

Installation and Operating Instructions Manual

2E206, 2E207, and 2E728

Please read and save these instructions. Read carefully before attempting to assemble, install, operate or maintain the product described. Protect yourself and others by observing all safety information. Failure to comply with instructions could result in personal injury and/or property damage! Retain instructions for future reference.

Temperature Controls

Description

The single stage Models 2E206 (SPDT) and 2E728 (SPST) and the two stage Model 2E207 (SPDT) are designed to control automatic ventilation or heating systems. The 30° to 110°F temperature range permits use for many space applications.

NOTE: Not for use where a National Electrical Code Article 547 approved control is required. The switches are enclosed and protected. A corrosion resistant, stainless steel helical temperature element is firmly attached to the exterior of the case and when the thermostat is mounted with bulb pointed down, it is protected from falling objects, dirt, etc.

Specifications

MODEL 2E728: One SPDT switch (one set of contacts opens or closes on temperature rise.

MODEL 2E206: One SPDT switch (one set of contacts opens on temperature rise as the other set closes simultaneously).

MODEL 2E207: Two SPDT switches, with one stage operating 3°F higher than the other stage.

Range: 30° to 110°F. (140°F maximum overrun temperature).

Differential: Approximately 3½°F. (Each switch has this differential on Model 2E207).

Temperature between stage: (Model 2E207) This difference is fixed; the low



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Figure 1

stage makes contacts R to Y at the dial setting while the high stage makes contact approximately 3°F above the dial setting.

Case: .062" Galvanized steel.

Cover: .025" cold rolled steel. Gray baked enamel finish.

Contact Unit: Snap acting contacts in dust protected enclosure.

ELECTRICAL RATINGS

MODELS 2E206 & 2E728

AC Voltage	120	208	240	277
Full load amps	16.0	9.2	8.0	—
Locked rotor amps	96.0	55.2	48.0	—

Model 2E728 SPST:

Non-inductive or resistance load amps (SPST Rating) (not lamp loads)	22.0	22.0	22.0	22.0
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Model 2E206:

Non-Ind.	When connected—SPST	22.0	22.0	22.0	22.0
Ind.	When connected—SPDT	16.0	9.2	8.0	7.2
Pilot duty		125 VA, 24/600 VAC			

MODEL 2E207

AC Voltage	120	208	240	277
Full load amps	16.0	9.2	8.0	—
Locked rotor amps	96.0	55.2	48.0	—

Non-inductive or resistance load amps (not lamp loads)

16.0	9.2	8.0	7.2
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Pilot duty 125 VA, 24/600 VAC

NOTE: When used as a two circuit switch, the total connected load must not exceed 2000 VA.

General Safety Information

1. Make certain that the electrical ratings of the thermostat conform to the power source and to the load(s) being controlled. Loads exceeding the rating of the thermostat should be handled with a suitably rated relay or motor starter.

2. Disconnect all power before

installing or servicing. If the power disconnect is out of sight, lock it in the open position and tag it to prevent unexpected application of power. Failure to do so could result in fatal electric shock.

WARNING Do not depend upon the thermostat as the sole means of disconnecting power when installing or servicing the product it is controlling. Always disconnect

power at the main circuit breaker as described above. Failure to do so could result in fatal electric shock.

3. Special attention must be given to any grounding information pertaining to this thermostat and to any other equipment associated with its installation and use. To ensure a proper ground, the grounding means must be checked by a qualified electrician.

Temperature Controls

General Safety Information (Continued)

4. This thermostat is intended ONLY for permanent installation in accordance with the United States National Electrical Code (NEC), all applicable local codes and ordinances, and all sections of this manual. All wiring should be done by a qualified electrician, using copper wire only.
5. This thermostat is intended for general heating or cooling ONLY. It must NOT be used in potentially dangerous locations such as flammable, explosive, chemical-laden or wet atmospheres.
6. These thermostats are designed for use only as operating controls. Where an operating control failure would result in personal injury and/or loss of property, it is the

responsibility of the installer to add devices (safety, limit controls) or systems (alarm, supervisory systems) that protect against, or warn of control failure.

