline. 2 heat and 2 cool.	Q7300E1001	Brown color
E1019	28,29,30	Tradeline. Used with Premier White T7300. 2 heat and 2 cool.	Q7300E1019	Light gray color
<b>Q7300F</b>	<b>Heat pump systems. System: none. Fan: none.</b>			
F1009	44	Tradeline. 1 stage heat pump.	Q7300F1009	Brown color
F1017	44	Tradeline. 2 stage heat pump.	Q7300F1017	Brown color
F1025	44	Tradeline. Used with Premier White T7300. 1 stage heat pump.	Q7300F1025	Light gray color
F1033	44	Tradeline. Used with Premier White T7300. 2 stage heat pump.	Q7300F1033	Light gray color
F1041	43	Carrier part no. HH93AX006. Used in Y7300A1018.	Q7300F1009	Brown color
			Q7300F1025	Light gray color
<b>Q7300G</b>	<b>Conventional equipment. System: Heat-Off-Cool-Auto. Fan: none.</b>			
G1007	31,32,33,34	Tradeline. 1 heat and 3 cool.	Q7300G1007	Brown color
G1015	31,32,33,34	Tradeline. Used with Premier White T7300. 1 heat and 3 cool.	Q7300G1015	Light gray color
<b>Q7300L</b>	<b>Conventional equipment. System: none. Fan: Auto-On.</b>			
L1006	45	LDS Church.	Q7300L1014	Brown color
L1014	46	Tradeline. 2 heat and 1 cool.	Q7300L1014	Brown color

# Wiring Diagrams

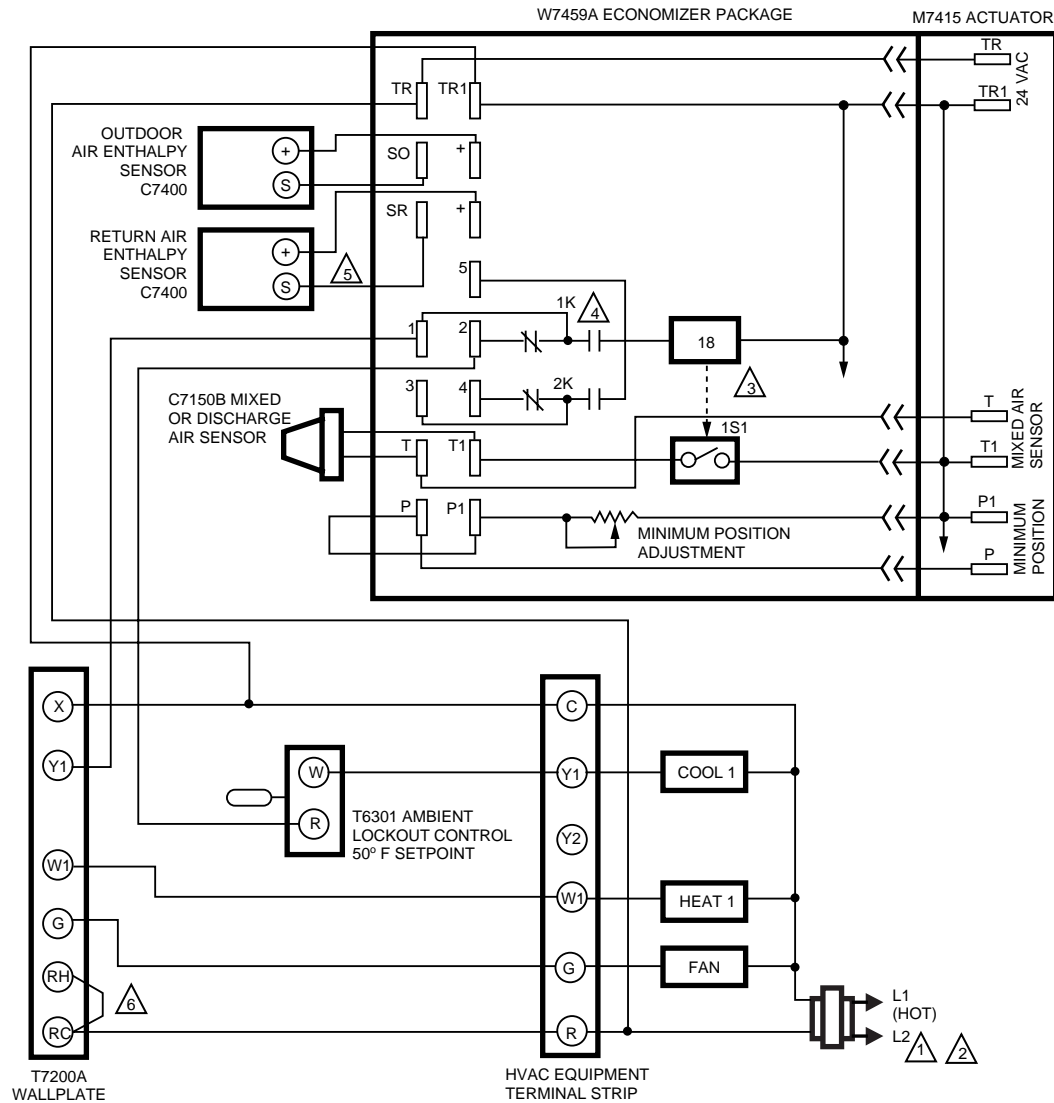
Fig. 23—T7200A with wallplate.



- 1 POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED.  
24 VAC SECONDARY; MUST BE ABLE TO CARRY ADDITIONAL 6 VA LOAD OF THERMOSTAT AND SUBBASE.
- 2 FIELD INSTALLED JUMPER.

M4405

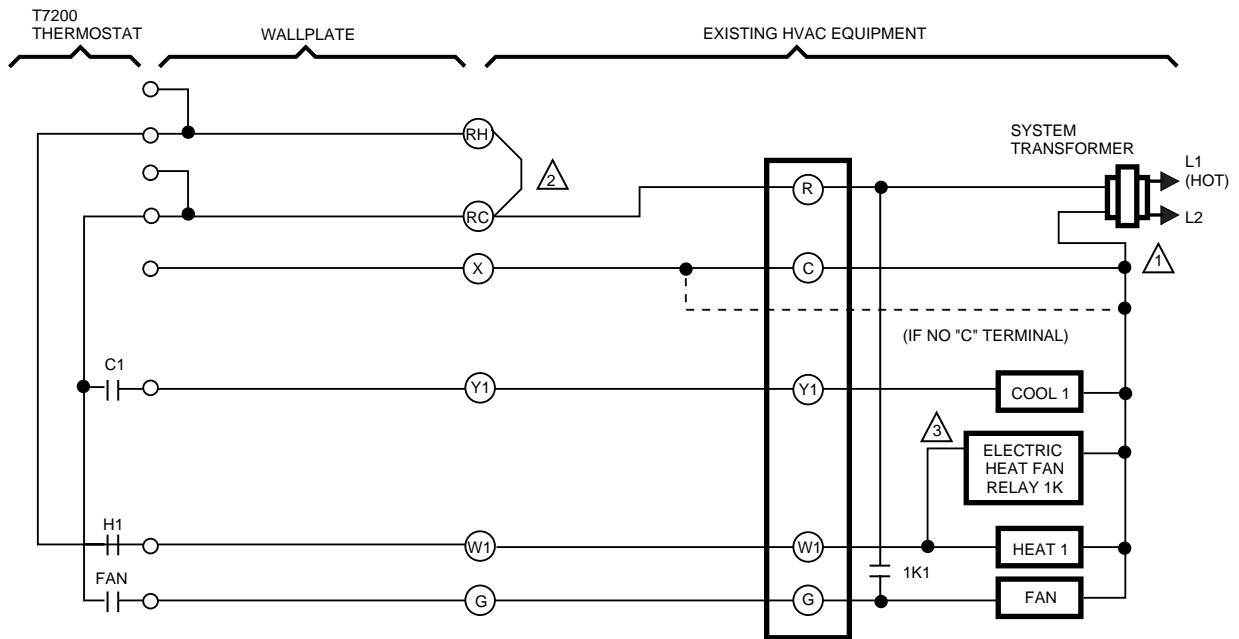
Fig. 24—T7200A with 1-stage cooling system with differential enthalpy changeover using W7459A/C7400 with M7415 Actuator.



- 1 POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED. 24 VAC SECONDARY.
- 2 ASSURE THAT EQUIPMENT TRANSFORMER IS SIZED TO HANDLE THE EXTRA LOAD OF THE ECONOMIZER, ACTUATOR, T7200 AND WALLPLATE
- 3 AN ELECTRONIC SWITCH THAT CLOSES WHEN POWERED BY A 24 VAC INPUT.
- 4 RELAYS 1K AND 2K ACTUATE WHEN THE ENTHALPY SENSED BY THE C7400 IS HIGHER THAN THE ENTHALPY SETPOINT A-D.
- 5 FACTORY INSTALLED 620 OHM, 1 WATT, 5% RESISTOR SHOULD BE REMOVED ONLY IF A C7400 ENTHALPY SENSOR IS ADDED TO SR AND + FOR DIFFERENTIAL ENTHALPY.
- 6 FIELD INSTALLED JUMPER.

M4407

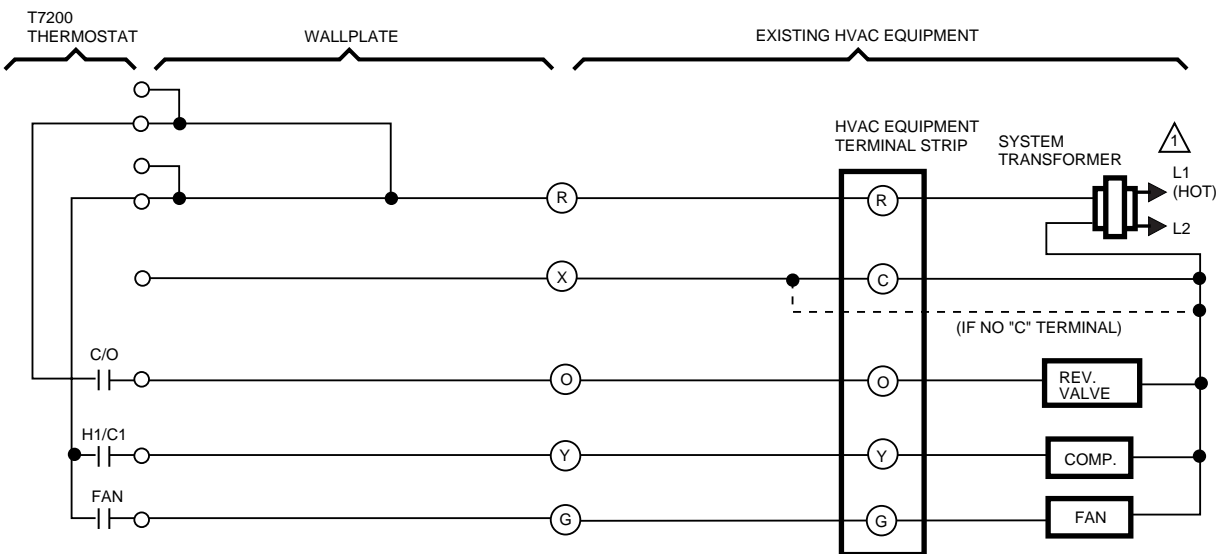
Fig. 25—T7200A with electric heat system.



- 1 POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED. 24 VAC SECONDARY; MUST BE ABLE TO CARRY ADDITIONAL 6 VA LOAD OF THERMOSTAT AND SUBBASE.
- 2 FIELD INSTALLED JUMPER.
- 3 RELAY REQUIRED (R8222 OR SIMILAR).

M4406

Fig. 26—T7200B with 1-stage heat pump system.



- 1 POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED. 24 VAC SECONDARY; MUST BE ABLE TO CARRY ADDITIONAL 6 VA LOAD OF THERMOSTAT AND SUBBASE.

M4396



Fig. 27—T7300/Q7300A with single transformer 1-stage heat/1-stage cool system.

