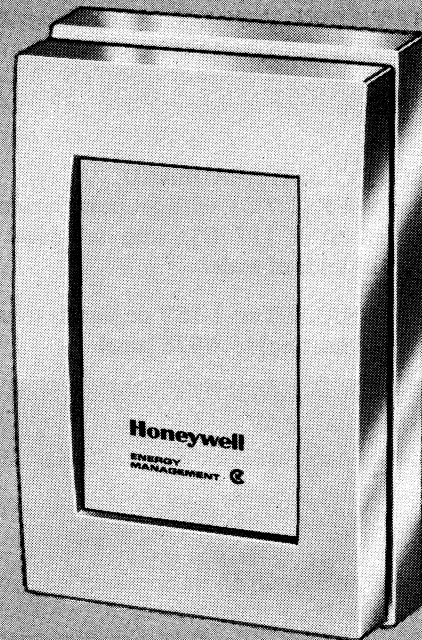


Honeywell

THE T7067A ELECTRONIC THERMOSTAT AND T7067B TRANSMITTER CONTROL SPACE TEMPERATURE WHEN EMPLOYED IN A HONEYWELL W973 SINGLEZONE LOGIC PANEL HEATING-COOLING SYSTEM.

- T7067A Electronic Thermostat has an integral space temperature sensor.
- T7067B Transmitter is designed for use with a T7047C1025 or T7022A1010 remote temperature sensor.
- Separate 1-16V dc voltage ramps provide independent heating and cooling thermostat signals to the W973 Singlezone Logic Panel.
- Separate heating and cooling set point adjustment levers on all models.
- Locking set point adjustment levers are concealed under device cover.
- Load reactive time delays insure stable system performance.
- All stages cycle off upon power failure; required stages are restored with a time delay between stages when power is returned.
- One T7067 can control up to 6 paralleled W973 logic panels.
- Checkout of control system can be performed at the T7067 using 2 LED's provided under the device cover.
- Power to T7067 is provided by the W973 Singlezone Logic Panel.
- Temperature anticipation provided to system by C7046A Discharge Air Sensor.
- Thermostat mounts on standard 2 x 4 in. outlet box or on a nonconductive flat surface.
- Meets ASHRAE 90-75 guidelines.
- Model available to meet United States Department of Defense Standards.
- All models include wiring plate.

ELECTRONIC THERMOSTAT AND TRANSMITTER



T7067A,B

SPECIFICATIONS

MODELS: T7067 Electronic Thermostat and Transmitter for use with the W973 Singlezone Logic Panel. Dual set point adjustment levers are concealed under the device cover. Light emitting diodes (LED's) under the device cover allow checkout of control system from the thermostat.

T7067A Electronic Thermostat—has an integral thermistor sensor for space temperature.

T7067B Transmitter—no space temperature sensor included; designed for use with T7047C1025 or T7022A1010 remote temperature sensor (order separately, see Accessories).

ELECTRICAL RATINGS:

Voltage—20V dc from W973 panel.

Current draw—20 milliamps.

AMBIENT TEMPERATURE RANGE: Minus 40 to plus 150 F [minus 40 to plus 65 C].

SET POINT ADJUSTMENT RANGE: 55 to 85 F [13 to 29 C].

HEATING-COOLING DEADBAND:

Minimum—3 F [1.7 C], with set point levers together.

Maximum—30 F [17 C], with set point levers at opposite ends of scale.

OUTPUT SIGNALS: Two 1-16V dc signals (one each for cooling and heating) to W973 panel.

OUTPUT SIGNAL RATE OF CHANGE (upon deviation from set point): 2.5V dc/1 F [0.5 C].

COVER: Silver-bronze painted, molded plastic.

DIMENSIONS: See Figs. 1 and 2.

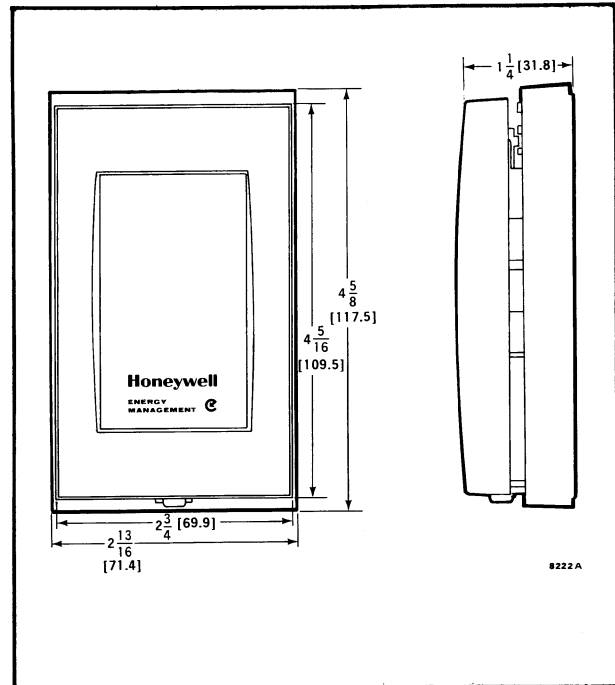


FIG. 1—APPROXIMATE DIMENSIONS, IN INCHES [MILLIMETRES], OF T7067 THERMOSTAT.