7. Use this thermostat as an operating control only.
8. In cases in which property damage may result from malfunction of the thermostat, a backup system should be used. Where critical or high value products are to be maintained, an approved temperature limit should be wired in series with this thermostat. In less critical applications, a second thermostat with alarm contacts can be used to provide redundancy.

Installation LOCATION

Mount control 5 to 6 feet above the floor where it will be exposed to the

average temperature of the controlled space. Do not mount control where it will be affected by unusual heat or cold such as directly exposed to body heat or in sunlight. Avoid locations near a door, window or other opening. Do not mount on an outside wall.

MOUNTING

CAUTION Do not dent or deform the sensing bulb of this control. A dent or deformation will change the calibration and cause the control to cycle at a temperature lower than the dial setting.

CAUTION On rough mounting surface use top two mounting holes only. When you mount this control on an uneven surface and pull all four mounting screws down tight, you can twist the case enough to affect thermostat calibration and operation.

Dimensions

Performance specifications appearing herein are nominal and are subject to accepted manufacturing tolerances and application variables.

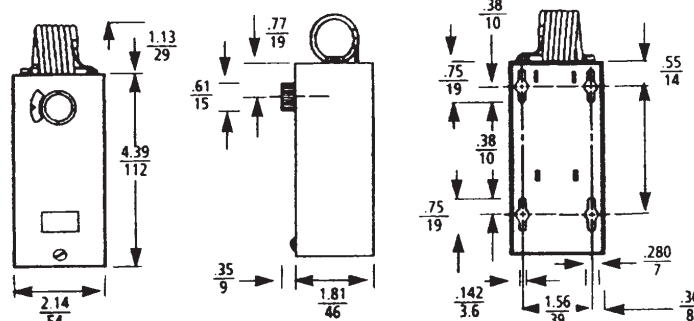


Figure 2 - Dimensions in inches/millimeters

Wiring Diagrams

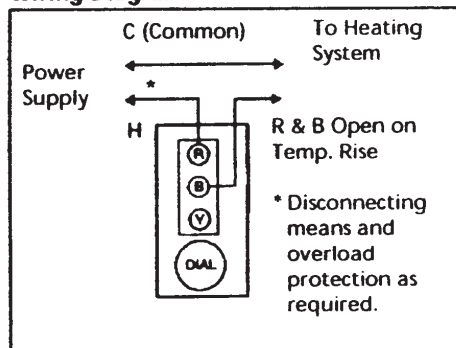


Figure 3 - Model 2E206 in Typical Heating Control Circuit

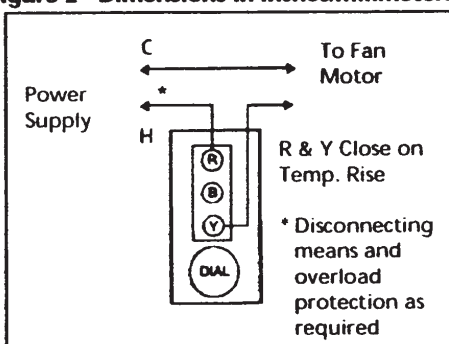


Figure 4 - Models 2E206 & 2E728 in Typical Ventilating or Cooling Control Circuit (Terminal B is not used on Model 2E728)

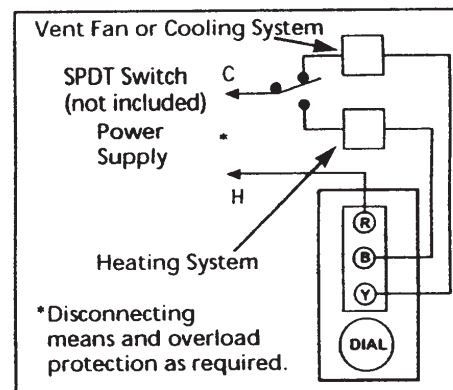


Figure 5 - Model 2E206 in Control of Heating and Ventilating Systems

Models 2E206, 2E207, and 2E728

Installation (Continued)

WIRING

All wiring should be done in accordance with applicable codes, ordinances and regulations. Figures 3, 4 and 5 illustrate typical wiring of Models 2E206 and 2E728 for control of heating, cooling and combination heating-cooling control systems (copper conductors only).

