

# Honeywell

THE T7075 FAMILY OF SOLID STATE REMOTE TEMPERATURE CONTROLLERS OFFERS SERIES 60 SWITCHING FOR TEMPERATURE CONTROL IN DUCTS, TANKS, PIPES, REFRIGERATION UNITS AND OTHER APPLICATIONS WHERE ELECTRONIC ACCURACY AND REMOTE SENSINGS ARE CRITICAL.

- ☐ T7075E heat or cool single-stage output.
- ☐ T7075F heat or cool two-stage output or heat/cool operation with adjustable interstaging.
- ☐ NEMA 4X Enclosure resists dust and corrosion.
- ☐ Does not require field calibration for applications with less than 400 ft of sensor wire.
- ☐ Linear platinum temperature sensor.
- ☐ High degree of accuracy.
- ☐ Wide set point temperature range.
- ☐ Wide ambient temperature range.
- ☐ Precise dial setting.
- ☐ Linear temperature set point scale.
- ☐ Linear differential set point scale.
- ☐ Jumper selectable heat-cool selection.
- ☐ Adjustable differential.
- ☐ LED annunciation for both operating mode and relay state.

## SOLID STATE REMOTE TEMPERATURE CONTROLLER



## T7075E,F

# SPECIFICATIONS

**MODELS:** T7075 family of solid state remote bulb temperature controls offers series 60 switching for temperature control in ducts, tanks, pipes, refrigeration units and other applications where electronic accuracy in addition to remote sensing is desired.

**T7075E** Heat or Cool single-stage output device with 0.5° F to 30° F adjustable differential. Mounted in NEMA 4X enclosure. Remote sensor 198212CA and liquid-tight fittings 201644 included.

**T7075F** Heat or Cool two-stage output or Heat/Cool device with 0.5° F to 30° F adjustable differential and 0° F to 35° F interstaging. Mounted in NEMA 4X enclosure. Remote sensor 198212CA and liquid-tight fittings 201644 included.

## ELECTRICAL RATINGS:

Voltage Input—24/120/240 Vac, 50/60 Hz.

Power Consumption—T7075A, 11 VA Maximum.

T7075B, 11 VA Maximum.

Switching—SPDT.  
CONTACT RATINGS—

	Voltage (Vac)	
	120	240
Full Load	9.8	4.9
Locked Rotor	58.8	29.4
Resistive	10.0 A @ 24 Vac	
Pilot Duty	125 VA	

**SENSOR:** Positive coefficient platinum type, 1000 ft maximum distance between sensor and solid state controller. To maintain NEMA 4X rating, use environmental proof cable and sensor (CSX).

**TEMPERATURE ACCURACY:** +/−1° F.

**REMOTE SET POINT:** 100 ft maximum distance between set point control and solid state controller.

(continued on page 3)

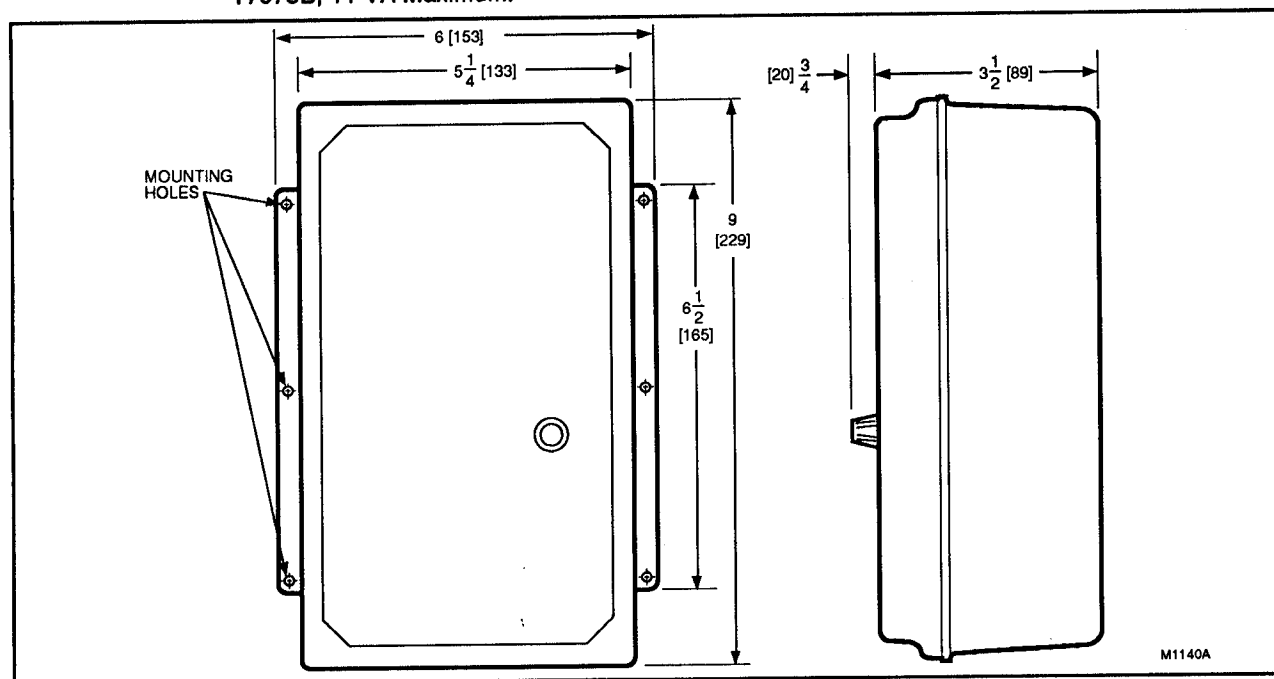


FIG. 1—APPROXIMATE DIMENSIONS IN in. [mm] OF T7075.

# 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 BUILDING CONTROLS DIVISION SALES OFFICE (CHECK WHITE PAGES OF PHONE DIRECTORY).
2. BUILDING CONTROLS DIVISION CUSTOMER SERVICE  
HONEYWELL INC., 1885 DOUGLAS DRIVE NORTH  
MINNEAPOLIS, MINNESOTA 55422-4386 (612) 542-7500

(IN CANADA—HONEYWELL LIMITED/HONEYWELL LIMITEE, 740 ELLESMERE ROAD, SCARBOROUGH, ONTARIO M1P 2V9) INTERNATIONAL SALES AND SERVICE OFFICES IN ALL PRINCIPAL CITIES OF THE WORLD.

INDICATORS: LED annunciation—relay state, operating mode/power.

AMBIENT TEMPERATURE RANGE: -40° F to 140° F [-40 C to 60 C]

HUMIDITY: 0 to 100% RH.