(continued on page 3)

ORDERING INFORMATION

WHEN PURCHASING REPLACEMENT AND MODERNIZATION PRODUCTS FROM YOUR TRADELINE WHOLESALE OR YOUR DISTRIBUTOR, REFER TO THE TRADELINE CATALOG OR PRICE SHEETS FOR COMPLETE ORDERING NUMBER, OR SPECIFY—

1. Order number.
2. Accessories, if desired.

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 HONEYWELL RESIDENTIAL DIVISION SALES OFFICE (CHECK WHITE PAGES OF PHONE DIRECTORY).
2. RESIDENTIAL DIVISION CUSTOMER SERVICE
HONEYWELL INC., 1885 DOUGLAS DRIVE NORTH
MINNEAPOLIS, MINNESOTA 55422 (612) 542-7500

(IN CANADA—HONEYWELL CONTROLS LIMITED, 740 ELLESMERE ROAD, SCARBOROUGH, ONTARIO M1P 2V9)
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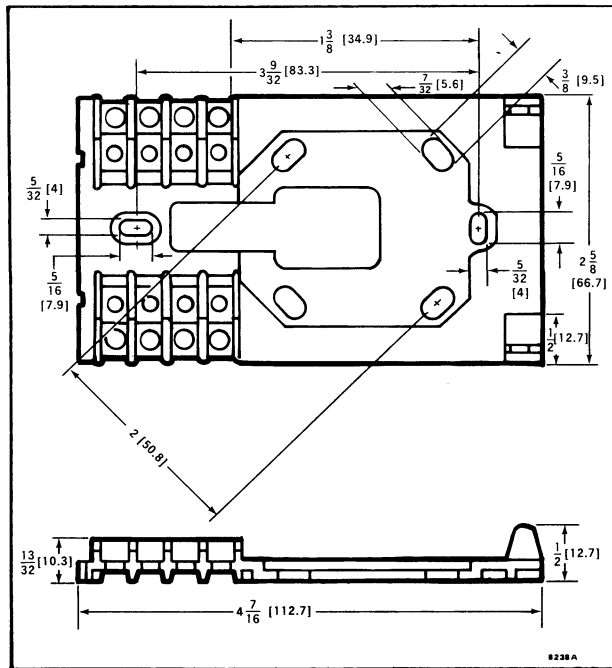


FIG. 2—APPROXIMATE T7067 WALLPLATE DIMENSIONS IN INCHES [MILLIMETRES].

MOUNTING: Mounts on standard vertical 2 x 4 in. outlet box or any nonconductive flat surface. Two No. 6-32 UNC, 5/8 in. [15.9 mm] screws are provided for mounting wallplate on outlet box. Thermostat mounts on wallplate. Use a 130821C Wallplate Adapter for vertically mounting a T7067 on a horizontal outlet box.

ACCESSORIES:

- Q667A Subbase—provides HEAT-AUTO-COOL-OFF system switching.
- Q667B Subbase—provides HEAT-AUTO-COOL-OFF system switching; AUTO-ON fan switching.
- T7047C1025—Wall Mounted Remote Temperature Sensor for use with the T7067B.
- T7022A1010—Duct Mounted, Return Air Temperature Sensor for use with the T7067B.
- 130821C Wallplate Adapter—for use in installations where the T7067 must be vertically mounted on a horizontal outlet box.

INSTALLATION

WHEN INSTALLING THIS PRODUCT . . .

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

CAUTION

1. Disconnect all power before beginning installation to prevent electrical shock or equipment damage.
2. The T7067 is intended for use with the W973A-F Singlezone Logic Panel; W974A,B Setback/Setup Module; and W975A,B Electronic Satellite Sequencer. Do not attempt to connect the T7067 to any other equipment without appropriate instructions.
3. Do not remove the protective cardboard that covers the T7067 circuit board.

LOCATION

T7067A

Locate the thermostat about 5 feet [1.5 metres] above the floor in an area with good air circulation at average temperature.

Do not mount where sensing element may be affected by—

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

T7067B

Mount the T7067B in a location where the thermostat settings will not be subject to tampering or unauthorized adjustments.

Install the remote temperature sensing element (T7047C1025 wall mounted or T7022A1010 return air) according to the instructions provided with it. The location restrictions listed above for the T7067A are also applicable to the T7047C1025 remote temperature sensor.

MOUNTING

The T7067 and T7047C1025 mount vertically on a standard 2 x 4 inch outlet box or nonconductive flat surface. If a horizontal outlet box is encountered, use the 130821C Wallplate Adapter (see ACCESSORIES).

To mount the thermostat:

1. Pull wires from the W973 (the remote sensor, and the W974A,B if used) through the hole in the wallplate or Q667 Subbase.