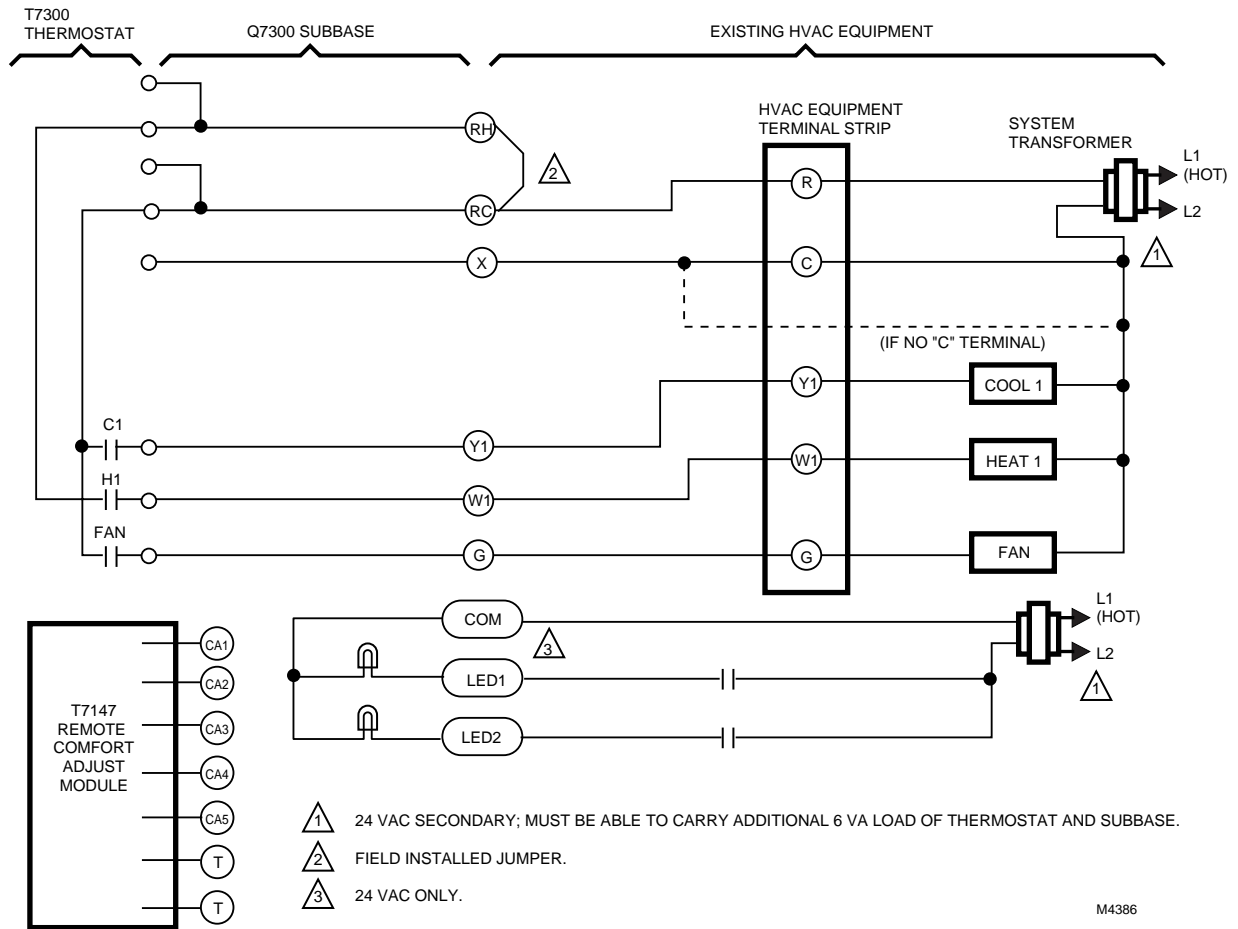


Fig. 28—T7300/Q7300A,B,E used with single transformer 1-stage heat/2-stage cool system.

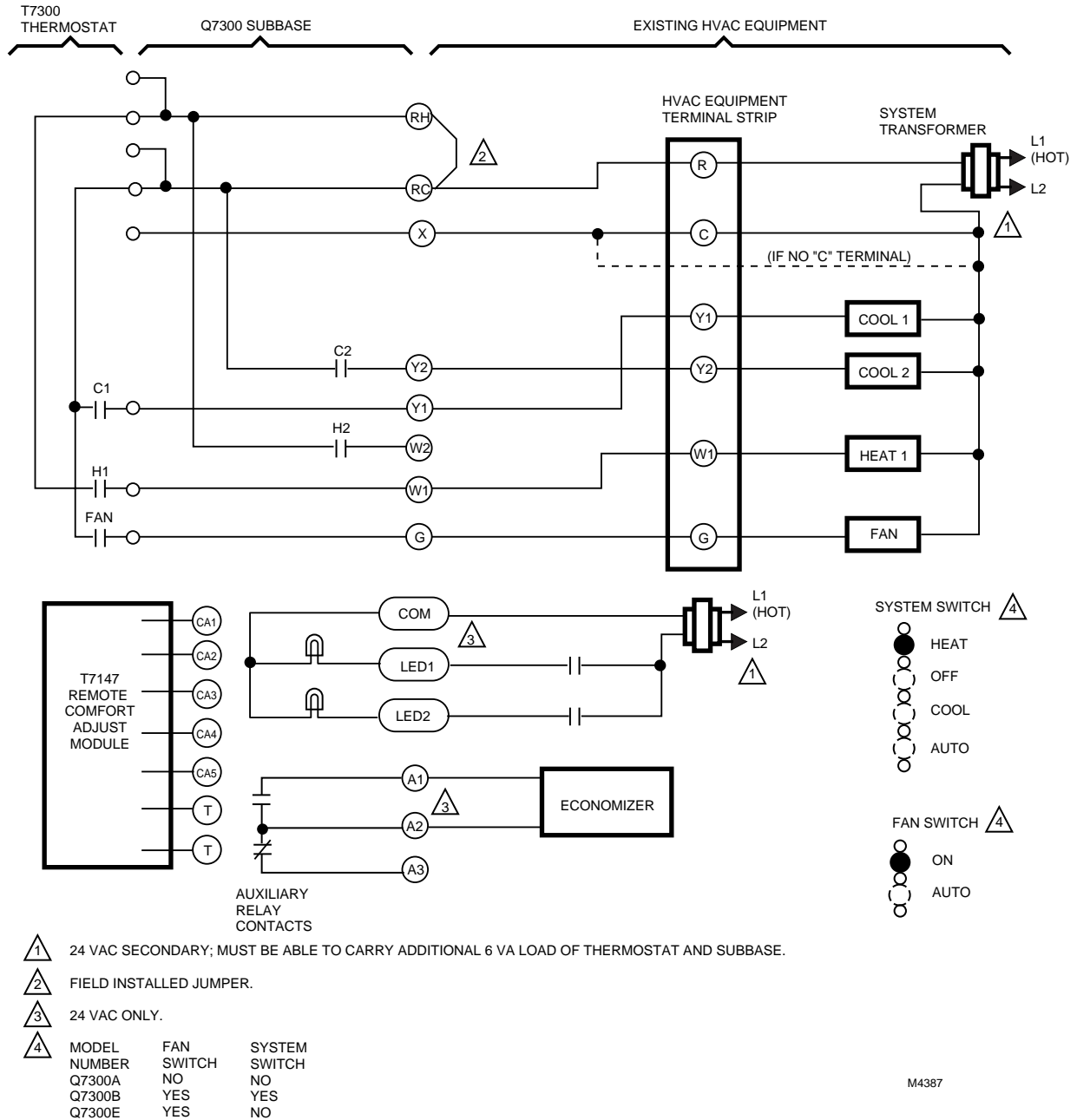
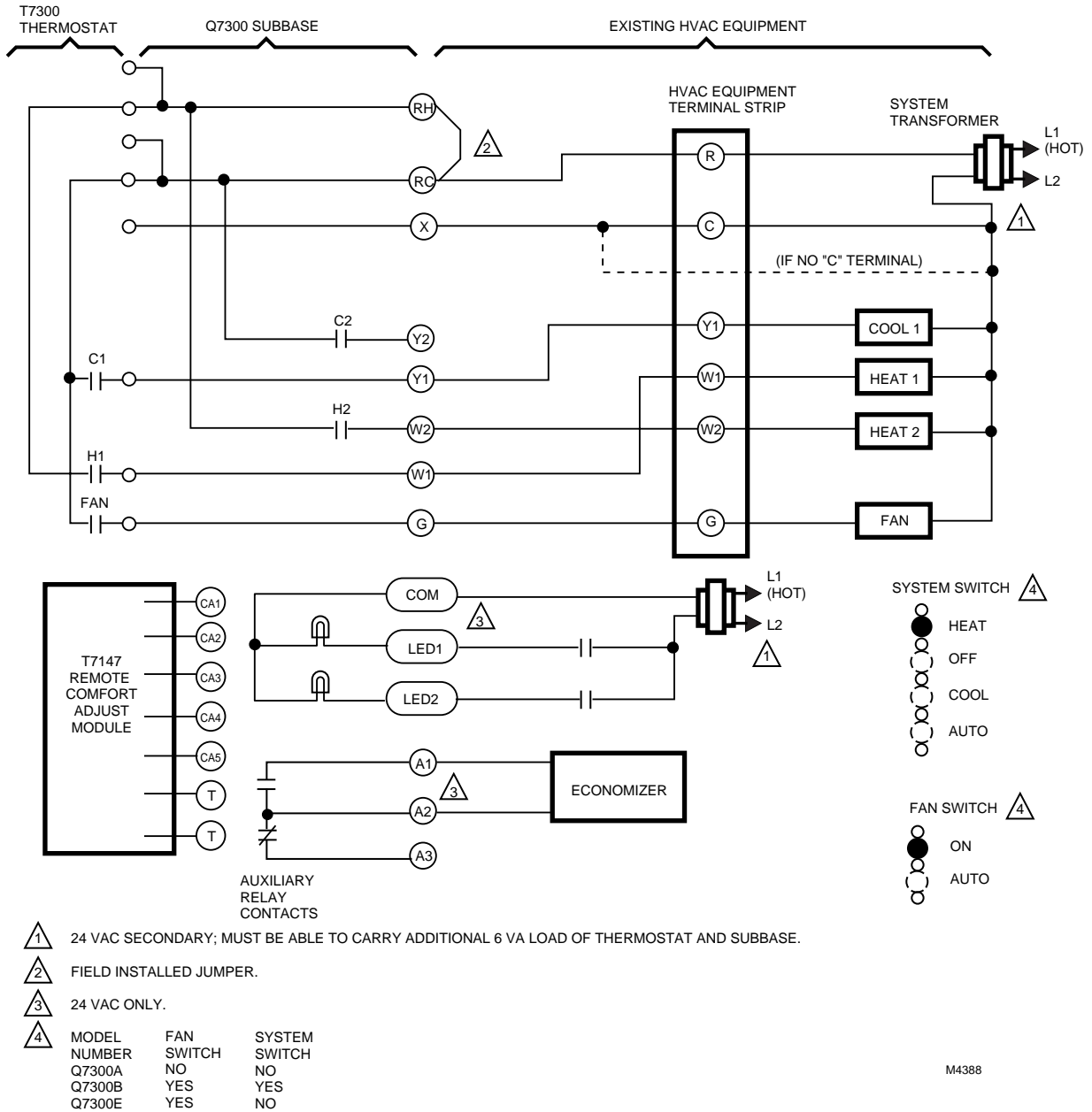


Fig. 29—T7300/Q7300A,B used with single transformer 2-stage heat/1-stage cool system.