SET POINT ADJUSTMENT RANGE -20° F to 200° F [-6 C to 93 C].

DIFFERENTIAL: 0.5° F to 30° F [.3 C to 16.6 C].

INTERSTAGE: (T7075F only) 0° F to 35° F [0 C to 19.4 C].

APPROVALS: Underwriters Laboratories Inc. listing pending.

MOUNTING: Mounts on any suitable horizontal or vertical surface. (See Fig. 2 for mounting hole locations).

#### ACCESSORIES:

S963E1026 Remote Set Point Control; -20° F to 200° F.

S963E1000 Remote Set Point Control; -20° F to 80° F.

S963E1018 Remote Set Point Control; 70° F to 200° F.

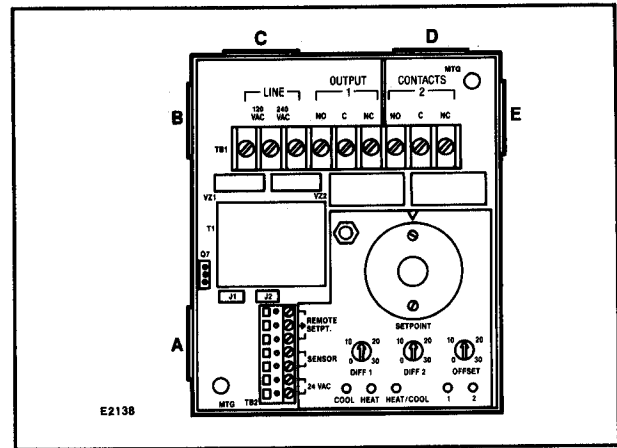


FIG. 2—MOUNTING HOLE LOCATIONS.

## 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.

## WARNING

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

#### LOCATION AND MOUNTING

Mount the controller on any convenient location using the mountings holes provided along the sides of the NEMA 4X enclosure (mounting screws are not included). Controller dimensions in Fig. 1 may be used as a guide.

#### WIRING

Disconnect external power before installation to prevent electrical shock or equipment damage. All wiring must comply with applicable codes and ordinances.

Refer to the chart on the inside of the controller cover or Fig. 2 for locating the power input, remote sensor and load relay output terminals. Access to the terminals may be gained through standard conduit knockouts (A-E) located around the perimeter of the enclosure.

NOTE: Knockout "A" should only be used for sensor and remote set point wiring and 24 Vac wiring. When wiring the input power, only one source of power must be applied to the T7075 (e.g., 24 Vac or 120 Vac or 240 Vac). When using both high voltage and low voltage loads, make sure the factory installed barrier strip is in position between output contacts 1 and 2. This barrier

allows stage 2 to switch low voltage while the device and stage 1 may be powered by line voltage. Refer to Fig. 15 for location of barrier strips.

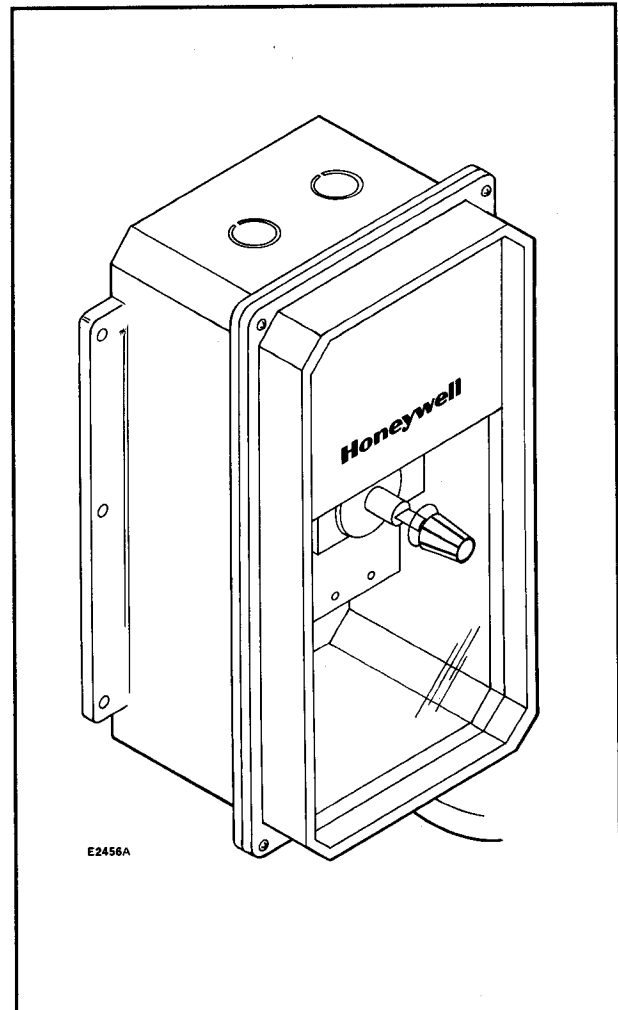
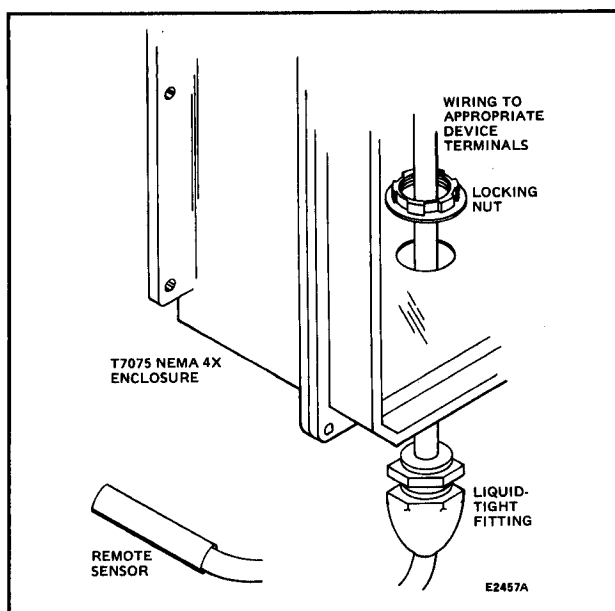


FIG. 3—CONNECTION OF REMOTE SENSOR TO T7075E,F.



**FIG. 4—INSTALLING OF LIQUID-TIGHT FITTINGS AND REMOTE SENSOR.**

For required applications liquid-tight fittings are available for the T7075E,F. Installation of these fittings is gained through standard conduit knockouts located around the perimeter of the NEMA 4X enclosure. Figs. 3 and 4 refer to the connection of the remote sensor to the T7075E,F. Wiring can be achieved by the following steps. Remove NEMA 4X enclosure and appropriate knockout for desired connection. Insert liquid-tight fitting with wiring into exposed knockout hole. Use locking nut to tighten and hold liquid-tight fitting and wiring securely. Make appropriate connections to device terminals.