2. Fasten the thermostat wallplate (or Q667 Subbase) to the outlet box or flat surface. Two No. 6-32 UNC 5/8 inch [15.9 mm] long screws are provided for outlet box mounting. See Fig. 3.

3. Make wiring connections on the wallplate or subbase. See wiring.

4. Loosen the T7067 cover locking screw with the 5/64 inch [1.98 mm] Allen wrench provided.

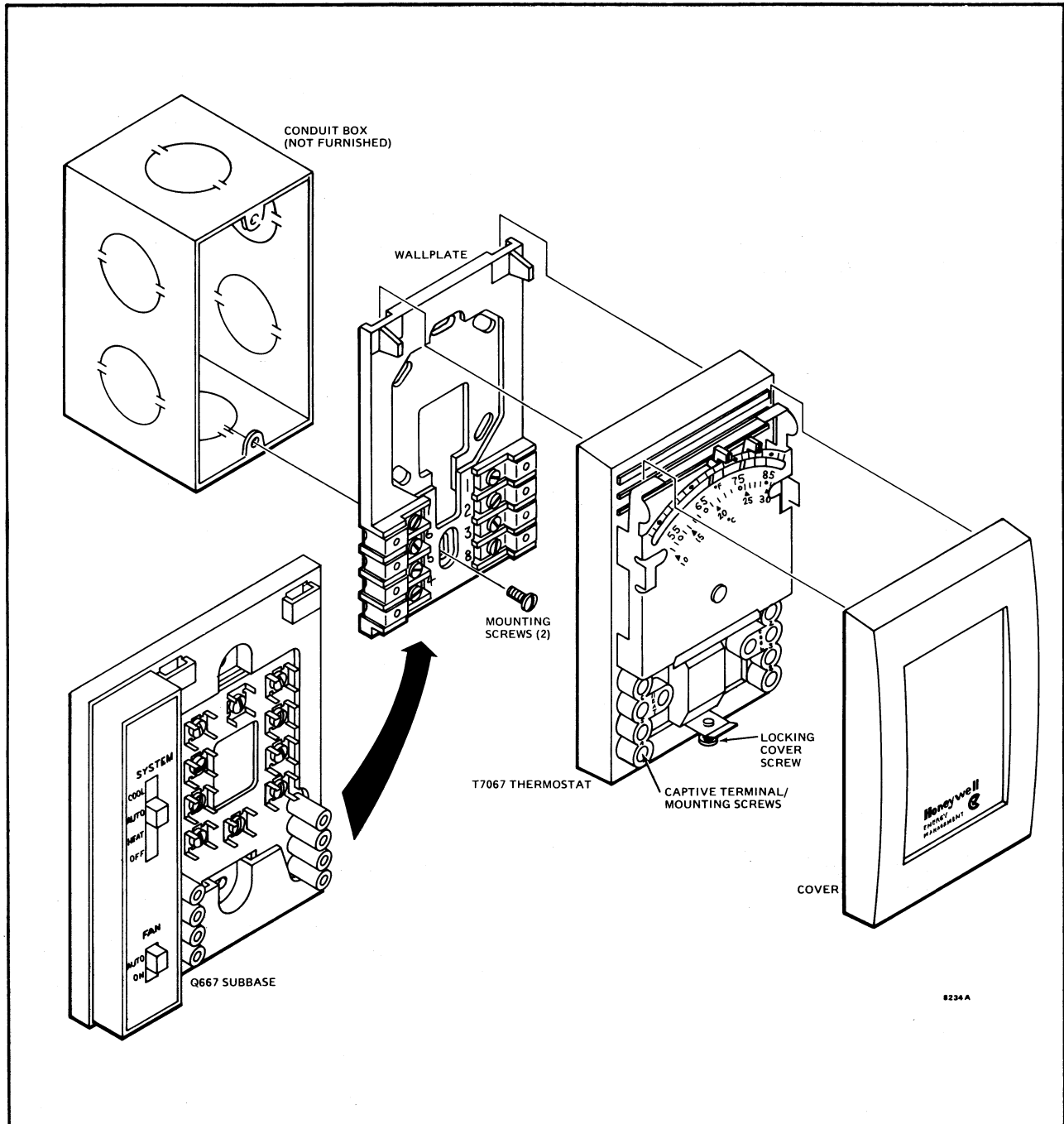


FIG. 3—MOUNTING THE T7067 THERMOSTAT ON AN OUTLET BOX.

5. Remove the thermostat cover by pulling out at the bottom and lifting it up off the tabs on the thermostat base.

6. Mount the thermostat on the wallplate or subbase.

7. Securely tighten all screws in the thermostat base to the wallplate. Do not overtighten.

NOTE: These screws make the electrical connections between the wallplate or subbase and the thermostat. If any screw is not securely tightened, the system will not operate properly. The T7067A does not have a screw for terminal 7.