**Fig. 30—T7300/Q7300A,B,E used with single transformer 2-stage heat/2-stage cool system without economizer.**

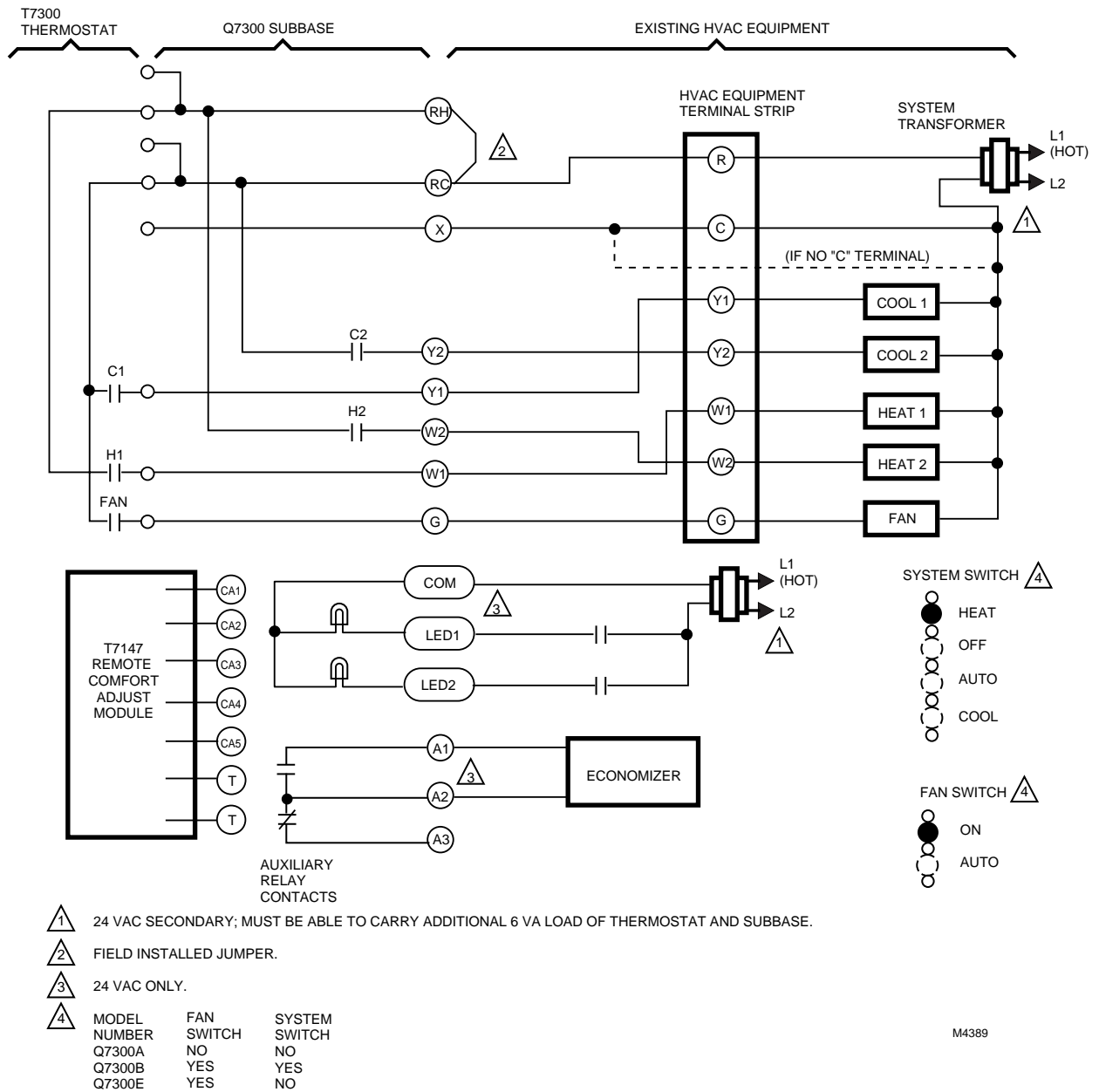
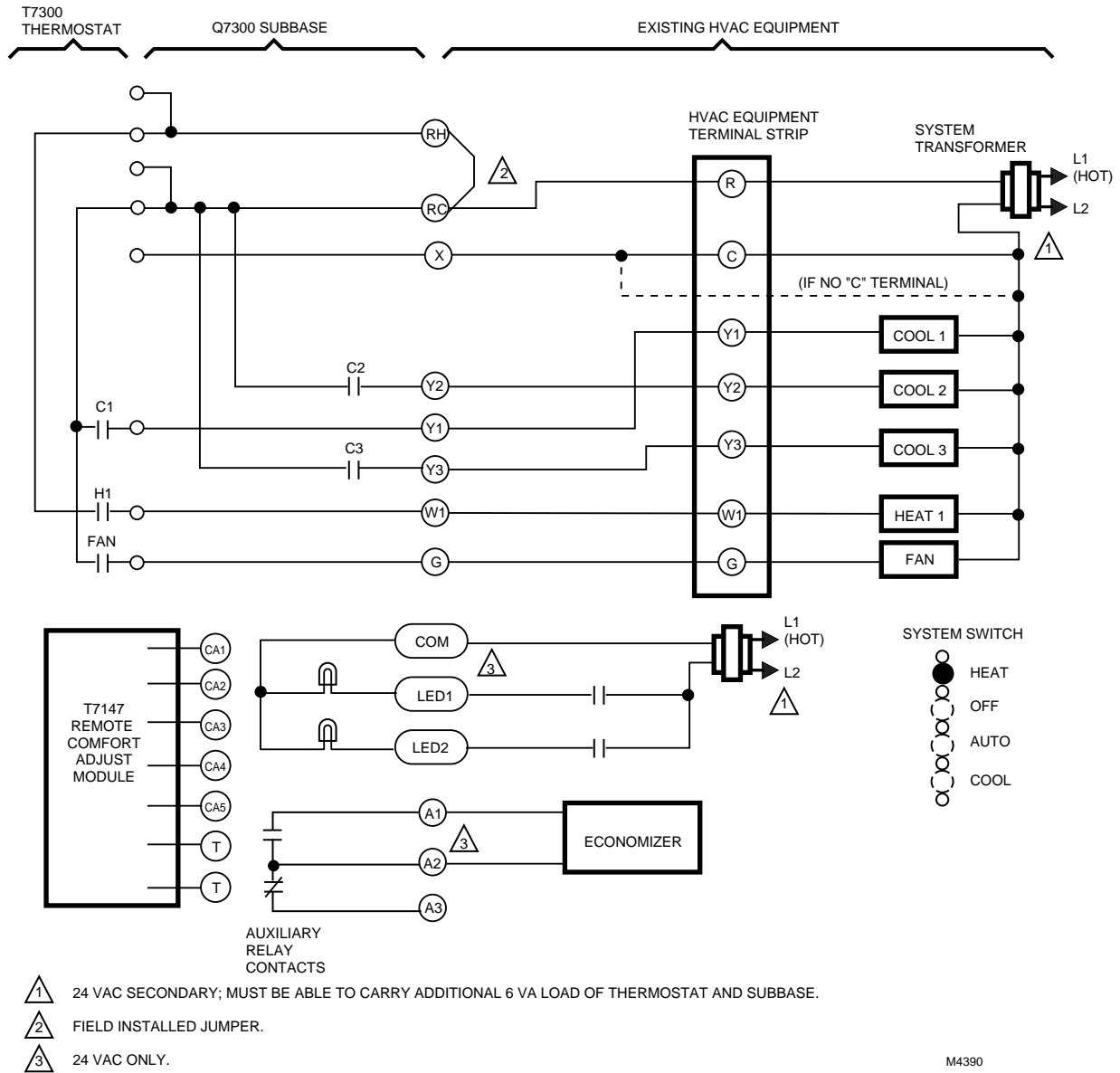
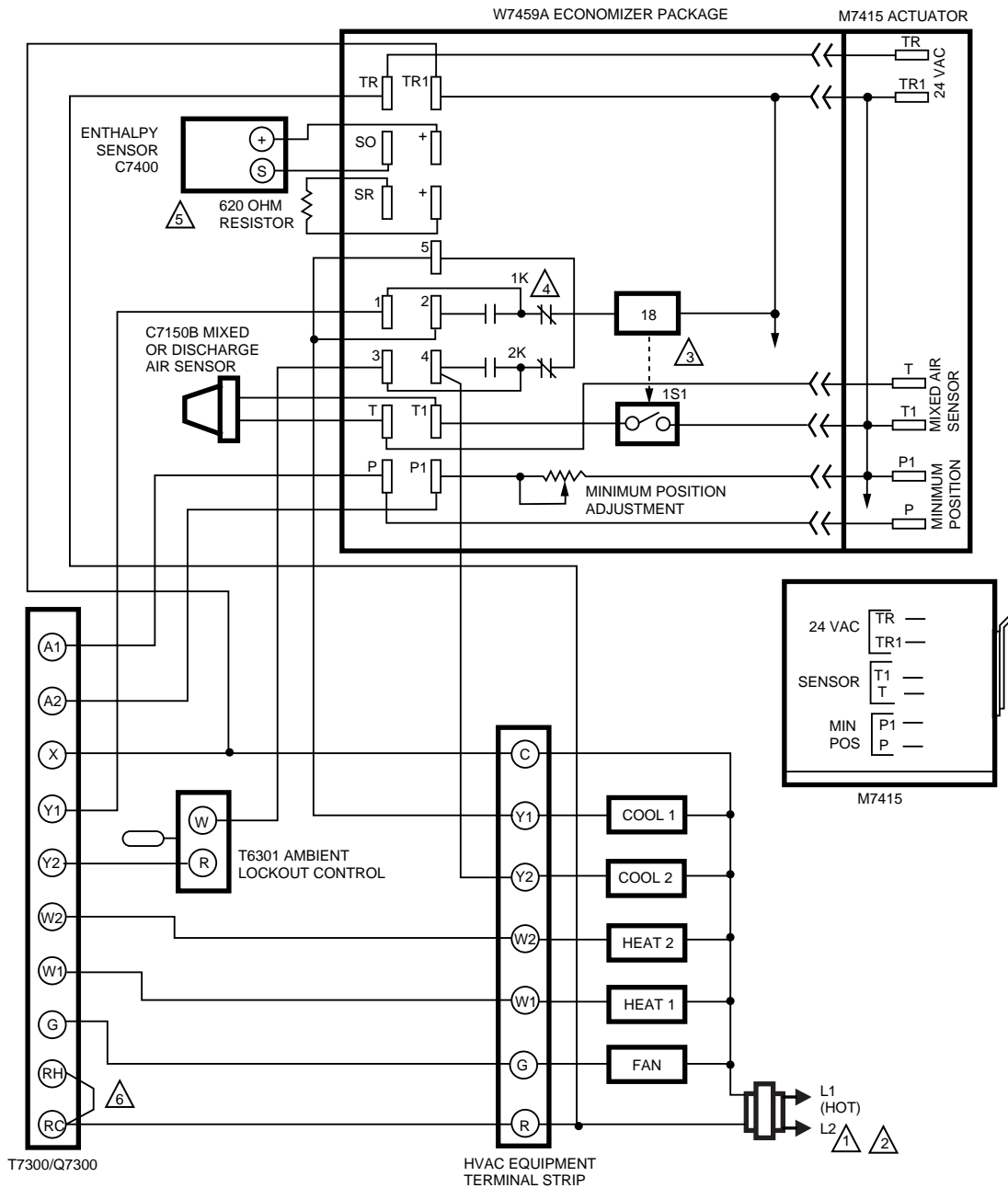


Fig. 31—T7300/Q7300G with single transformer 1-stage heat/3-stage cool system.



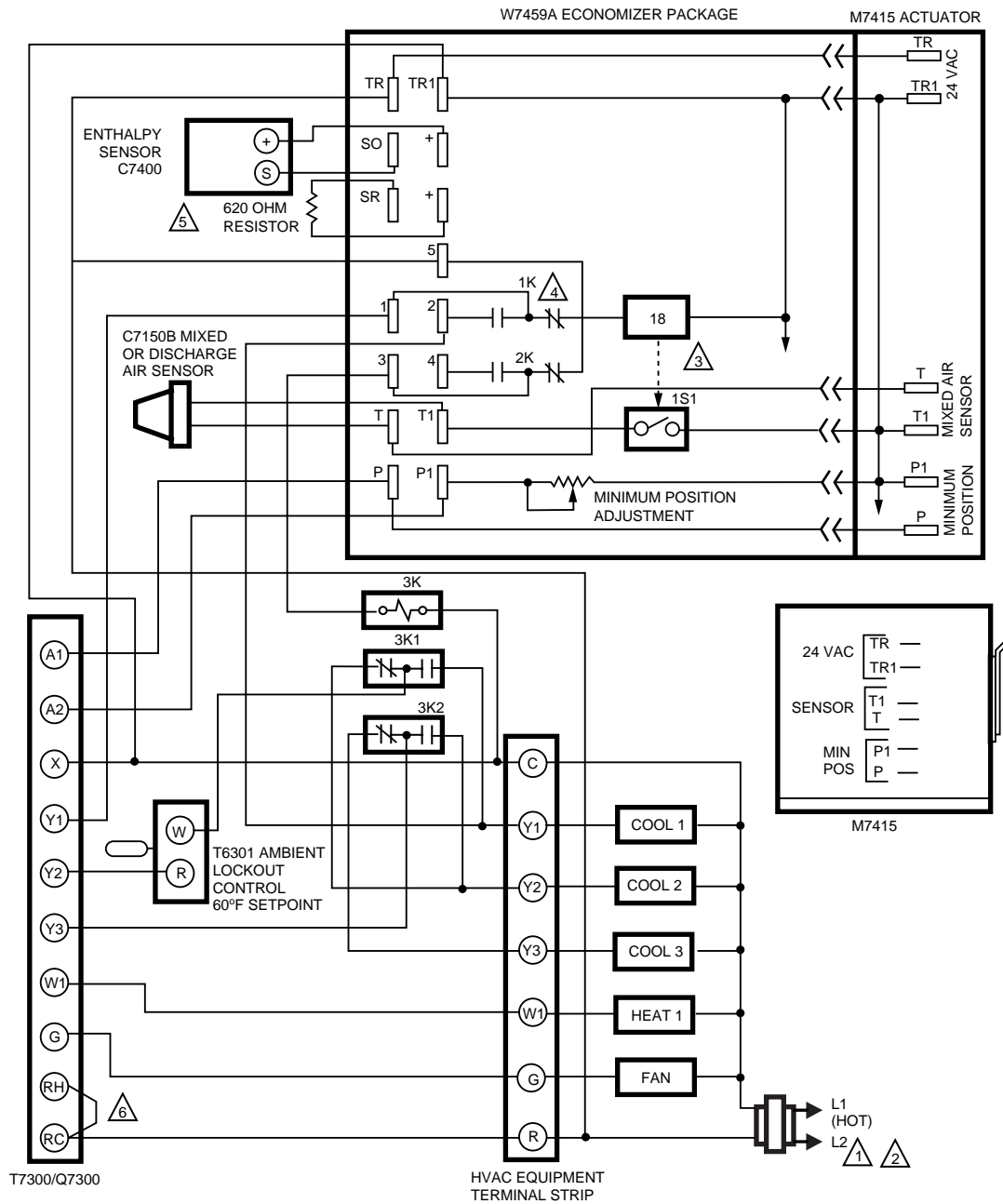
**Fig. 32—T7300/Q7300A,B,G defeating economizer minimum position during unoccupied period in a 2-stage cool system with single enthalpy changeover using W7459A/C7400 with an M7415 actuator.**



- 1 POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTIONS AS REQUIRED. 24 VAC SECONDARY.
- 2 ASSURE THAT EQUIPMENT TRANSFORMER IS SIZED TO HANDLE THE EXTRA LOAD OF THE ECONOMIZER, ACTUATOR AND T7300/Q7300.
- 3 1S, AN ELECTRONIC SWITCH THAT CLOSSES WHEN POWERED BY A 24 VAC INPUT.
- 4 RELAYS 1K AND 2K ACTUATE WHEN THE ENTHALPY SENSED BY THE C7400 IS HIGHER THAN THE ENTHALPY SETPOINT A-D.
- 5 FACTORY INSTALLED 620 OHM, 1 WATT, 5% RESISTOR SHOULD BE REMOVED ONLY IF C7400 ENTHALPY SENSOR IS ADDED TO SR AND + FOR DIFFERENTIAL ENTHALPY.
- 6 FIELD INSTALLED JUMPER.