## CAUTION

Never remove the main barrier with warning label.

**NOTE:** The T7075 is not intended for safety limit applications. It is an operating control, not a safety control.

Refer to Figs. 5-10 for T7075E and Figs. 11-14 for T7075F typical wiring, application and control algorithm examples.

**NOTE:** To maintain accuracy, sensor wires should be 18 AWG two-conductor. If length of sensor wire exceeds 400 ft., recalibration will be necessary (refer to Checkout and Operation section for instructions). Suitable insulation should be used for outdoor wiring. The use of shielded wire is not required.

## CHECKOUT AND OPERATION

In the following procedures refer to the diagram inside the cover of the T7075 or Fig. 13 showing locations of all operating controls, option jumpers, LEDs and wiring connection points.

## INITIAL ADJUSTMENTS

1. Adjust the set point control to desired setting.
2. Adjust the differential (DIFF 1, DIFF 2) control(s) to

desired setting.

3. Adjust the interstage (OFFSET) control (T7075B only) to desired setting.

## MODE SELECTION

Position jumper J1 for the desired mode:

T7075E—heat or cool

T7075F—heat or cool or heat/cool

(The mode selected will be indicated by the heat, cool or heat/cool LED.)

## SET POINT CONTROL CALIBRATION

If length of sensor wire exceeds 40 ft., calibration is necessary to maintain  $\pm 1$  degree accuracy. All readings are referenced to the factory calibration mark that is located on the edge of the set point control knob at approximately midscale. The new set point reading will be the scale reading at the calibration mark minus the calibration offset as listed in the chart below. Loosen the two screws on the set point control knob and move the scale plate to the new reading, then retighten the screws.

**EXAMPLE:** Sensor wire length is approximately 750 ft., the calibration mark on a T7075E ( $-20^{\circ}\text{F}$  to  $80^{\circ}\text{F}$ ) is 30.0 degrees. Loosen the two screws on the set point control knob and move the scale plate to the new setting of 28.0 degrees ( $30.0 - 2.0$ ). Tighten the screws when finished.

SENSOR WIRE LENGTH (#18/2)	CALIBRATION OFFSET
0-399 ft.	factory calibrated
400-599 ft.	- 1.5 degrees
600-799 ft.	- 2.0 degrees
800-1000 ft.	- 2.5 degrees

## REMOTE SET POINT CONTROL

To use the remote set point control, first disable the internal set point control by repositioning jumper J2 to the remote set point position. Connect remote set point control leads to terminals 1, 2 and 3 of TB2.

## CHECKOUT

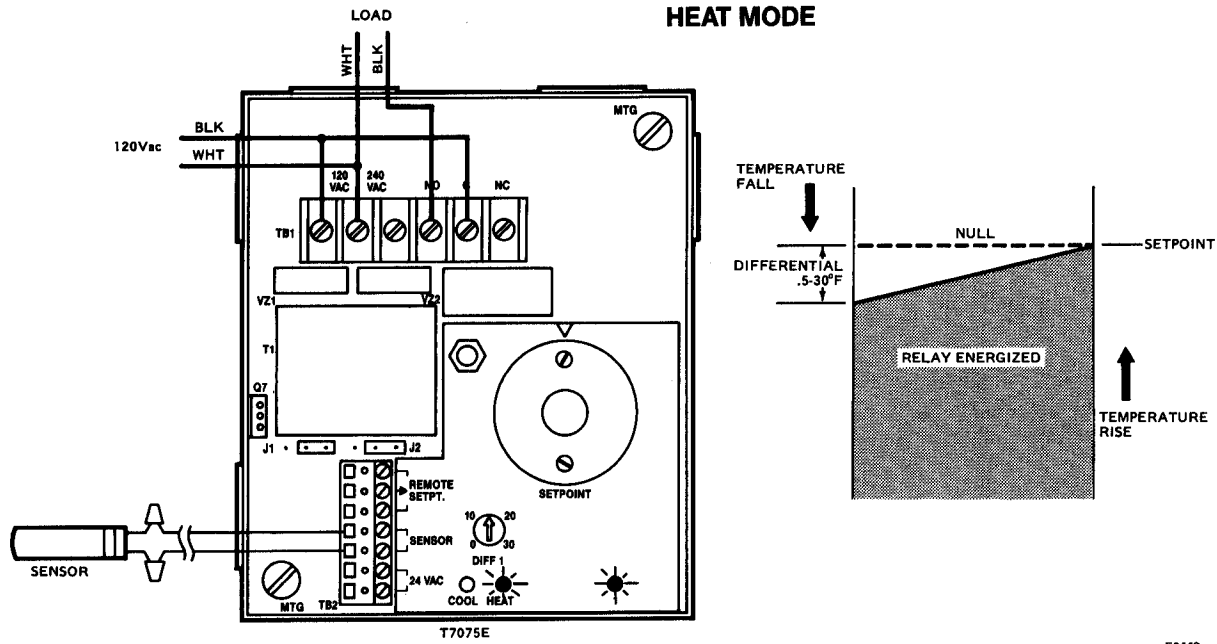
After the controller is installed, wired, and all settings verified, apply power. Operation may be verified by the following manual operations. Checkout will depend on the type of hookup and controlled equipment.

For checking cooling applications, turn the wet point knob counterclockwise until the stage 1 (T7075E) or stage 1 and 2 (T7075F) LEDs light. This initiates a call for cooling and the cooling equipment should respond. For checking heating applications, turn the set point knob clockwise until the stage 1 (T7075E) or stage 1 and 2 (T7075F) LEDs light. This initiates a call for heat and the heating equipment should respond. For heating/cooling applications (T7075F only), check both heating and cooling as described above.