8. With the cover off—
- Check out the thermostat per the instructions in the CHECKOUT section.
 - Select the desired heating and cooling set points.
 - Lock the set point levers if desired.

9. Replace the cover and tighten the cover locking screw.

LOCKING SET POINT LEVERS

The set point adjustment locks provided are engaged by moving set point adjustment levers to desired settings and tightening locking screws as shown in Fig. 4.

To position the set point lever at the extreme end of the adjustment scale, remove the locking screws. (The locking screws interfere with the thermostat scaleplate when the set point levers are moved to the extreme end of the scale). Move the set point lever to the extreme position. The set point lever can be locked in place at the extreme end of the scale if the locking screw is re-inserted into the lever lock through the hole below the end of the scale (see Fig. 4).

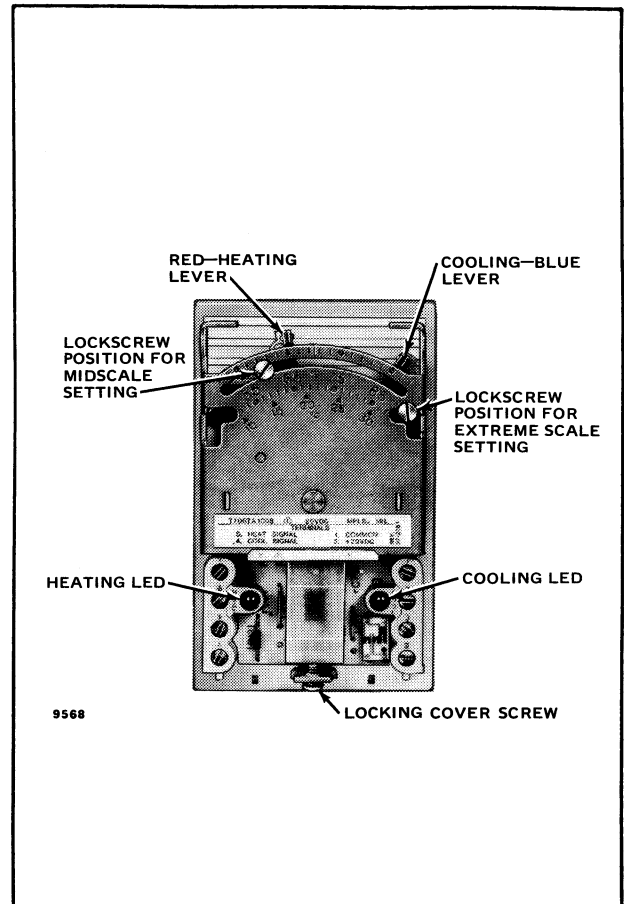


FIG. 4—T7067 THERMOSTAT WITH COVER REMOVED. TIGHTEN LOCKING SCREWS TO LOCK SET POINT ADJUSTMENT LEVERS.

WIRING

All wiring must comply with local codes and ordinances. Terminal screws are provided on the wallplate or Q667 subbase for wiring connections. Wiring to thermostat is low voltage and need not be in conduit unless required by local codes. Make the connections to the wallplate, if used, as shown in Figs. 5-8. If the switching Q667 subbase is used, refer to Q667 instructions for wiring connections. Complete system connections are shown in instructions for the W973 Singlezone Logic Panel.

Fig. 5 shows the connections required between the W973 and the T7067A,B. Terminal 1 is the system common. Terminal 2 the point where the 20V dc output of the W973 is connected to provide power to the T7067. Terminal 3 supplies the C7046A temperature signal to the T7067. (The C7046A provides heating and cooling anticipation to the T7067.) Terminals 4 and 5 are the

output terminals for the cooling and heating voltage ramps respectively. The dotted lines from terminals 6 and 7 represent the connections required when the T7067B and remote temperature sensor are used. Terminals 6 and 8 on both the T7067A and T7067B are used in applications employing the W974A,B Setback Module.

Figs. 7 and 8 illustrate the connections required when a T7067 is used with a W974A or W974B. The terminal 6 connection provides a selectable amount of heating setback to the T7067 during the unoccupied mode. Terminal 8 provides a selectable amount of cooling setup (W974B only) to the T7067 or forces the cooling signal low to shutdown cooling equipment during the unoccupied mode (W974A,B).