M4392

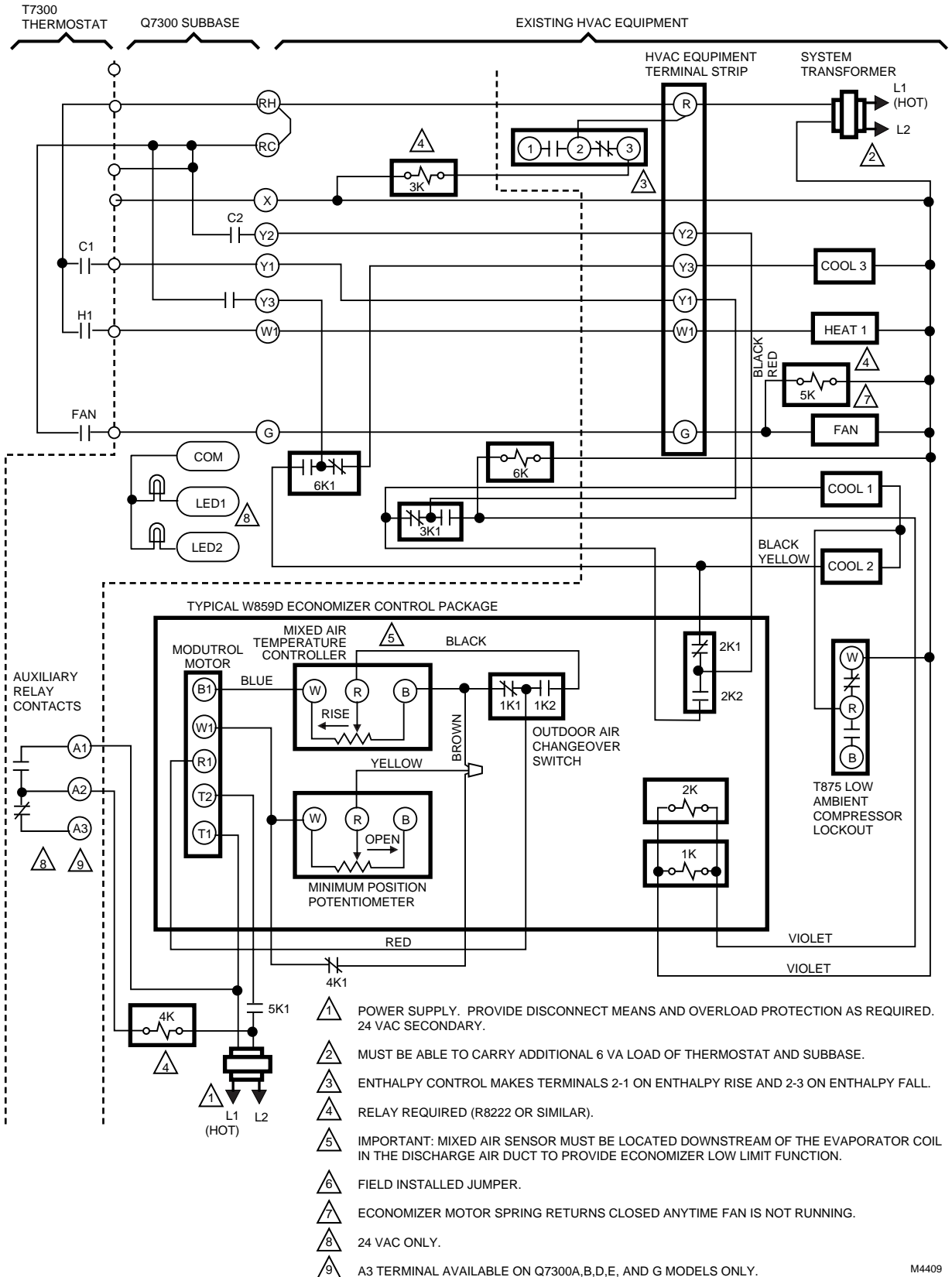
**Fig. 33—T7300/Q7300G defeating economizer minimum position during unoccupied period in 3-stage cool system with single enthalpy changeover using W7459A/C7400 with M7415 Actuator.**



- ① POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTIONS AS REQUIRED. 24 VAC SECONDARY.
- ② ASSURE THAT EQUIPMENT TRANSFORMER IS SIZED TO HANDLE THE EXTRA LOAD OF THE ECONOMIZER, ACTUATOR AND T7300/Q7300.
- ③ 1S, AN ELECTRONIC SWITCH THAT CLOSSES WHEN POWERED BY A 24 VAC INPUT.
- ④ RELAYS 1K AND 3K ACTUATE WHEN THE ENTHALPY SENSED BY THE C7400 IS HIGHER THAN THE ENTHALPY SETPOINT A-D.
- ⑤ FACTORY INSTALLED 620 OHM, 1 WATT, 5% RESISTOR SHOULD BE REMOVED ONLY IF C7400 ENTHALPY SENSOR IS ADDED TO SR AND + FOR DIFFERENTIAL ENTHALPY.
- ⑥ FIELD INSTALLED JUMPER.

M4395

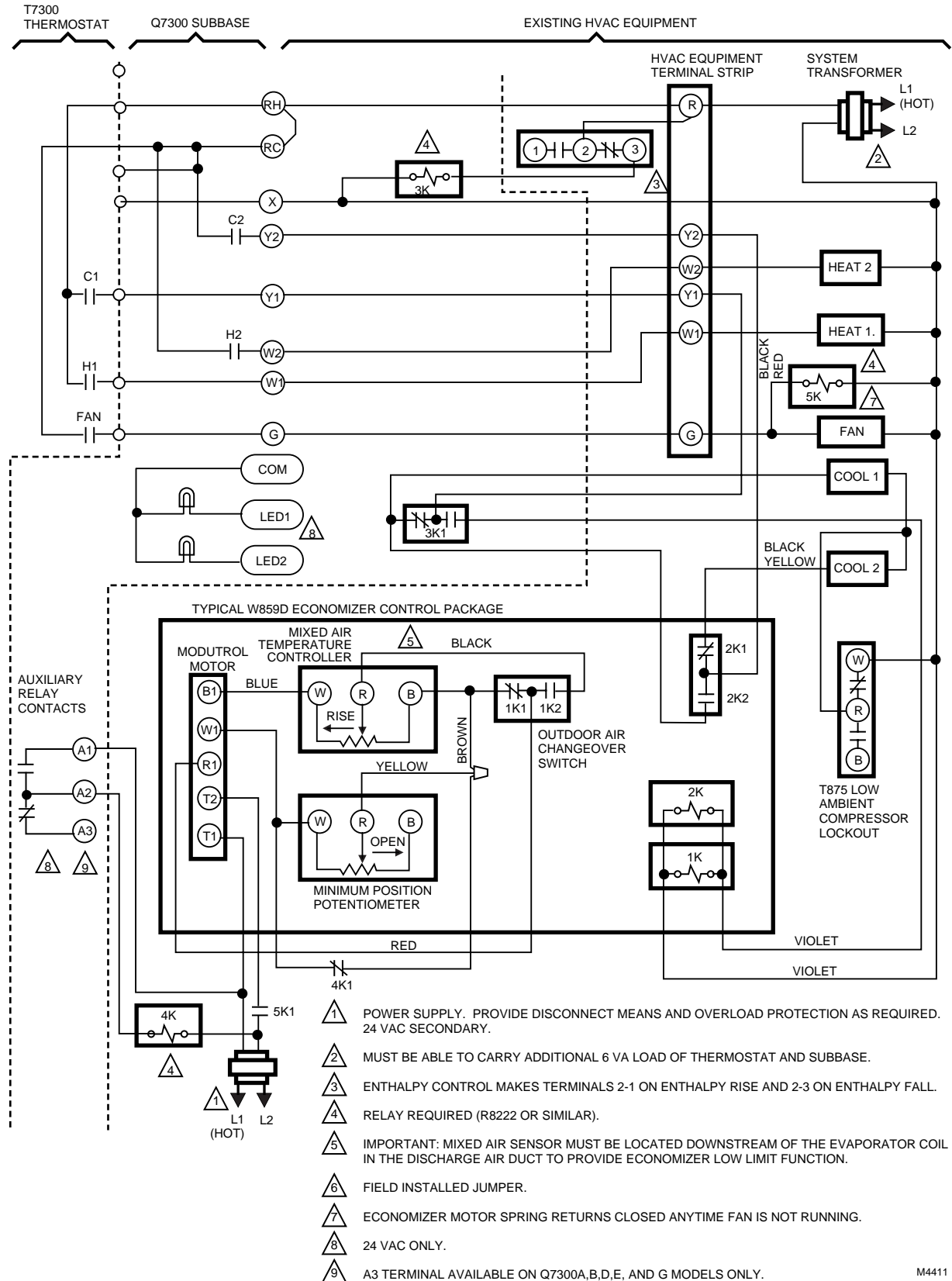
**Fig. 34—T7300/Q7300G with W859A Economizer package in 1-stage heat/3-stage cool system defeating economizer minimum position during unoccupied period.**



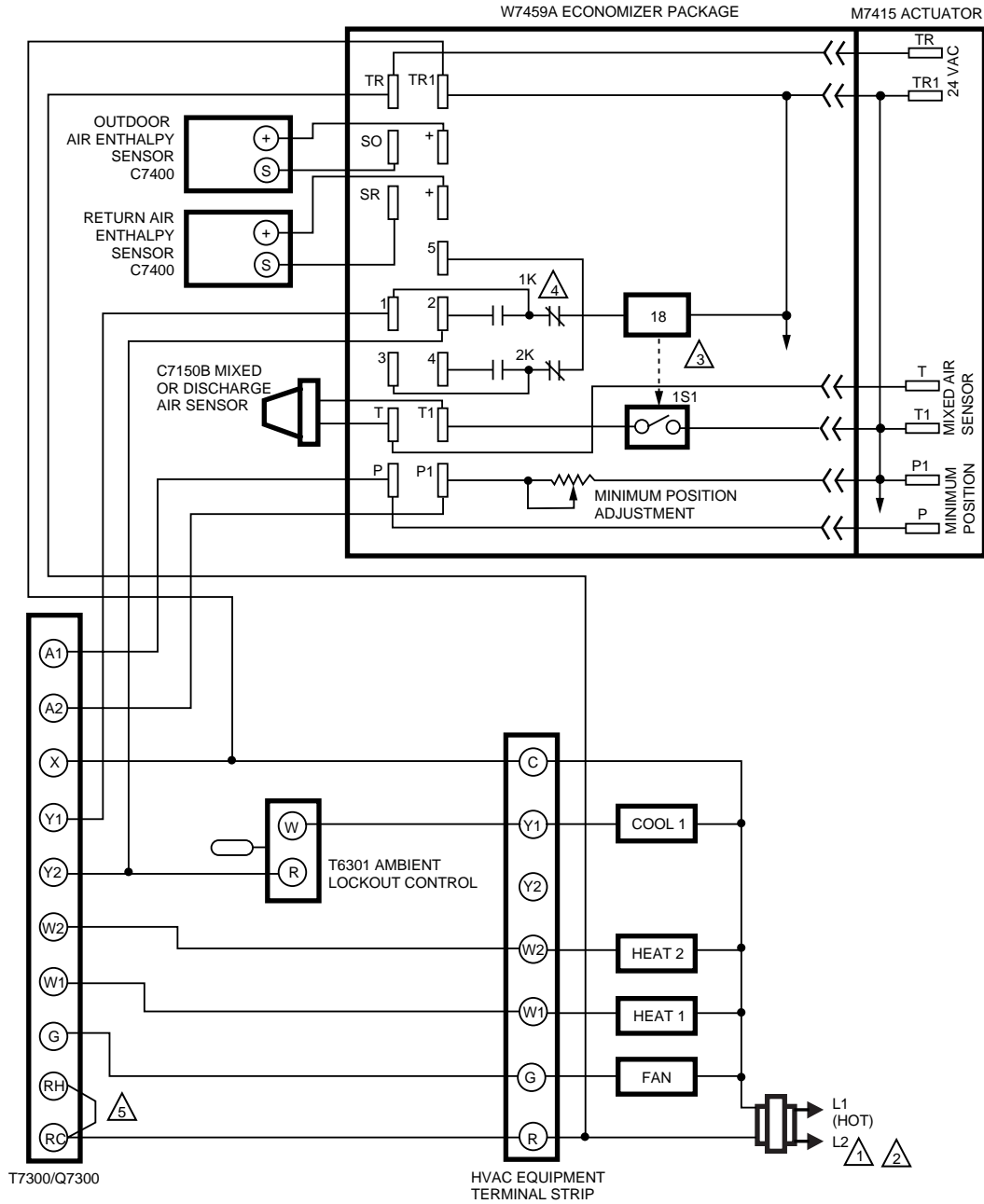
M4409



**Fig. 35—T7300/Q7300A,B with W859D economizer package in 2-stage heat/2-stage cool system defeating economizer minimum position during unoccupied period.**