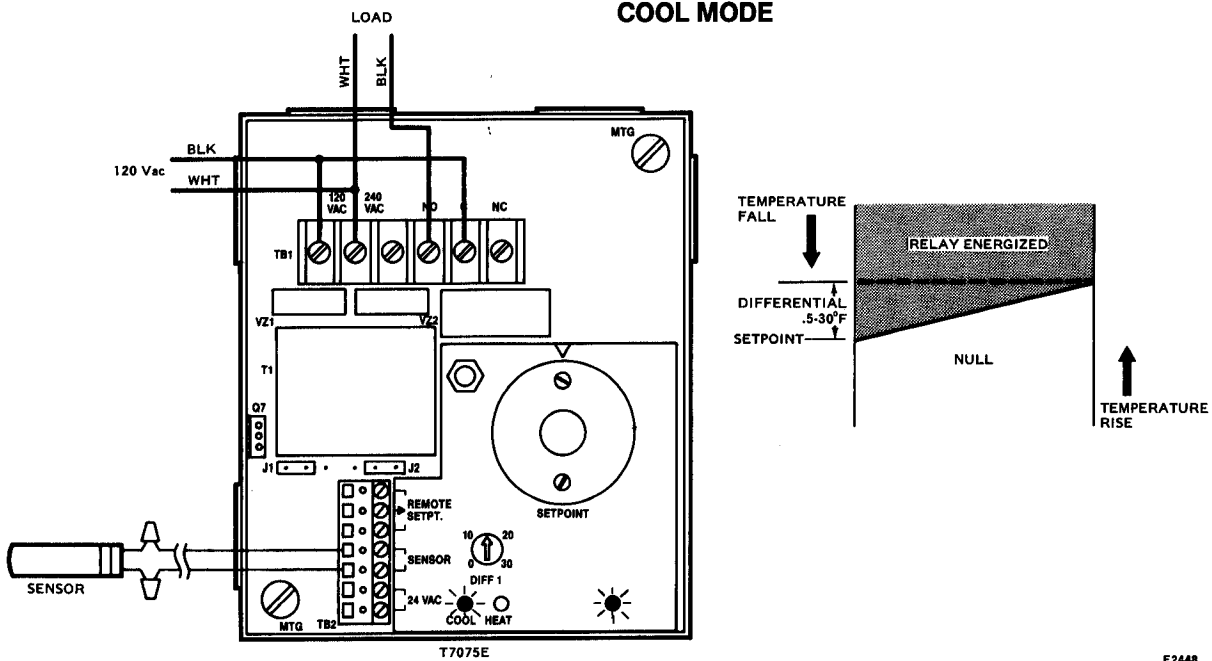
## CAUTION

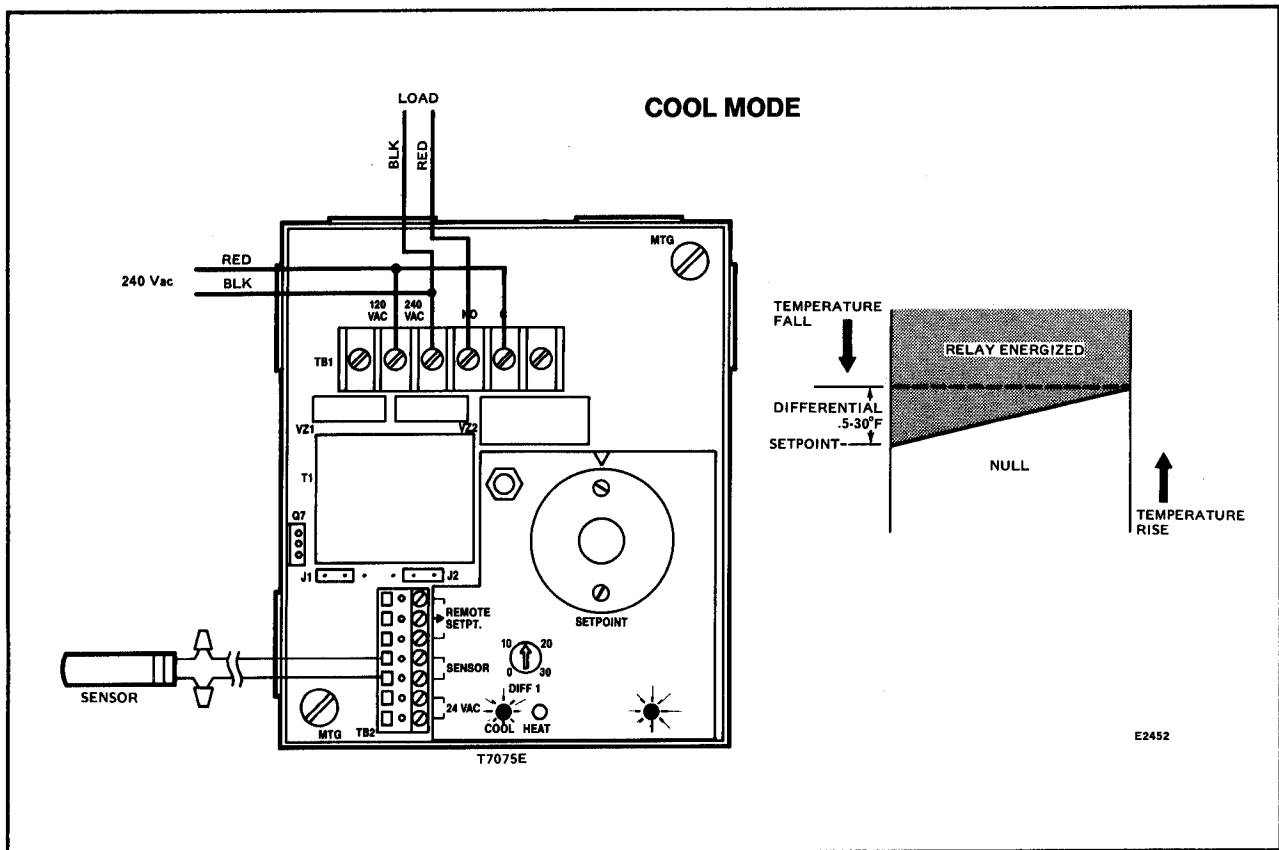
If the controller is controlling a compressor, allow at least 2 minutes between on-cycles to equalize internal pressure. Rapid cycling might damage compressor and overload electrical circuits.