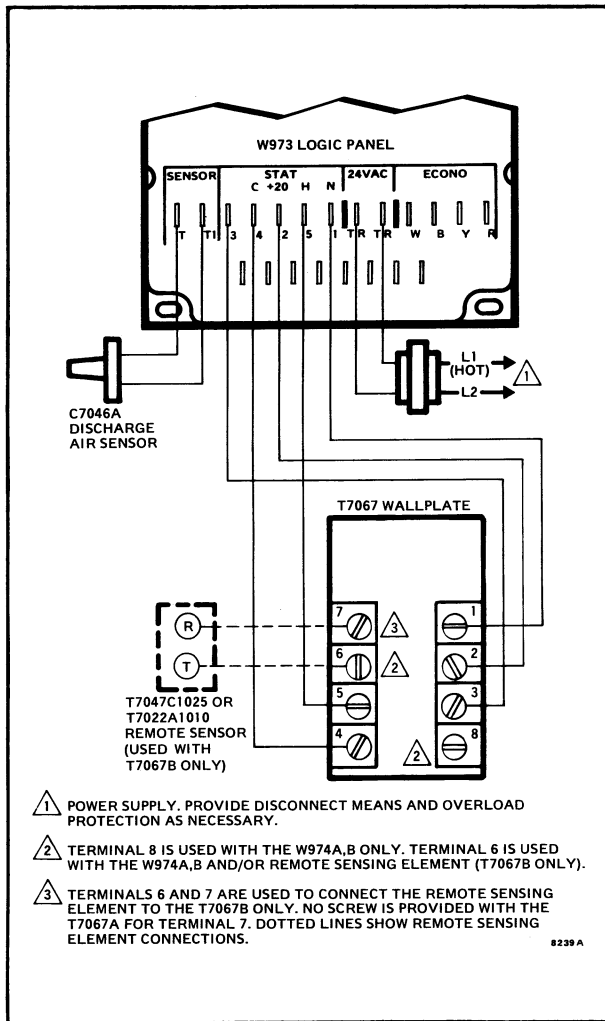


FIG. 5—W973 AND T7067 WALLPLATE WIRING CONNECTIONS.

When the controlled zone is a large area, it may be advantageous to use several remote temperature sensors dispersed throughout the area to obtain an average zone temperature signal and better system control. The circuit for this application is illustrated in Fig. 6.

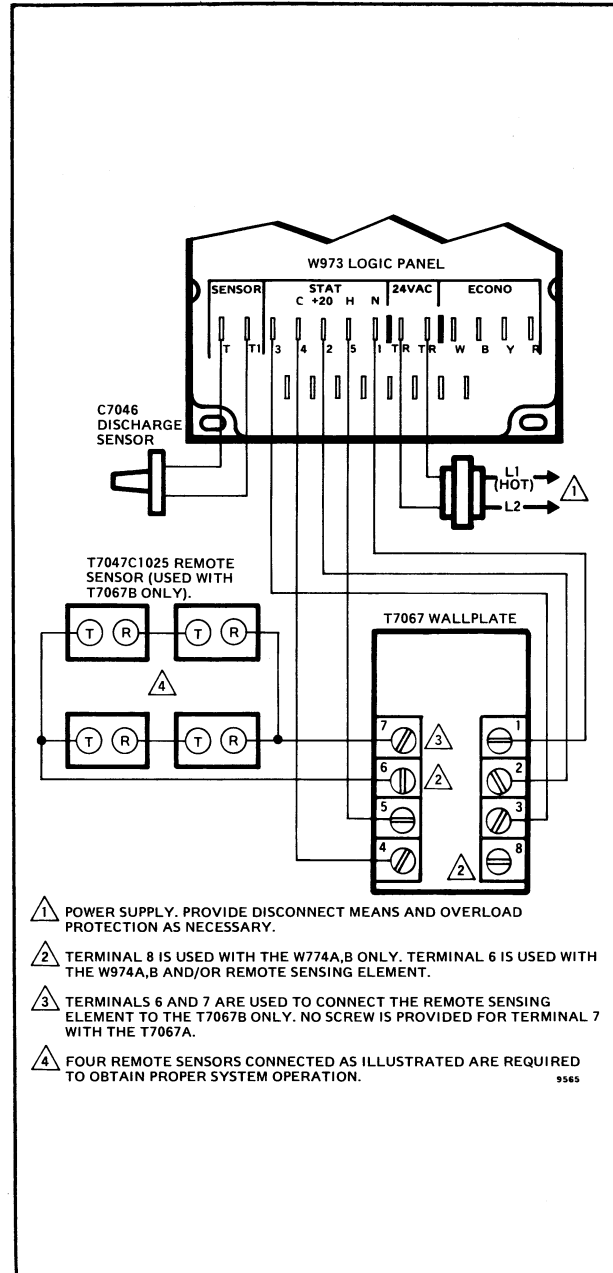


FIG. 6—USING THE T7067B AND FOUR REMOTE SENSORS TO PROVIDE AN AVERAGE ZONE TEMPERATURE SIGNAL.