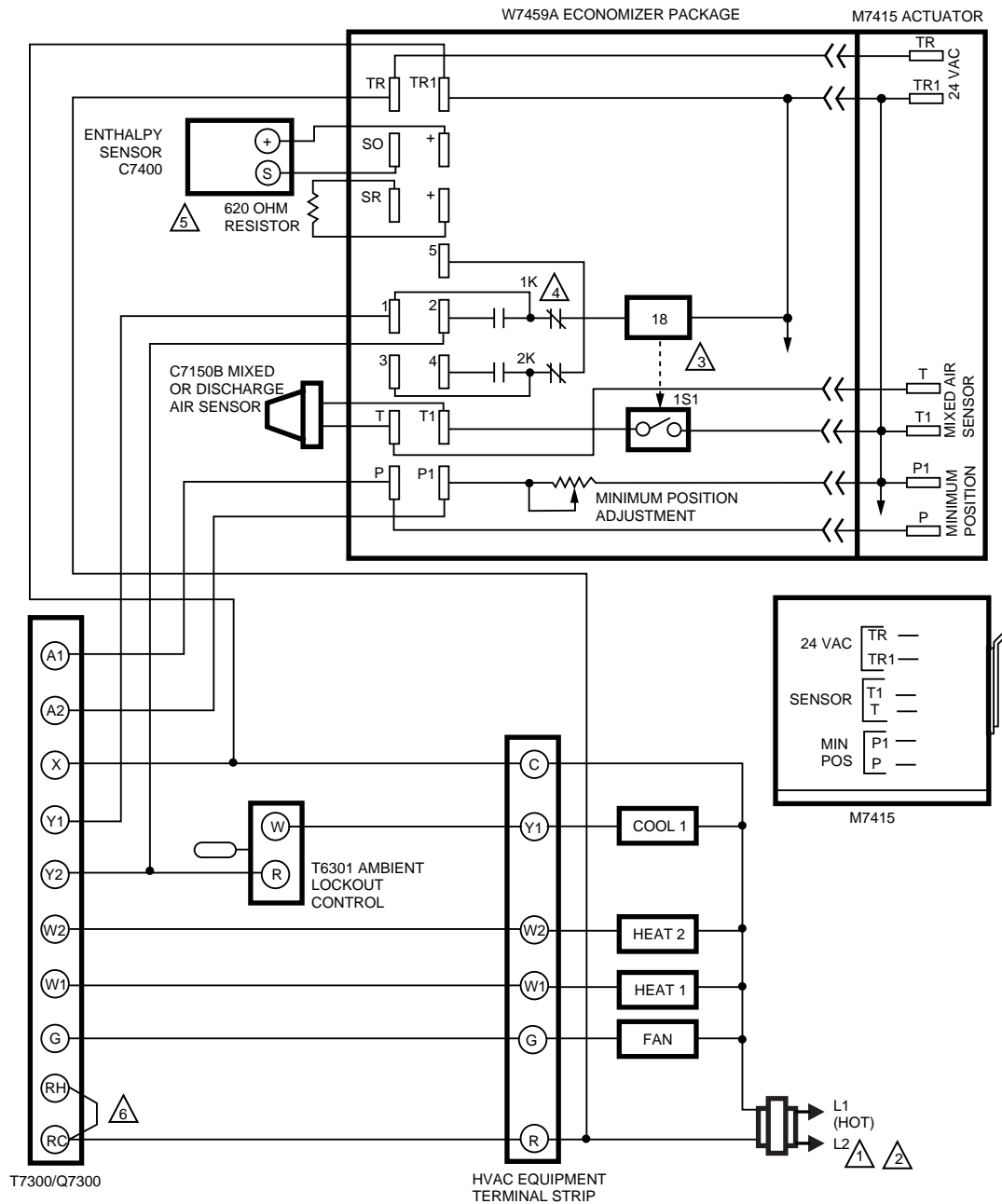
**Fig. 36—T7300/Q7300A,B with economizer package in 1-stage cool system defeating economizer minimum position during unoccupied period with differential enthalpy changeover using W7459A/C7400 with M7415 Actuator.**



- 1 POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTIONS AS REQUIRED. 24 VAC SECONDARY.
- 2 ASSURE THAT EQUIPMENT TRANSFORMER IS SIZED TO HANDLE THE EXTRA LOAD OF THE ECONOMIZER, ACTUATOR AND T7300/Q7300.
- 3 AN ELECTRONIC SWITCH THAT CLOSES WHEN POWERED BY A 24 VAC INPUT.
- 4 RELAYS 1K AND 2K ACTUATE WHEN THE ENTHALPY SENSED BY THE C7400 IS HIGHER THAN THE ENTHALPY SETPOINT A-D.
- 5 FIELD INSTALLED JUMPER.

M4393

**Fig. 37—T7300/Q7300 with economizer package in 1-stage cool system defeating economizer minimum position during unoccupied period with single enthalpy changeover using W7459A/C7400 with M7415 Actuator.**



- 1 POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTIONS AS REQUIRED. 24 VAC SECONDARY.
- 2 ASSURE THAT EQUIPMENT TRANSFORMER IS SIZED TO HANDLE THE EXTRA LOAD OF THE ECONOMIZER, ACTUATOR AND T7300/Q7300.
- 3 1S, AN ELECTRONIC SWITCH THAT CLOSSES WHEN POWERED BY A 24 VAC INPUT.
- 4 RELAYS 1K AND 2K ACTUATE WHEN THE ENTHALPY SENSED BY THE C7400 IS HIGHER THAN THE ENTHALPY SETPOINT A-D.
- 5 FACTORY INSTALLED 620 OHM, 1 WATT, 5% RESISTOR SHOULD BE REMOVED ONLY IF C7400 ENTHALPY SENSOR IS ADDED TO SR AND + FOR DIFFERENTIAL ENTHALPY.
- 6 FIELD INSTALLED JUMPER.

M4394

**Fig. 38—T7300/Q7300C with 2-stage heat/1-stage cool heat pump system using O or B terminal for reversing valve.**

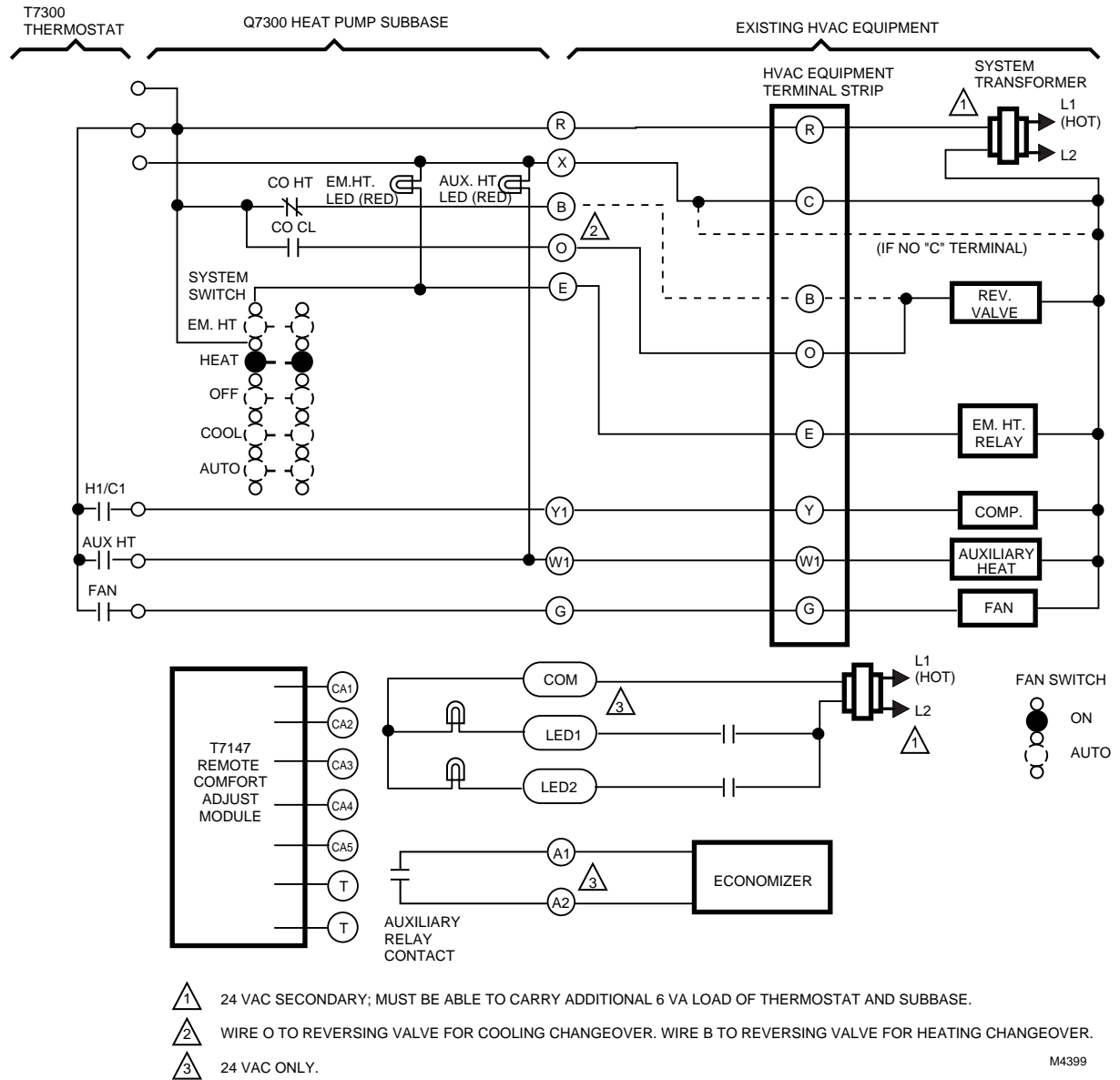
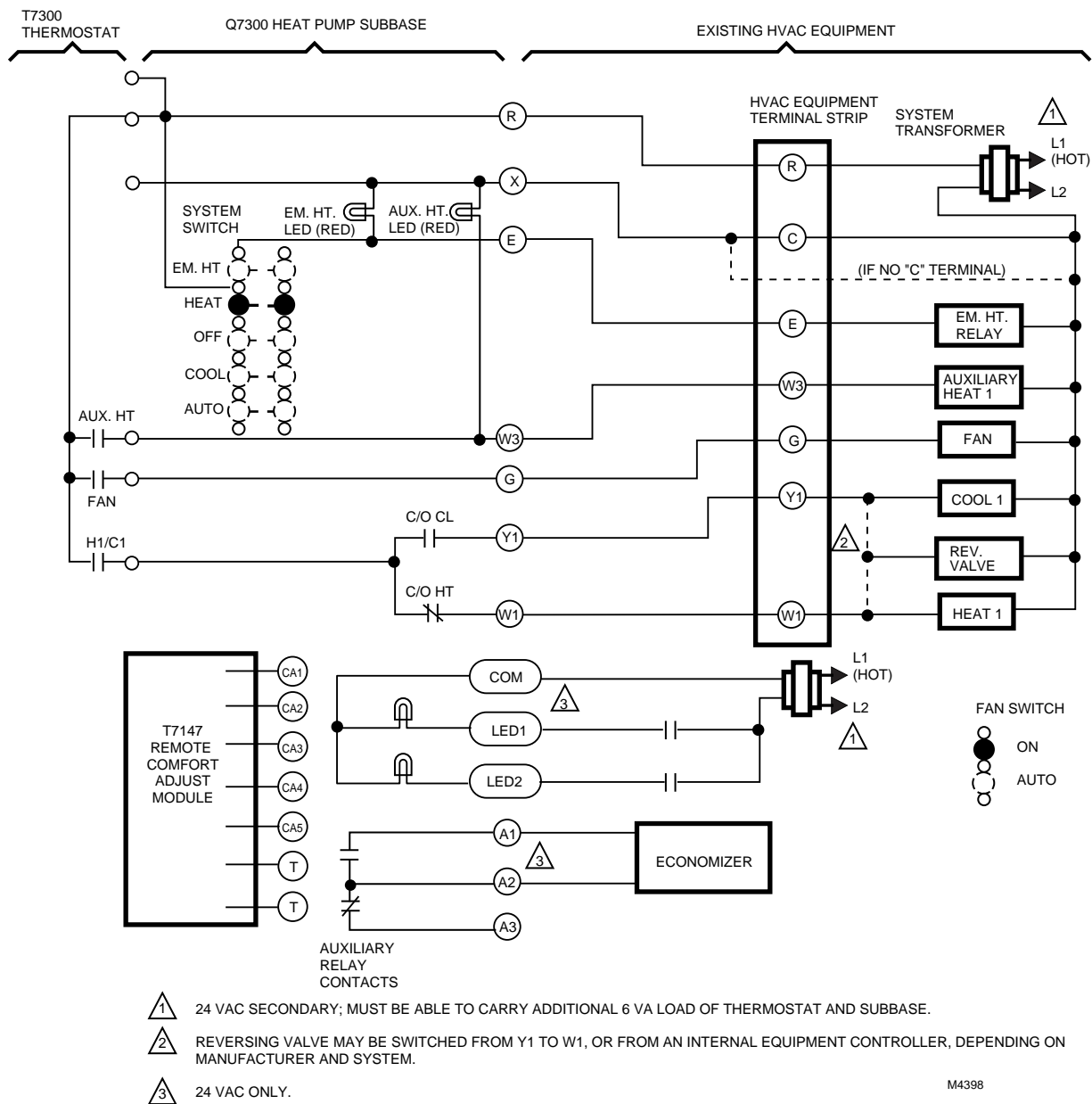


Fig. 39—T7300/Q7300D with 2-stage heat/1-stage cool heat pump system.