NOTE: Letters R, B and Y (red, blue and yellow) refer to color of paint dots near terminals.

Figure 6 shows typical wiring for the control of a two speed ventilating fan. When control temperature element reaches the dial settings of Model 2E207, the low temperature switch starts the fan on low speed. If the space temperature continues to rise, the high temperature switch supplies power to the high speed motor winding while disconnecting the low speed winding.

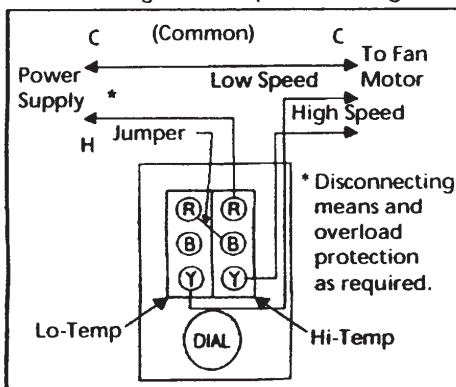


Figure 6 - Model 2E207 in Typical Two-Speed Ventilating Fan Control Circuit

Figure 7 shows Model 2E207 in a typical hook-up for a two-volume fan application. The damper motor will be energized when the temperature reaches the dial setting. If the temperature continues to rise, the fan motor will be energized by the high temperature switch.

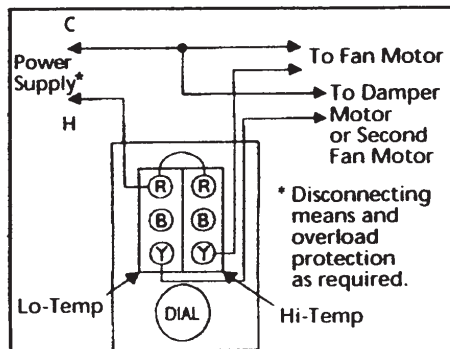


Figure 7 - Model 2E207 in Control of Single Speed Ventilating Fan and Volume-Increase Damper Motor

Model 2E207 can also be used to control a combination heating and ventilating or cooling system, as shown in Figure 8. A temperature increase to the dial setting will turn off the heating system when the R-B contacts of the low temperature switch break. An increase in temperature of about 3°F will turn on the fan or cooling system through the R-Y contacts of the high temperature switch.

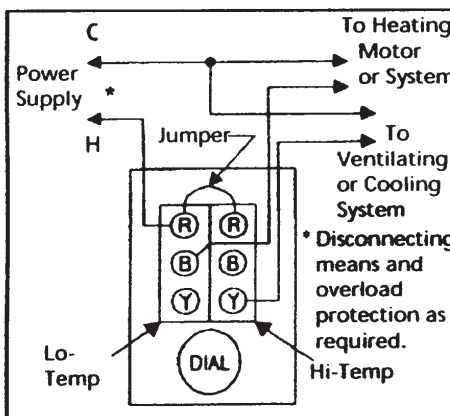


Figure 8 - Typical Wiring of Heating and Cooling Devices to Model 2E207 Two-Stage Thermostat (Automatic Changeover)

Figure 9 illustrates typical wiring of Model 2E207 for control of two stages of heating. As the space temperature decreases to the dial setting, the high temperature switch will make R-B turning on the first stage of heating. If the temperature continues to drop (about 3°F) the low temperature switch will make R-B turn on the second stage of heating.

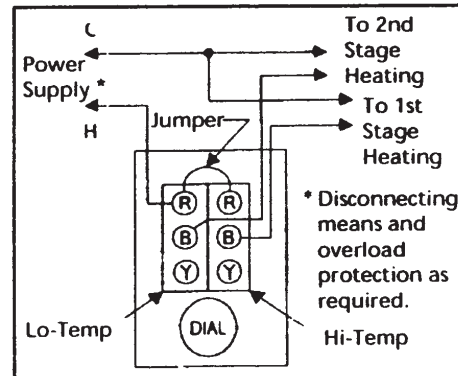


Figure 9 - Typical Wiring of two-Stage Heating

CHECKOUT PROCEDURE

Before leaving the installation, a complete operating cycle should be observed to see that all components are functioning properly.