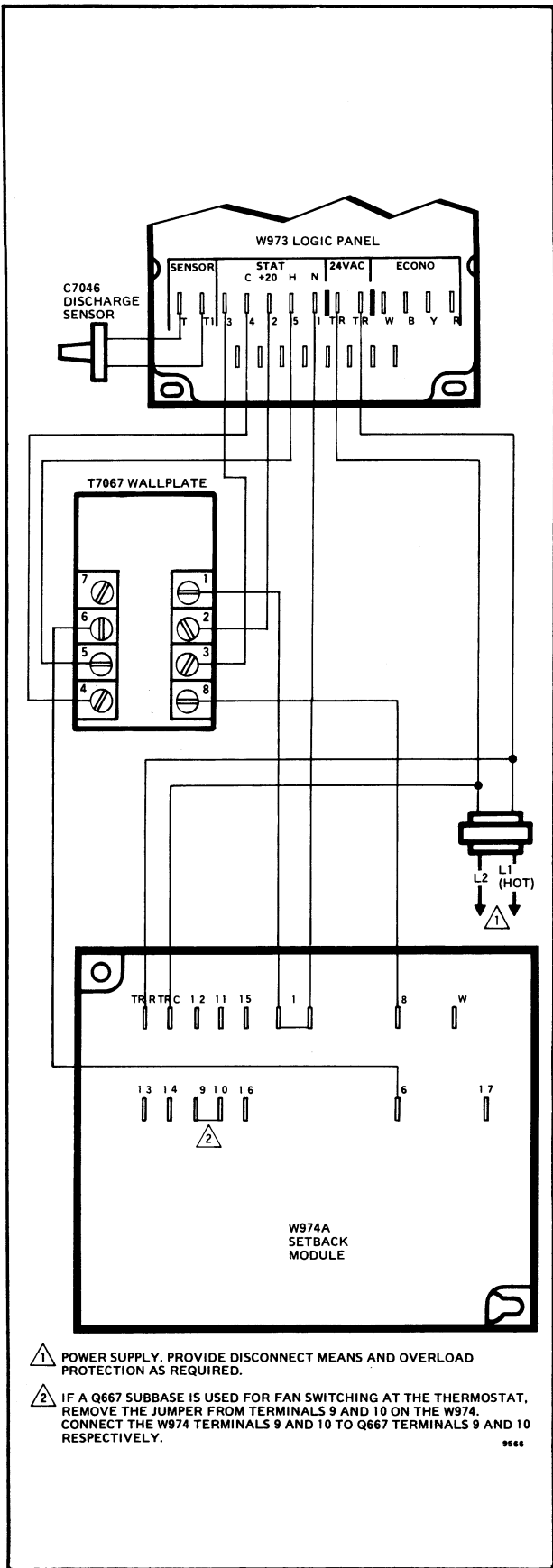


FIG. 7—T7067 WALLPLATE CONNECTIONS IN AN APPLICATION USING THE W974A.

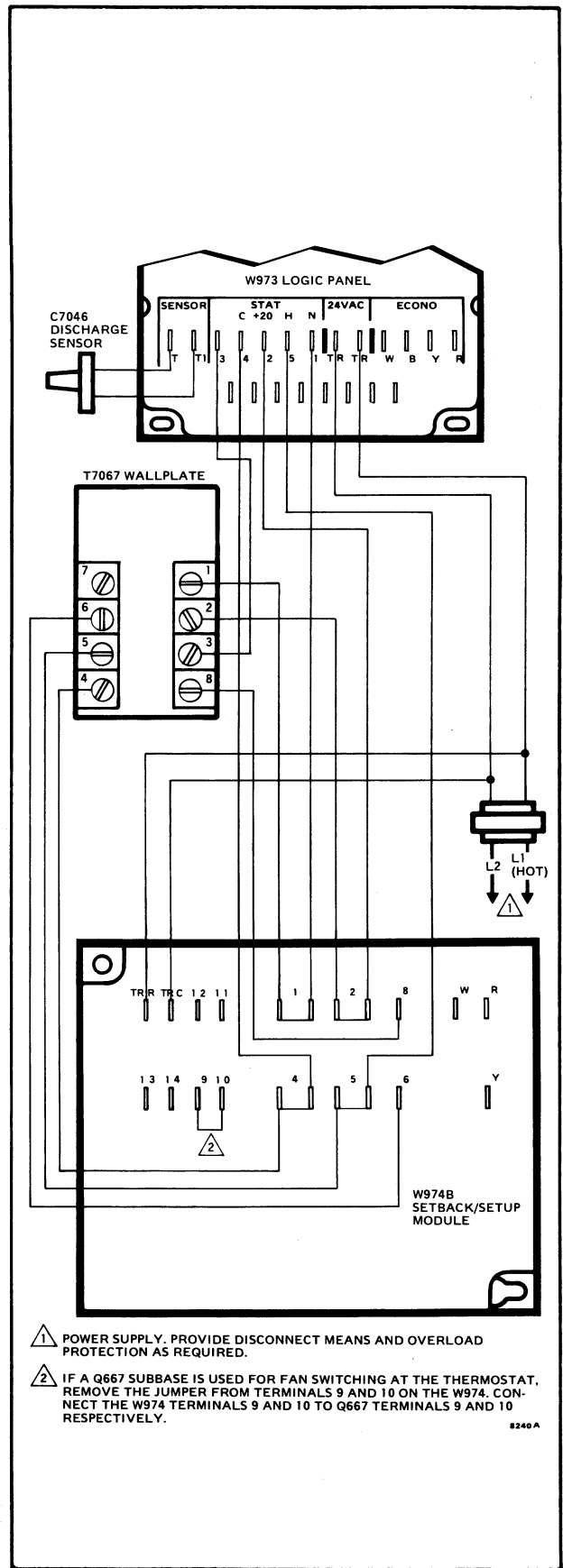


FIG. 8—T7067 WALLPLATE CONNECTIONS IN AN APPLICATION USING THE W974B.