M4398

**Fig. 40—T7300/Q7300C with 2-stage heat/2-stage cool heat pump system using O or B terminal for reversing valve.**

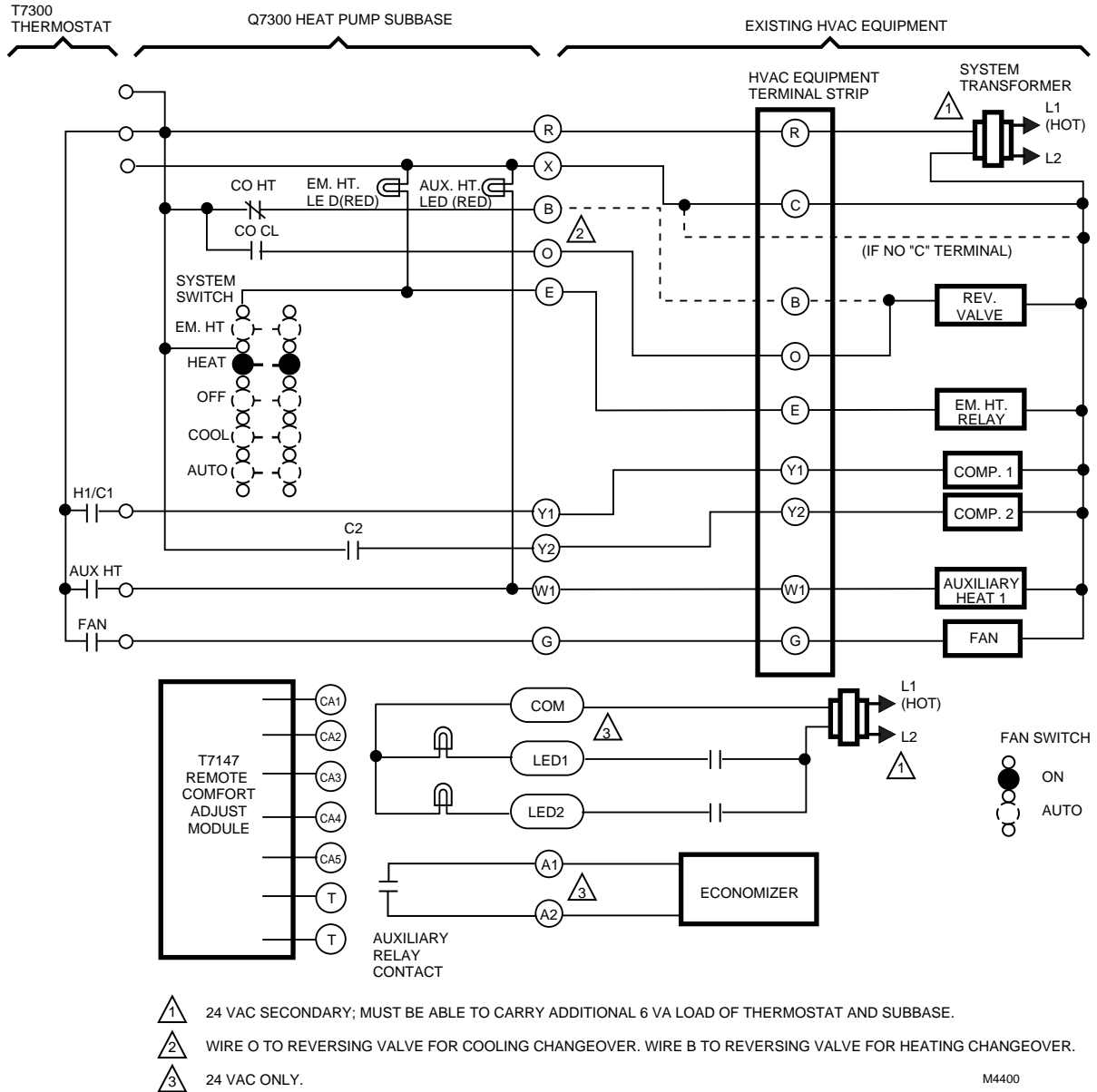
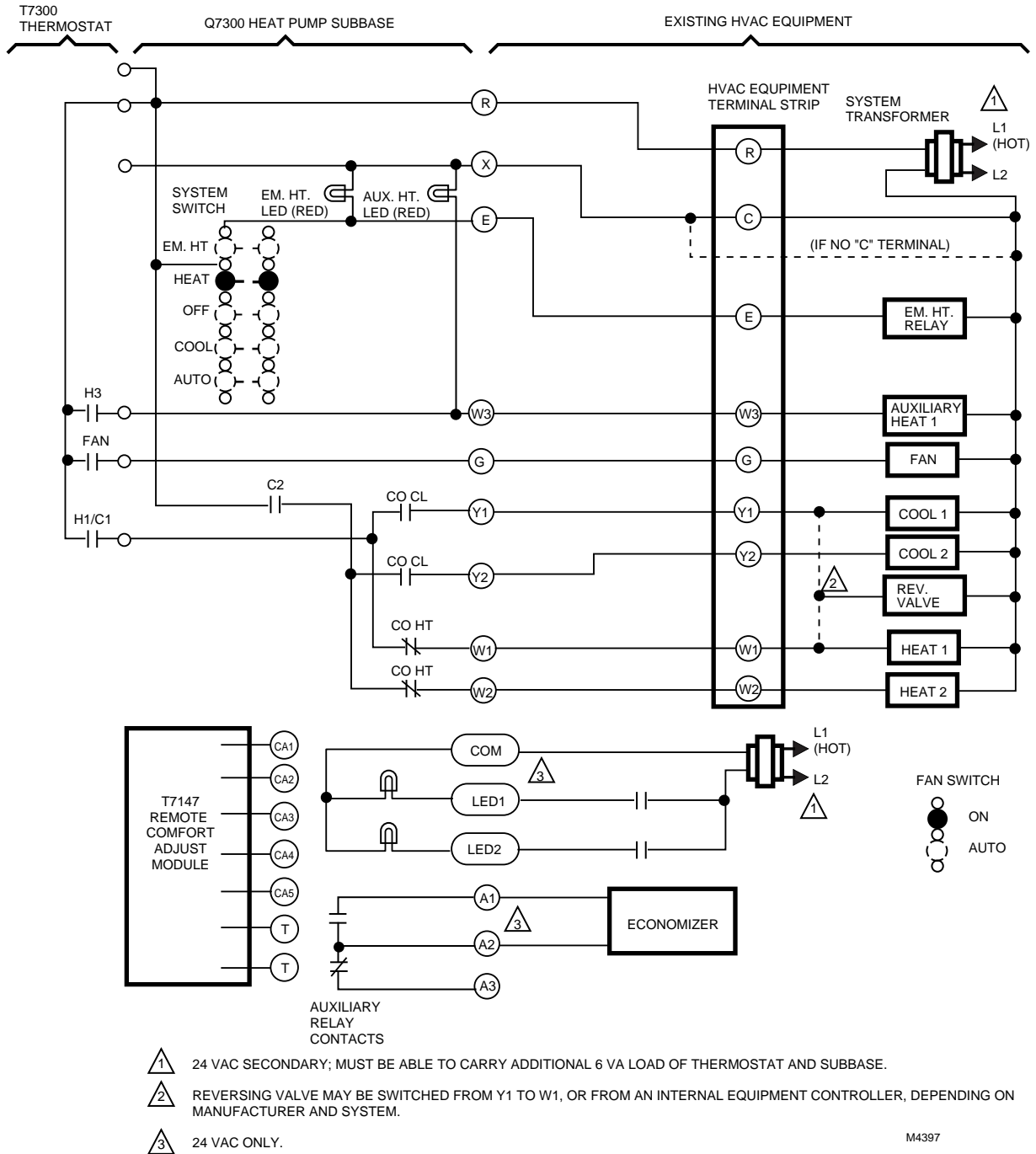
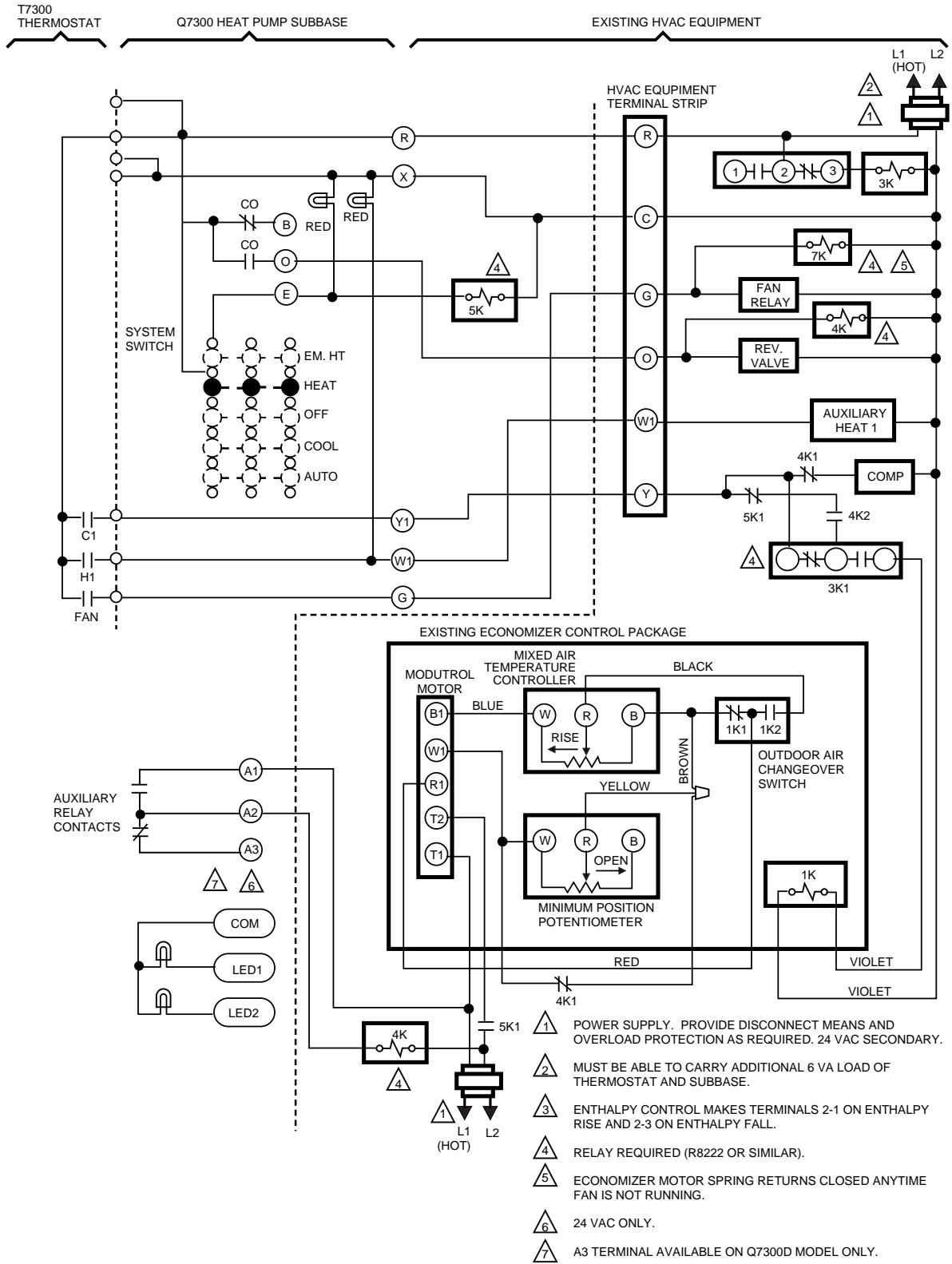


Fig. 41—T7300/Q7300D with 3-stage heat/2-stage cool heat pump system.