Check for correct operation in the following manner:

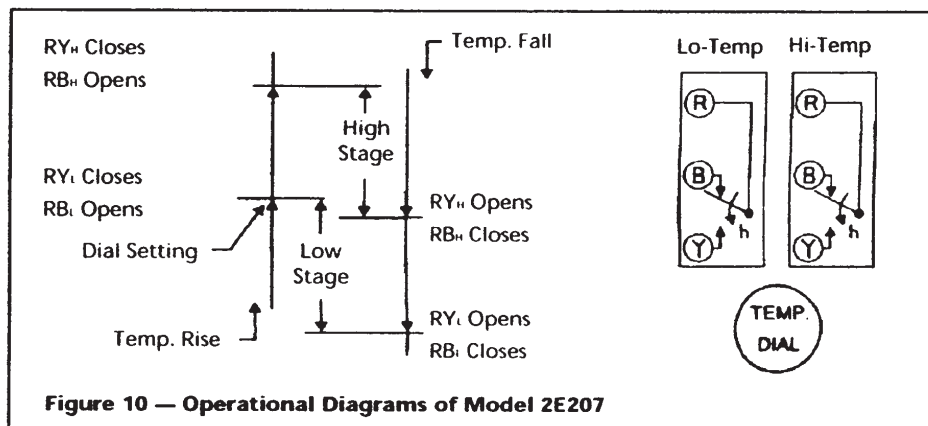
1. Models 2E206 & 2E728 — Ventilating or Cooling System: Turn dial clockwise to a setting above space temperature. Fan or cooling system should be off. When dial is turned counterclockwise (lower temperature setting), the fan or cooling system should turn on approximately at the dial setting.
Model 2E206 — Heating System: Turn dial clockwise above the space temperature; the heating unit should be on. When dial is turned counterclockwise (lower temperature setting), the heating unit should turn off approximately at the dial setting.
2. Model 2E207 — If hook-up is similar to Figure 6, fan should start at approximately space temperature and should change to high speed as the dial is turned counterclockwise to a lower temperature setting. If wiring is similar to Figure 7, the damper should open as the dial is turned counterclockwise (lower temperature setting). The devices should act in reverse sequence when the dial is turned clockwise.

Temperature Controls

Operation

Figure 10 illustrates the operation of Model 2E207. On a temperature increase to the dial setting, the circuit between R and Y of the low stage switch (RYL) closes. Simultaneously the circuit between R and B (RBL) opens. On a further increase in temperature the high stage switch operates and closes (RYH) while simultaneously opening (RBH). The reverse sequencing takes place on a temperature fall.

NOTE: No Replacement Parts Available.



Troubleshooting Chart

Symptom	Possible Cause(S)	Corrective Action
Models 2E206 & 2E728		
Cooling or fan does not operate	1. Improper wiring 2. Thermostat dial set above space temperature	1. Check wiring 2. Set dial to lower temperature
Cooling or fan runs continuously	1. Improper wiring 2. Thermostat dial set below space temperature	1. Check wiring 2. Set dial to higher temperature
Model 2E206		
System operates in reverse	Improper wiring	Check wiring
Heating unit does not operate	1. Improper wiring 2. Thermostat dial set below space temperature	1. Check wiring 2. Set dial to higher temperature
Heating unit runs continuously	1. Improper wiring 2. Dial set above space temperature	1. Check wiring 2. Set dial to lower temperature
Model 2E207		
Cooling or fan does not operate	1. Improper wiring 2. Thermostat dial set too high	1. Check wiring 2. Adjust dial to lower setting
Cooling or fan runs continuously	1. Improper wiring 2. Thermostat set too low	1. Check wiring 2. Adjust to higher setting
Heating does not operate (Figure 9)	1. Improper wiring 2. Thermostat set too low	1. Check wiring 2. Adjust thermostat to higher setting. First stage of heating should come on when dial setting equals space temp. As dial is adjusted to higher temp. (3°F) second stage of heating unit should come on
Heating system runs continuously	1. Improper wiring 2. Thermostat set too high	1. Check wiring 2. Adjust to lower setting
System runs in reverse	Improper wiring	Check wiring