## HEAT MODE

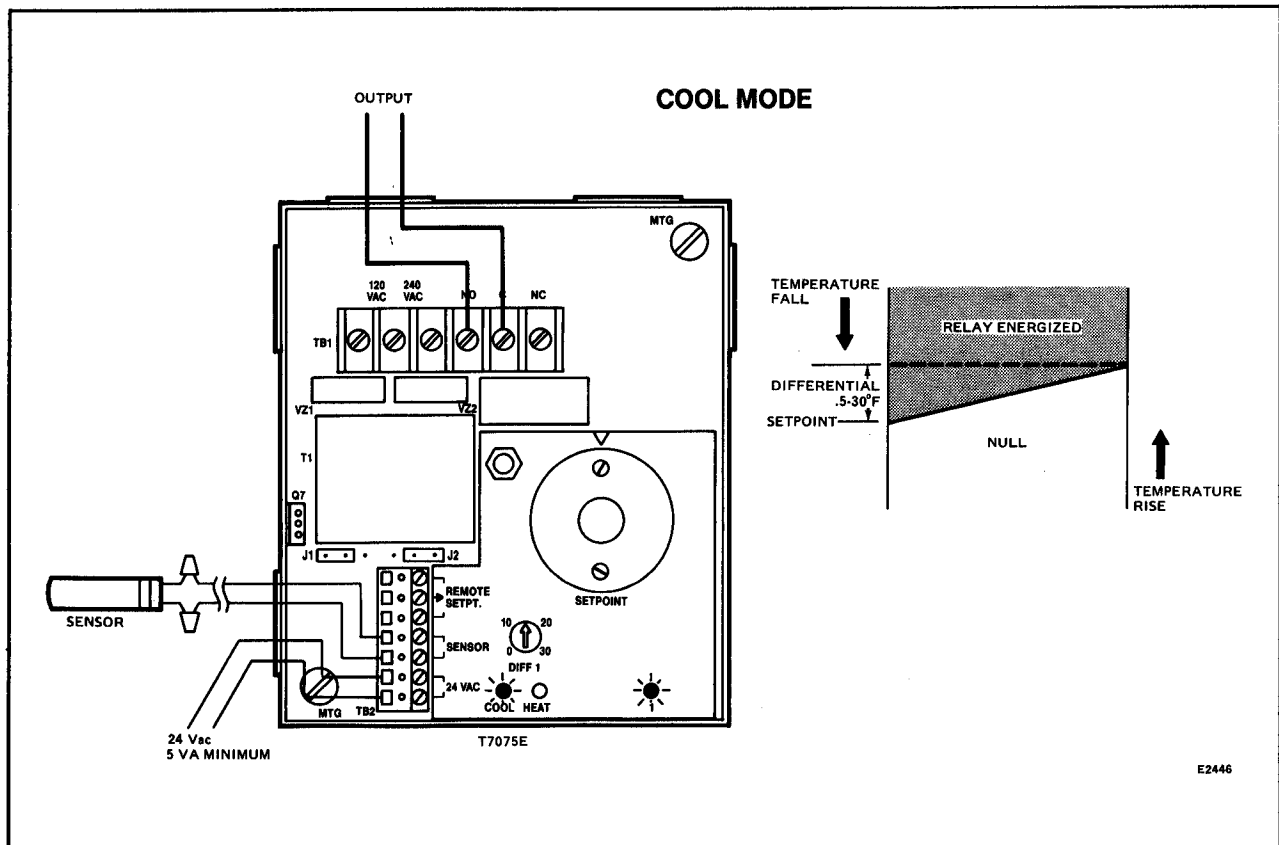


## COOL MODE

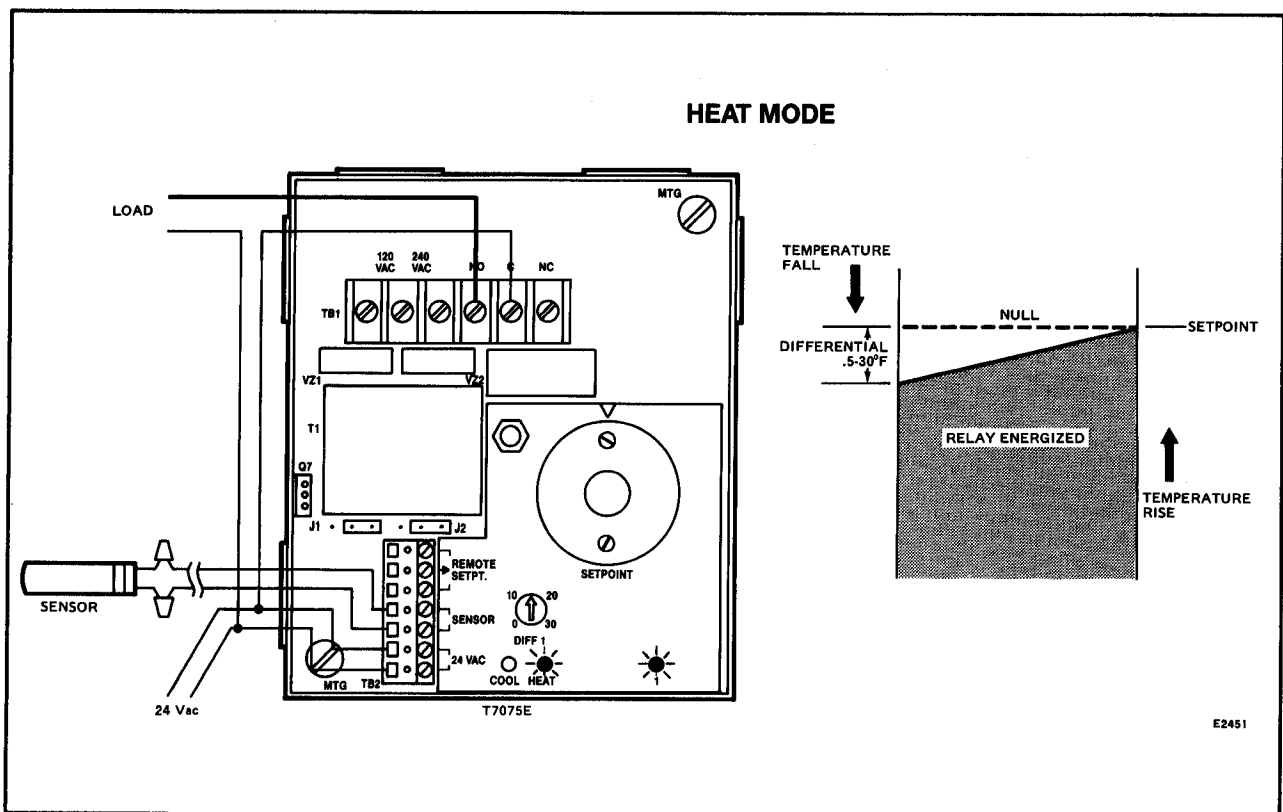




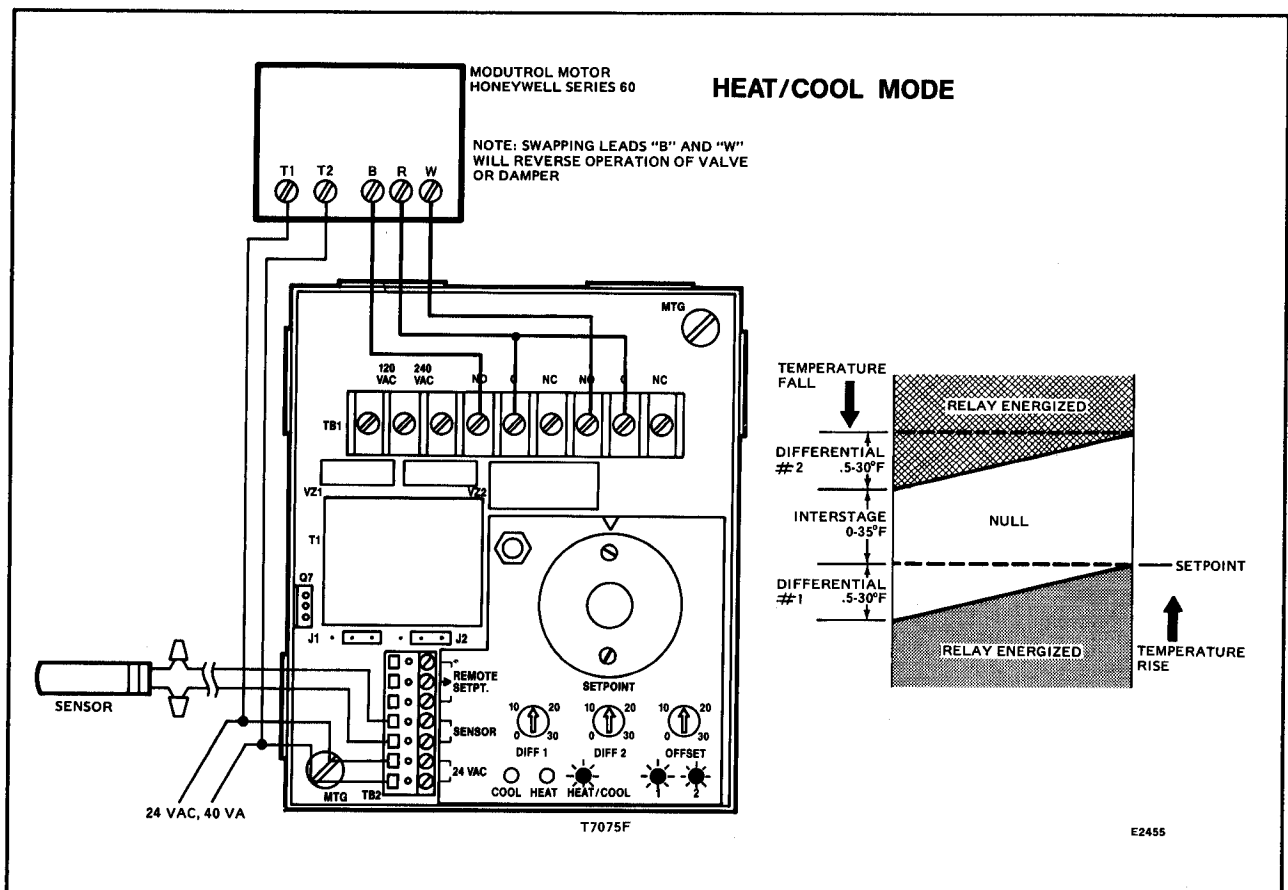
**FIG. 7—SINGLE-STAGE COOLING, 240 Vac INPUT; 240 Vac LOAD.**



**FIG. 8—SINGLE-STAGE COOLING, 24 Vac INPUT; DRY CONTACT LOAD.