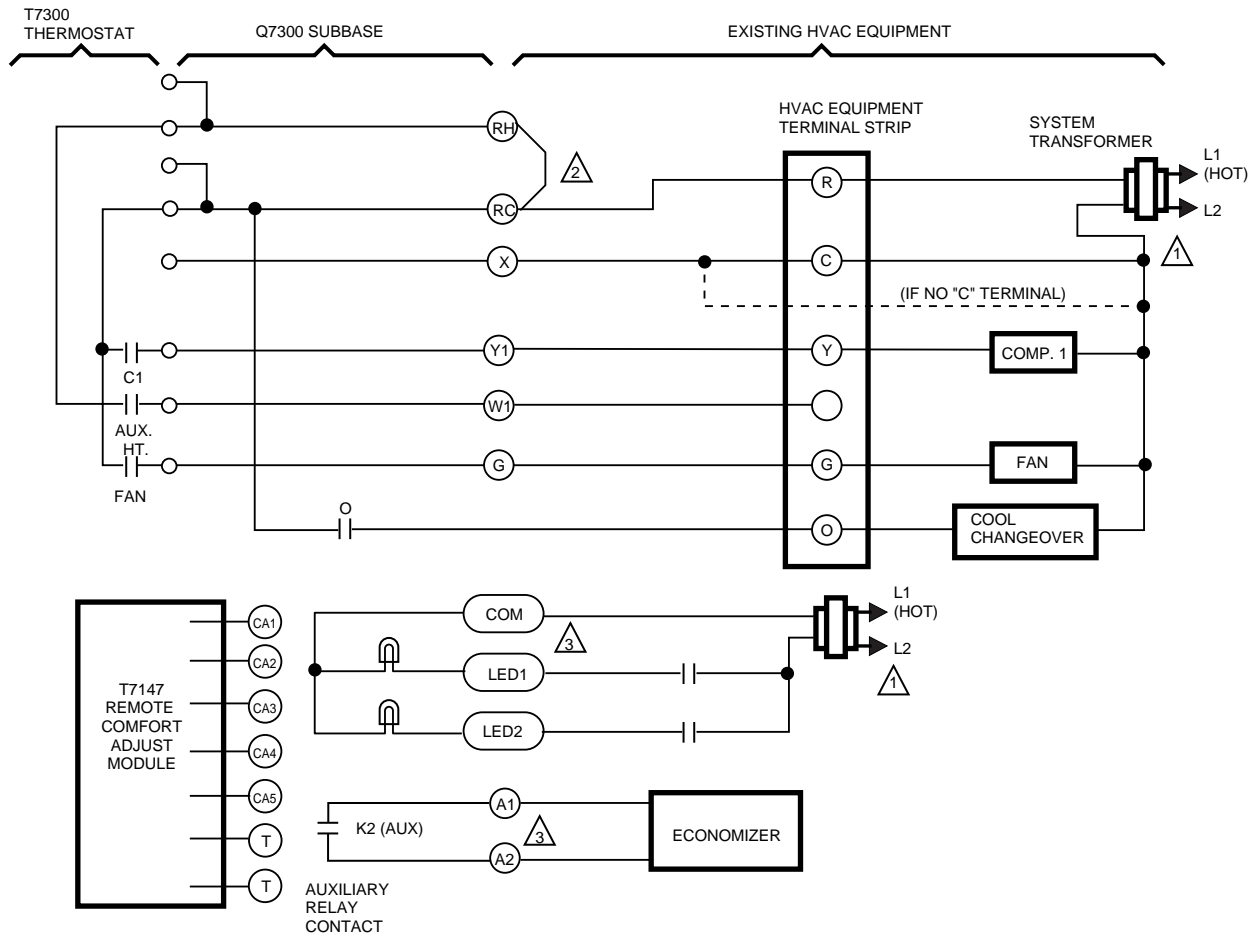
**Fig. 42—T7300/Q7300C,D with economizer package in 2-stage heat/1 stage cool heat pump system defeating economizer minimum position during unoccupied period.**



M4412



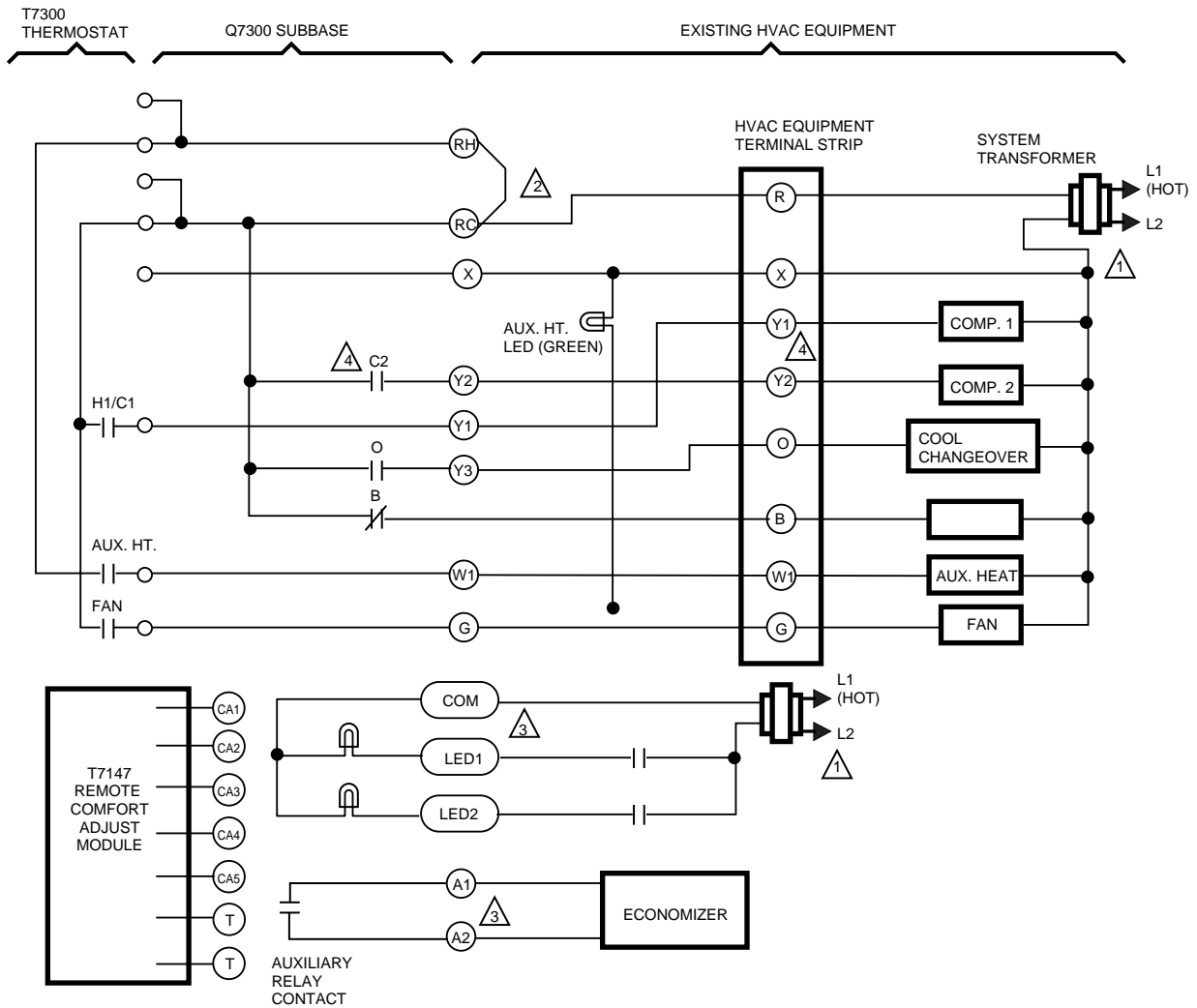
Fig. 43—T7300/Q7300F for 1-stage heat pump.



- 1 24 VAC SECONDARY; MUST BE ABLE TO CARRY ADDITIONAL 6 VA LOAD OF THERMOSTAT AND SUBBASE.
- 2 FIELD INSTALLED JUMPER.
- 3 24 VAC ONLY.

M4419

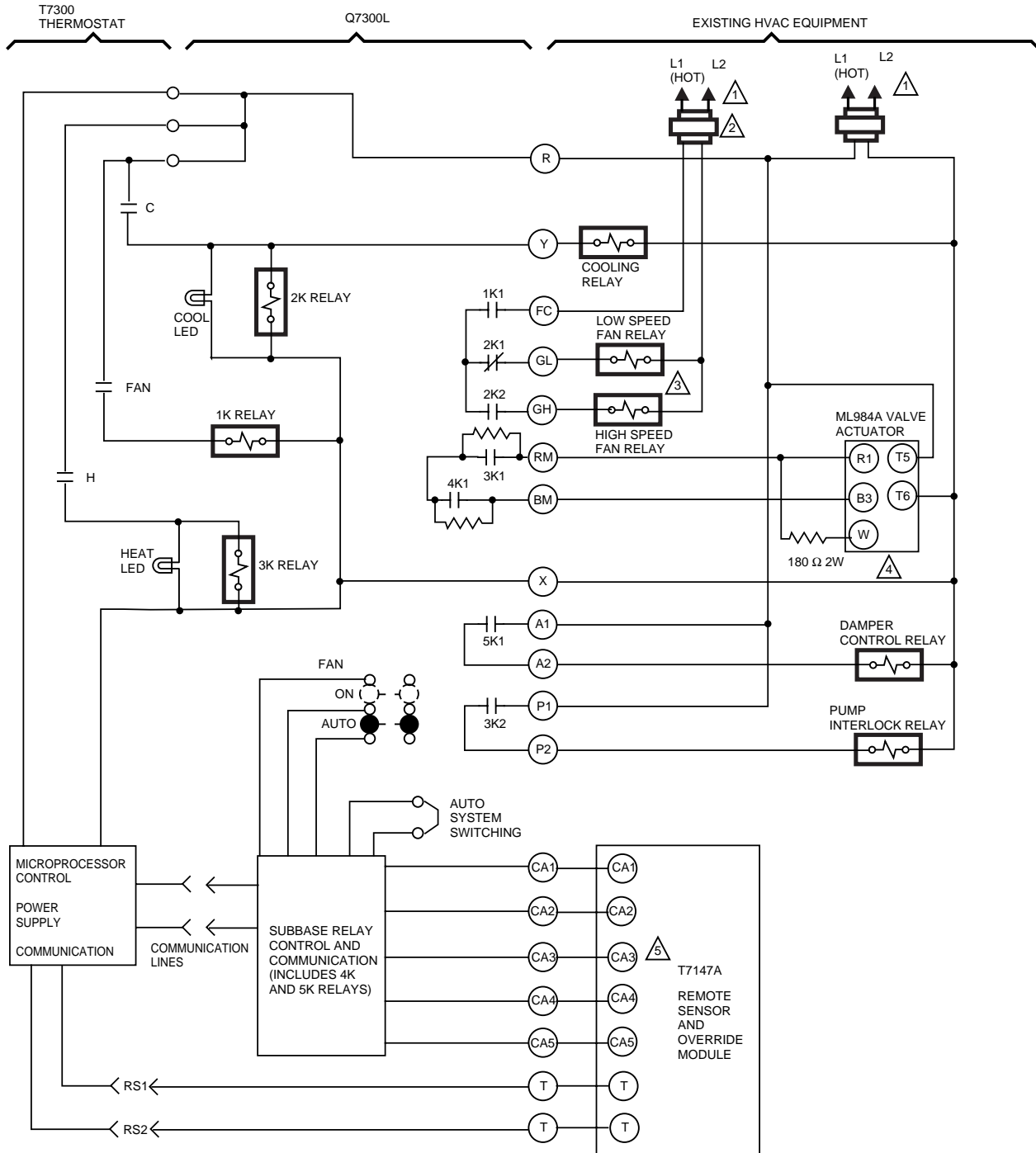
Fig. 44—T7300/Q7300F for 1-stage heat/1-stage cool and 2-stage heat/1-stage cool heat pumps.



- ⚠️ 1 24 VAC SECONDARY; MUST BE ABLE TO CARRY ADDITIONAL 6 VA LOAD OF THERMOSTAT AND SUBBASE.
- ⚠️ 2 FIELD INSTALLED JUMPER.
- ⚠️ 3 24 VAC ONLY.
- ⚠️ 4 AVAILABLE ON Q7300F1017 AND Q7300F1033 ONLY.