OPERATION

The T7067 Electronic Thermostat is a solid state device designed for use with the W973 Singlezone Logic Panel. The thermostat receives 20V dc power from the W973 and generates two separate output voltage ramps, one each for cooling and heating. Zone temperature is monitored by a thermistor sensor which is either integral to the thermostat (T7067A) or located remotely from the transmitter (T7067B). In applications where it is desirable to prevent unauthorized adjustment or tampering with the thermostat settings, the T7067B is used with the remotely located T7047C1025 space temperature sensor or T7022A1010 return air temperature sensor.

As the zone temperature changes, the resistance of

the thermistor sensor changes inversely. The chart below gives the approximate resistance values of the thermistor sensors for several different temperatures. The resistance of the sensor will change approximately 15 ohms/F.

THERMISTOR SENSOR RESISTANCE VALUES	
TEMPERATURE	RESISTANCE (ohms)
70 F (21.1 C)	1495 ± 15
71 F (21.6 C)	1480 ± 15
72 F (22.2 C)	1465 ± 15
73 F (22.8 C)	1450 ± 15
74 F (23.3 C)	1435 ± 15
75 F (23.9 C)	1420 ± 15

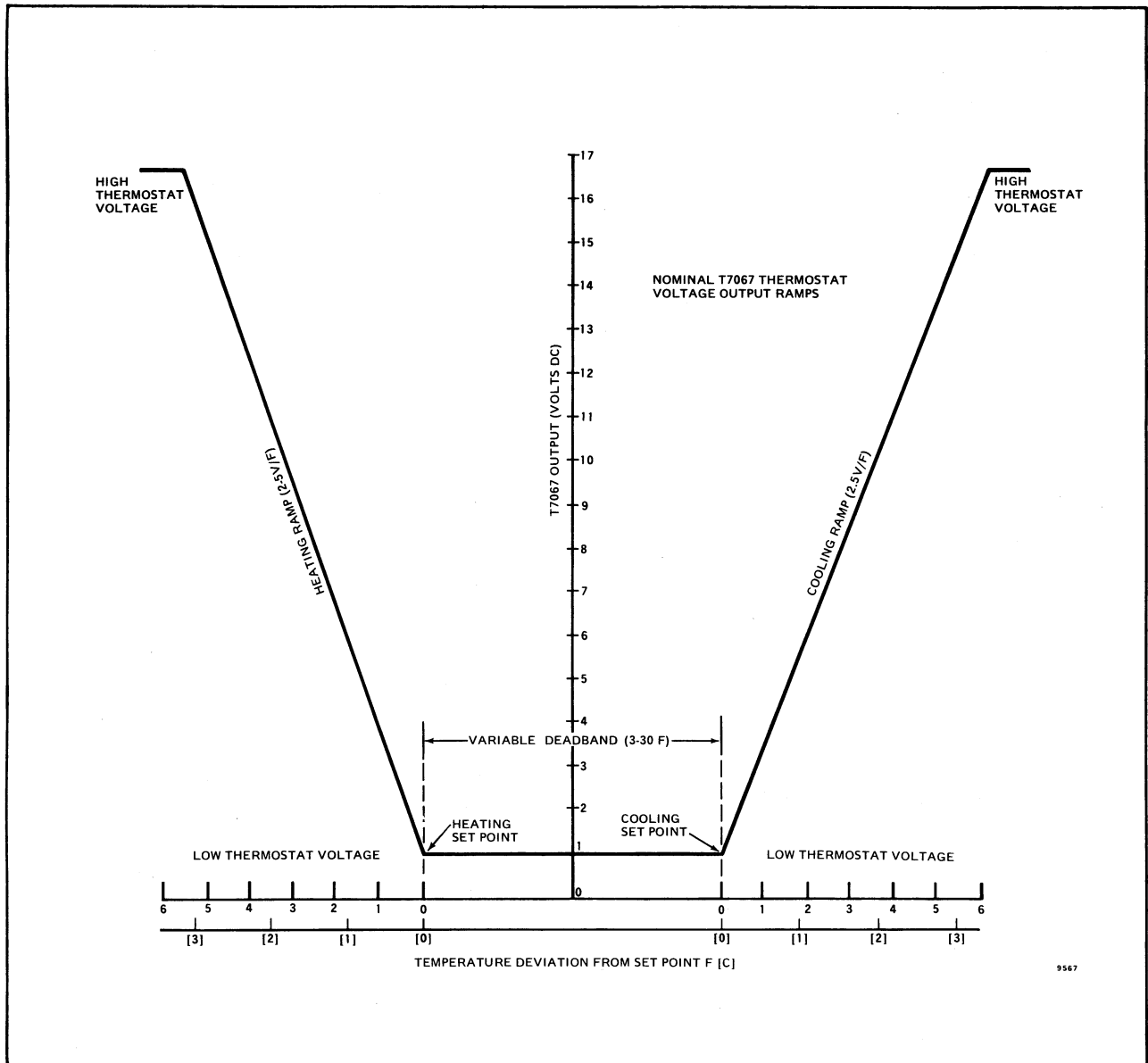


FIG. 9—T7067 OUTPUT VOLTAGE RAMPS.