**



**FIG. 9—SINGLE-STAGE HEATING, 24 Vac INPUT; 24 Vac LOAD (VA rating of transformer must be sufficient to power the load and T7075).**



**FIG. 10—TWO-STAGE HEATING, VALVE OR DAMPER CONTROL.**

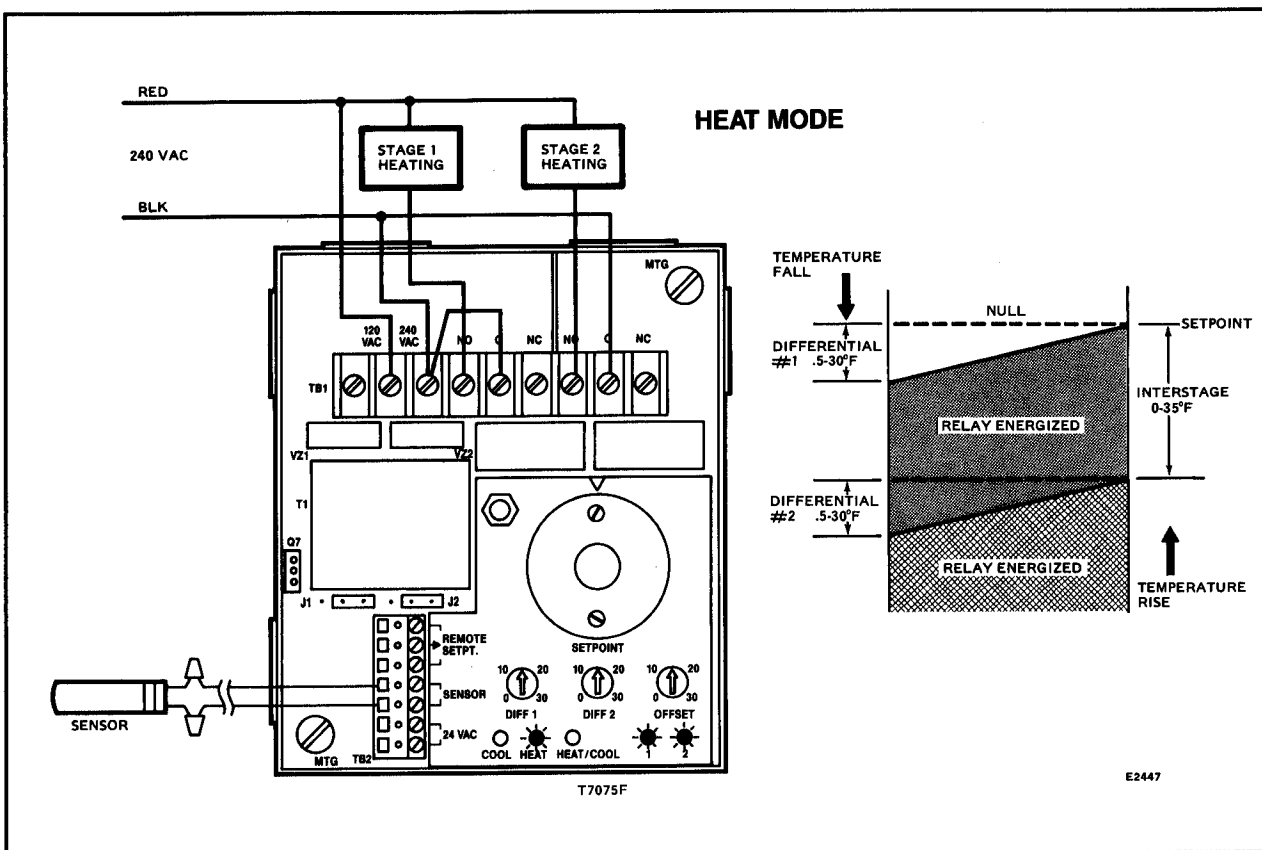


FIG. 11—TWO-STAGE HEATING, 240 Vac INPUT; 240 Vac LOAD.