M4420

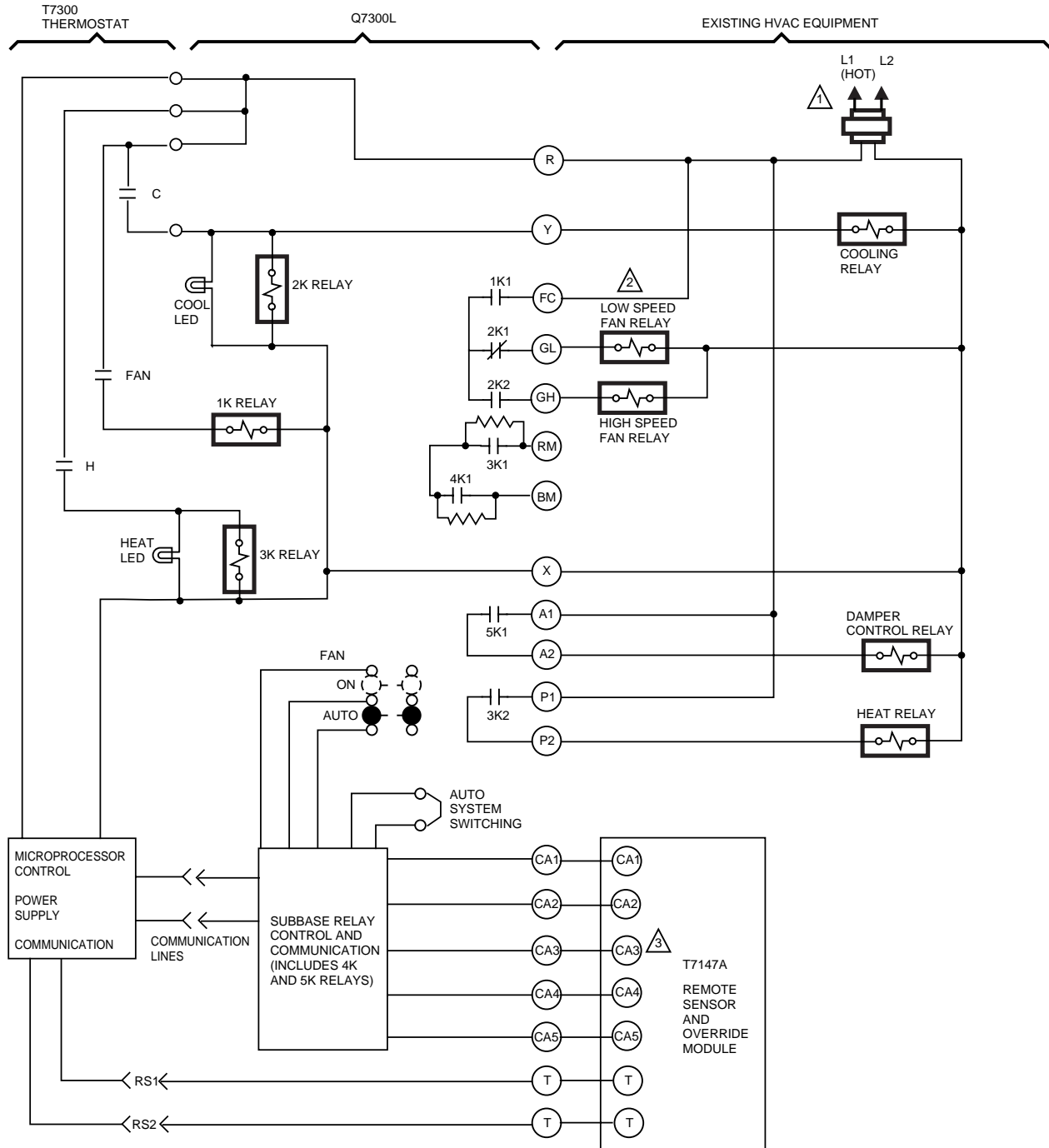
Fig. 45—Q7300L for 2-stage heating with three-position ML984A actuator/V50B valve and 1-stage cooling.



- 1 POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED.
- 2 INDEPENDENT FAN TRANSFORMER OPTIONAL. IF SINGLE TRANSFORMER IS USED, JUMPER FC TO R.
- 3 FOR SINGLE SPEED FAN, JUMPER GL AND GH.
- 4 180 Ω 2W RESISTOR MUST BE INSTALLED AS SHOWN.
- 5 REFER TO T7147 INSTRUCTIONS FOR APPROPRIATE CA TERMINAL CONNECTIONS. T7047 HAS T-T TERMINALS ONLY.

M4377

Fig. 46—Q7300L for single-stage conventional heating systems with single-stage cooling.



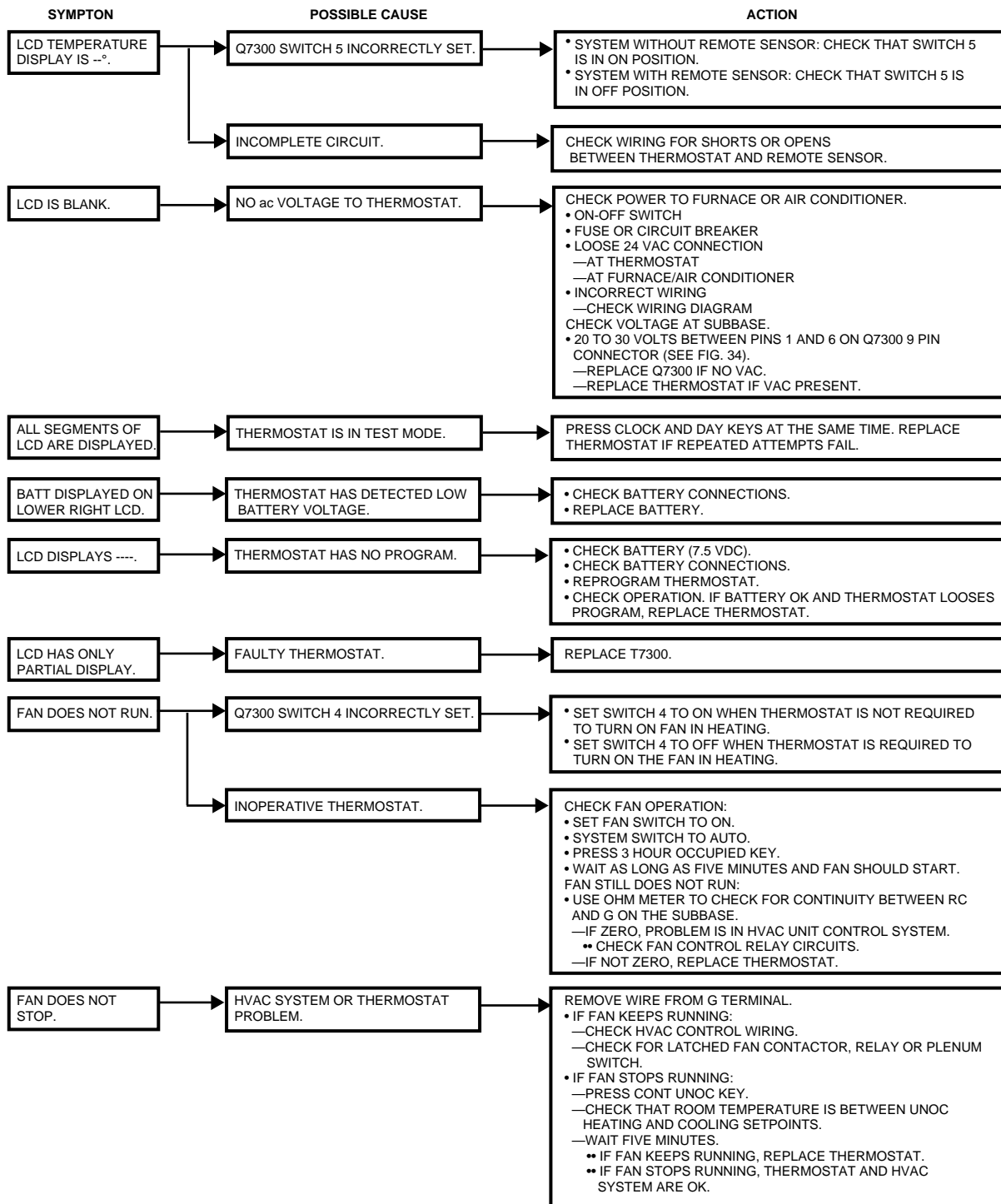
- ⚠ POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED.
- ⚠ FOR SINGLE SPEED FAN JUMPER GL AND GH.
- ⚠ REFER TO T7147 INSTRUCTIONS FOR APPROPRIATE CA TERMINAL CONNECTIONS. T7407 HAS T-T TERMINALS ONLY.

M4378

# Troubleshooting

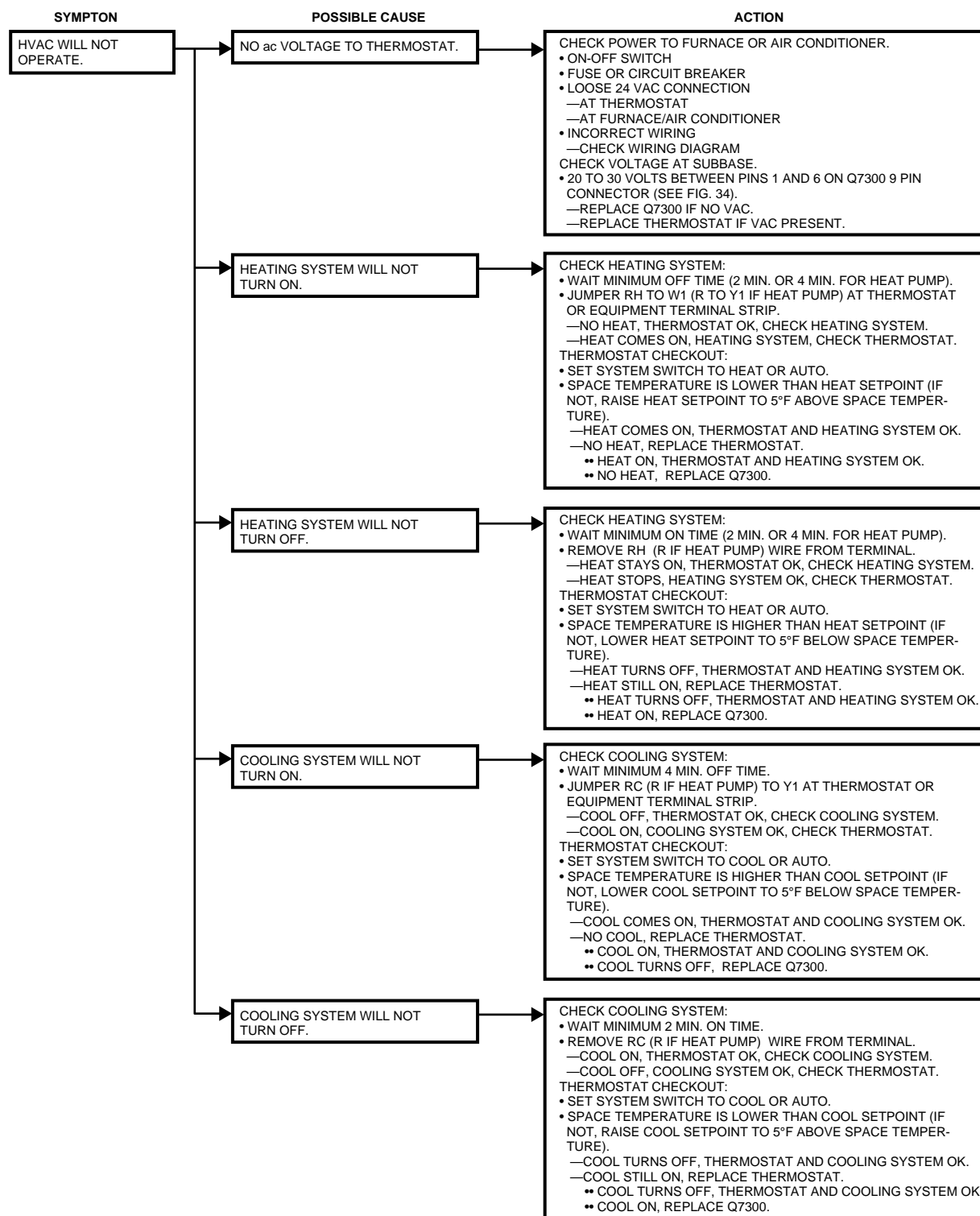
Refer to Figs. 47 and 48 to troubleshoot problems with the thermostat and system.

**Fig. 47—Troubleshooting chart to quickly isolate a display or fan problem.**



M4416

Fig. 48—Troubleshooting chart to quickly isolate a HVAC problem.



M4417



**FOR CANADIAN EMI REGULATIONS  
Class B**

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la Class B prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

**Honeywell**

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