The change in resistance causes the thermostat (or transmitter) to generate a dc voltage ramp signal which is proportional to the zone temperature deviation from the heating or cooling set point. This signal is sent to the W973 which switches on or off the minimum number of heating or cooling stages necessary to satisfy the zone demand. As the output voltage signal increases, more stages are switched on. The T7067 heating and cooling LED's under the device cover glow brighter as the applicable output signal increases. The thermostat output signal is modified by the C7046 Discharge Air Temperature Sensor which is mounted in the discharge air stream of the HVAC equipment. The C7046 signal provides heating and cooling anticipation to the system at an authority ratio of 25:1. In other words, a 25 F change in discharge temperature corresponds to a 1 F change in zone temperature. Fig. 9 shows the output voltage ramp values for the T7067. The output voltage changes approximately 2.5V dc/F. The minimum output voltage is 1.1V dc and the maximum is 16.75V dc.

The 3-30 F [1.7-17 C] variable deadband (temperature range between heating and cooling set points) and

built-in load reactive time delay insure stable system performance. The deadband protects against simultaneously energizing heating and cooling equipment when more than one W973 is paralleled with a T7067. The length of the built-in time delay varies exponentially with the temperature difference between the T7067 set point and the actual zone temperature. The time delay between switching on of successive stages is long when zone temperature is close to the thermostat set point, preventing too many stages being energized. When the difference between zone temperature and the T7067 set point increases, the time delay between turn on of successive stages becomes shorter so the system can react to sudden changes in load. The chart below gives the approximate time delays for various temperature differences between the T7067 set point and the zone.

Upon power failure, the output of the T7067 will drop to zero. When power returns, only the required stages of heating and cooling equipment are sequenced on by the W973 logic panel. The T7067 provides a time delay between the required stages to prevent energizing the equipment simultaneously.

PARAMETER	TIME DELAY (SECONDS)			
	STEP CHANGE ►	STAGE 1 ON	STAGE 1 ON ► STAGE 2 ON	STAGE 2 ON ► STAGE 3 ON
5 F HEAT		15	11	12
STEP CHANGE COOL		30	15	26
10 F HEAT		3	4	5
STEP CHANGE COOL		6	6	8
15 F HEAT		0	2	3
STEP CHANGE COOL		0	3	5

CHECKOUT

Successful completion of the following checkout procedure indicates that the thermostat is powered and operating properly.

Do this checkout on initial installation and anytime the system is serviced. For more detailed checkout and troubleshooting procedures, refer to the W973 Singlezone Logic Panel instructions.

CHECKOUT PROCEDURE

1. Verify power on to the W973 logic panel.
2. If the Q667 Subbase is used, set the system and fan switches to AUTO.

3. Remove cover from T7067 thermostat, or transmitter.

4. Note the red LED's near the bottom of the thermostat (Fig. 4).

5. Move the thermostat cooling lever (blue) below room temperature to call for cooling. Cooling LED on right side of T7067 will glow brighter as lever is moved further below room temperature. (Allow for system time delay.)

6. Move T7067 cooling lever above room temperature. Cooling LED intensity will decrease to a faint glow or go off entirely.

7. Move thermostat heating lever (red) above room

temperature. Left heating LED will glow brighter as lever is moved further above room temperature. (Allow for system time delay.)

8. Move thermostat heating lever below room temperature. Heating LED intensity will decrease to a faint glow or go off entirely.

9. Return heating and cooling levers to desired set points, and lock them if desired. Return subbase switches to desired operating modes.

If a problem is suspected with the T7067, several voltage readings can be taken with a dc voltmeter to verify proper thermostat operation. Refer to the following chart for terminal numbers and the approximate volt-

age values.

TERMINALS	APPROXIMATE VOLTAGE
2 (positive) 1 (negative)	20V dc
4 (positive) 1 (negative)	Refer to Fig. 9.
5 (positive) 1 (negative)	Refer to Fig. 9.

The resistance of the remote thermistor sensor (T7047C1025 or T7022A1010) can be checked with an ohmmeter at terminals 6 and 7 of the wallplate or Q667 subbase. Disconnect one of the sensor leadwires, then measure the resistance between the sensor leadwires. Use the resistance values given in the OPERATION section to verify sensor reliability. The resistance of the integral thermistor sensor in the T7067A cannot be checked by the operator.

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