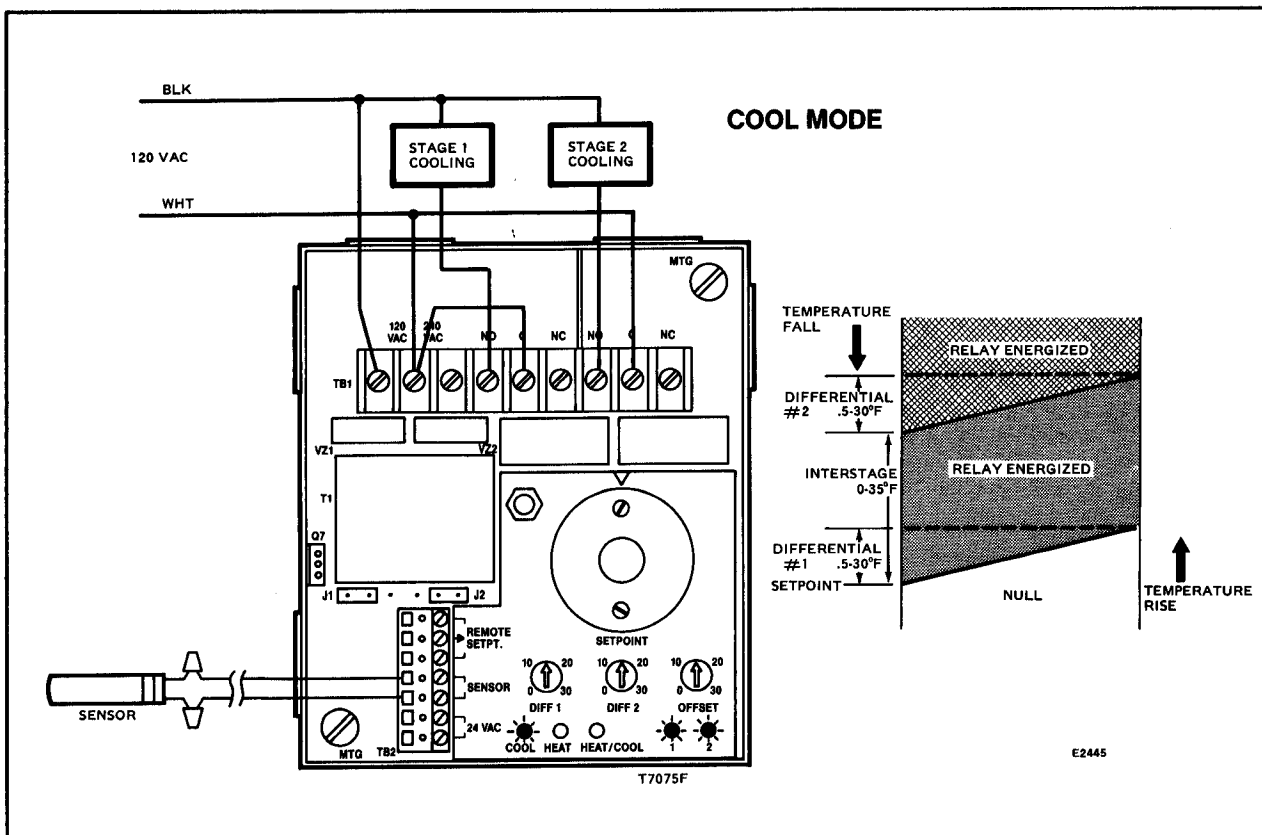
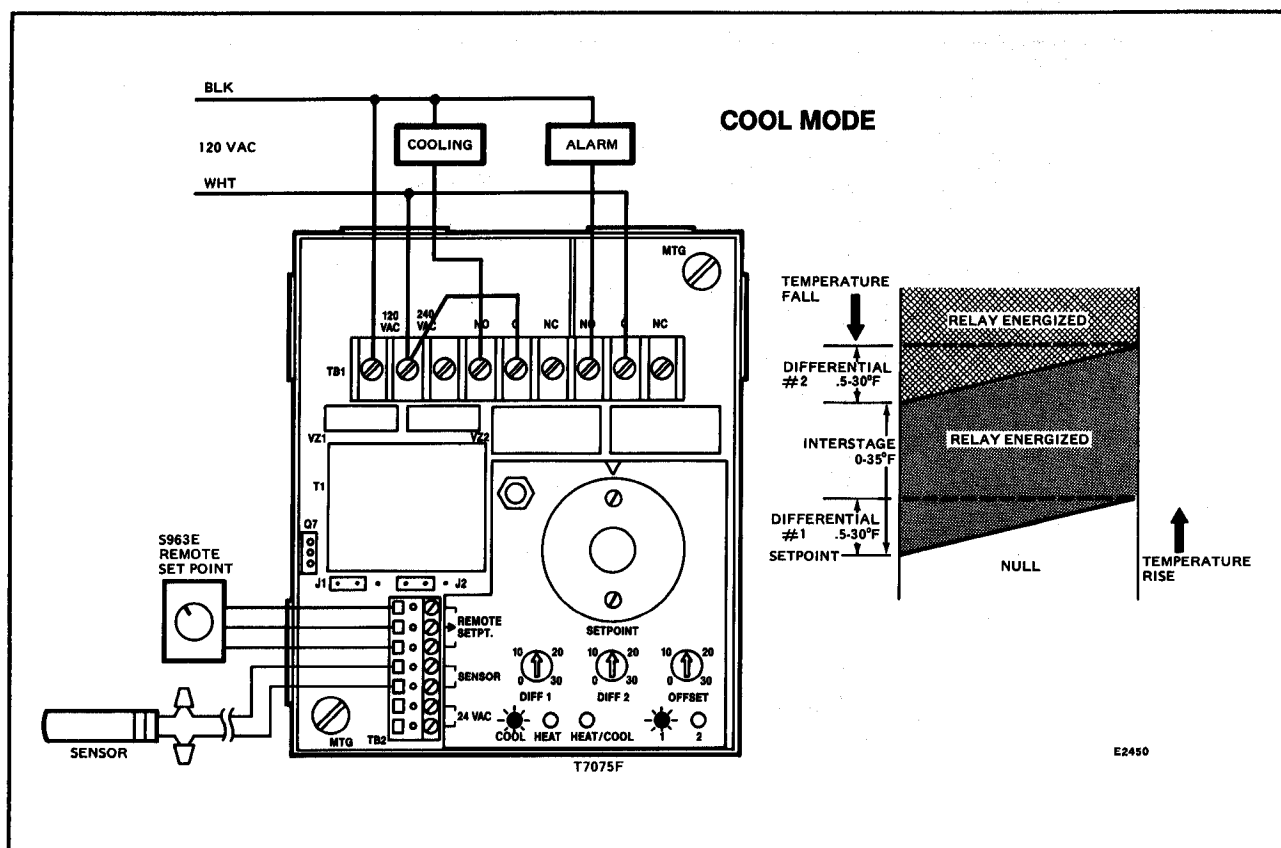
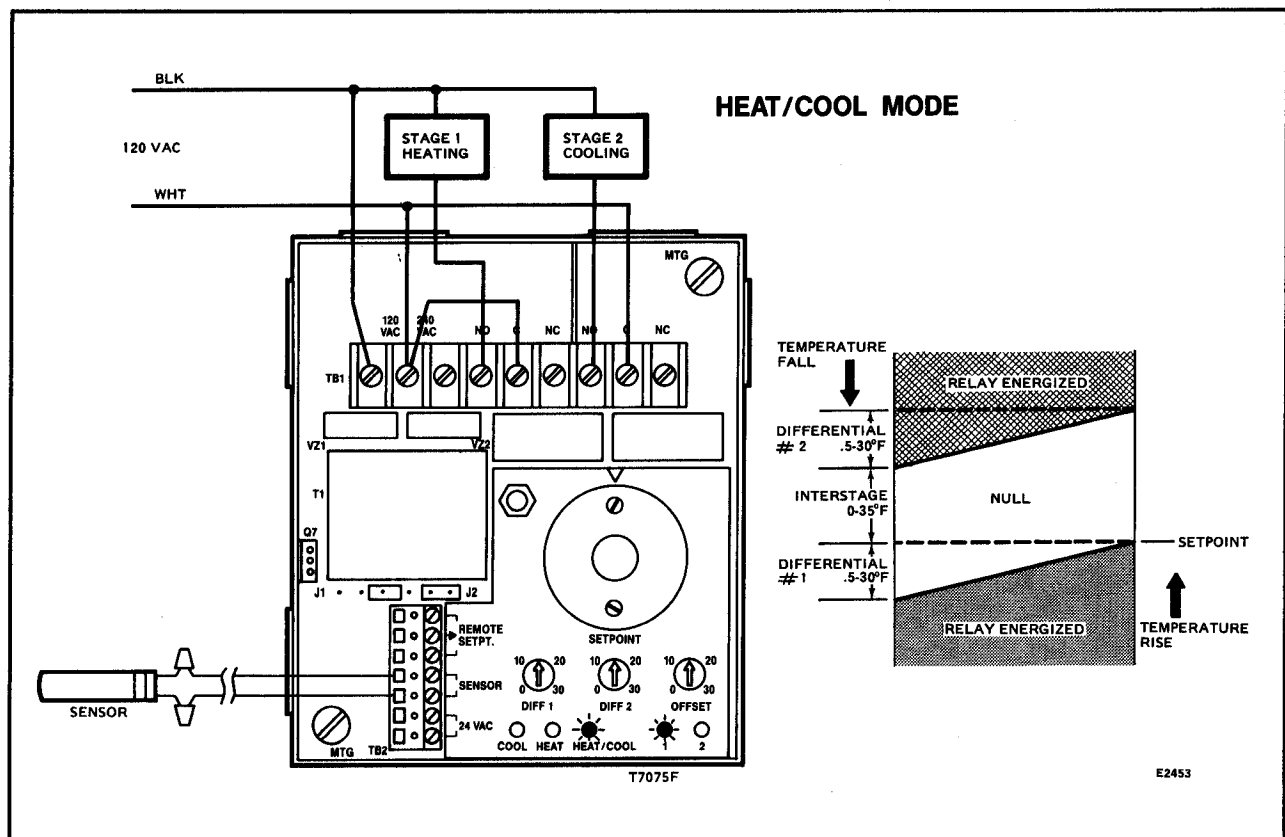


FIG. 12—TWO-STAGE COOLING, 120 Vac INPUT; 120 Vac LOAD.

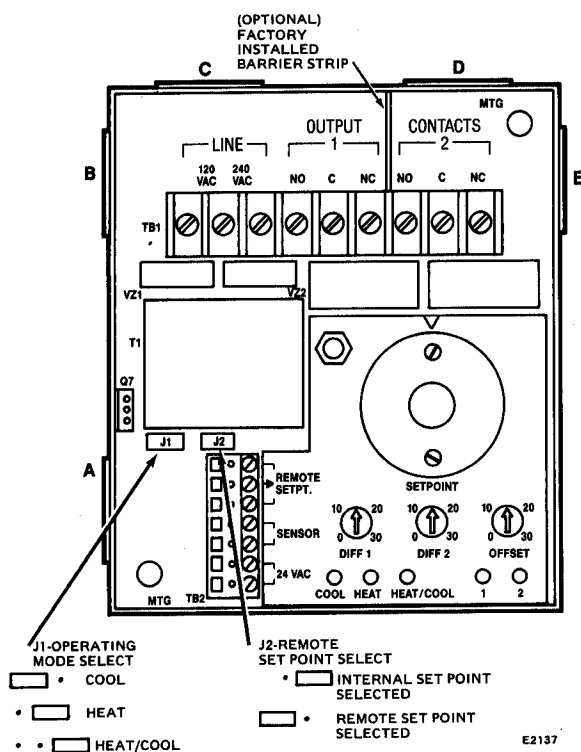




**FIG. 13—SINGLE-STAGE COOLING WITH OVER TEMPERATURE ALARM AND S963E REMOTE SET POINT CONTROL.**



**FIG. 14—HEATING/COOLING, 120 Vac INPUT; 120 Vac LOAD.**



**FIG. 15—LOCATION OF OPERATING CONTROLS, OPTION JUMPERS AND OPTIONAL BARRIER STRIP.**

**NOTE:** When using both high voltage and low voltage loads, make sure the factory installed barrier strip is in position between output contacts 1 and 2. This barrier allows stage 2 to switch low voltage while the device and stage 1 may be powered by line voltage. The position of the barrier strip can be seen easily on Fig. 15 above.