

### FEATURES

120/240 VAC Operation  
(Field Selectable)  
Sub-panel Mount  
Dual Solid State Outputs  
Thermistor, RTD, and  
Thermocouple Sensor Inputs  
Remote or Integral Set Pot  
Range Change Possible with  
Change of Bridge Board  
Sensor Change Possible with  
Change of Bridge Board  
Auxiliary Output Indication  
Program Input Bridge Boards  
Output One: Time Proportioning; and Output Two: Choice of Time Proportioning or on-off.

### GENERAL

The Series 250 is a sub-panel mount, dual output, heat/cool temperature controller. The control mode is time proportioning for the primary output and a choice of time proportioning or on-off for the secondary output. The secondary output is slaved to the primary output and is adjustable from 5° to 100°F, either above or below the primary. The standard controller comes with the adjustment above the primary, but an option allows for the adjustment to be made below the primary. Outputs are dual solid state zero switching triacs.

The controller will accept thermistor, RTD, or thermocouple inputs. The standard bridge boards will drive a full scale analog meter and the special bridge boards will feature a 5mv/LSD output capable of driving a digital meter. The special bridge boards will accept the standard set point assemblies or will accept a 5 mv/LSD program input.

### SPECIFICATIONS:

#### CONTROL MODE:

- 1) Output One is Time Proportioning.
- 2) Output Two is Time Proportioning or On/Off.

**PROPORTIONAL BAND:** Adjustable, typically 0 to 50°F. When at 0°F, the controller reverts to an on-off mode. Switching sensitivity is 2°F when in an on-off mode.

**CYCLE RATE:** Fixed. Typically 10 seconds.

**NULL BAND:** Second set point adjustable from 5°F to 100°F either above or below set point.

**SENSOR:** Thermistor, RTD, or thermocouple available.

#### OUTPUTS:

- 1) Dual solid state zero switching triacs rated at 1 ampere, 120/240V. Note: Load current must be 0.05 amperes minimum to insure proper triac switching.
- 2) Heating: Solid state zero switching triac rated at 15 amperes, 120/240V. Note: Load current must be 0.1 ampere minimum to insure proper triac switching.  
Cooling: Solid state zero switching triac rated at 1 ampere, 120/240V. Note: Load current must be 0.05 amperes minimum to insure proper triac switching.

#### AUXILIARY OUTPUTS:

- 1) On the standard bridge boards available, there is a 0-1 mA output to drive a calibrated full scale analog meter.
- 2) On the special bridge boards available, there is a 5 mv/LSD output to drive a digital meter. RTD models only.

**AUXILIARY INPUT:** On the special bridge boards, there is a program input that accepts a 5 mv/LSD signal.

**LINE VOLTAGE:** 120/240 VAC,  $\pm 20\%$ , 50/60 Hz. (field selectable).

**POWER CONSUMPTION:** Less than 3.5 V.A.

**OPERATING AMBIENT:** 30 to 130°F.

#### CONTROL ACCURACY:

Typically  $\pm \frac{1}{2}^{\circ}\text{C}$  depending on design of the thermal system.

#### SET POINT SHIFT W/LINE VOLTAGE:

$\pm 20\%$  shift in line voltage will produce a set point shift of less than  $\pm .25\%$  of span.

**SET POINT SHIFT W/AMBIENT:** Typically 5 microvolts/°F ambient referred to the input (thermocouple model).

Typically  $\pm 1^{\circ}\text{F}$  (RTD and thermistor models).

#### ISOLATION:

Thermocouple Models — T.C. input to line and load.

D.C. resistance:  $10^{11}$  ohms. Capacitance: 50 pf.

RTD and Thermistor Models — Sensor and control circuitry are isolated from line and load.

**COLD JUNCTION COMPENSATION:** Thermocouple Models — Automatic; thermocouple is connected directly to unit.

#### SENSOR PROTECTION:

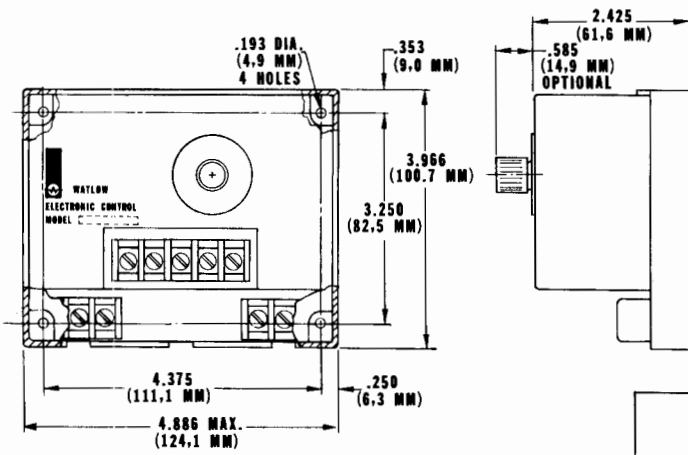
RTD and Thermocouple Models — In the event of an open sensor, load power will de-energize.

Thermistor Sensor — In the event of a shorted sensor, load power will de-energize.

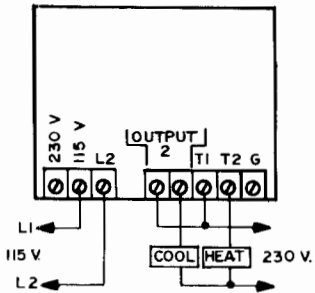
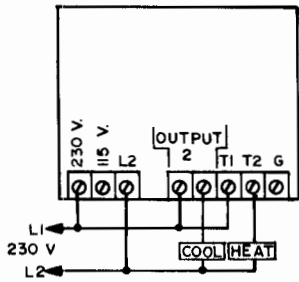
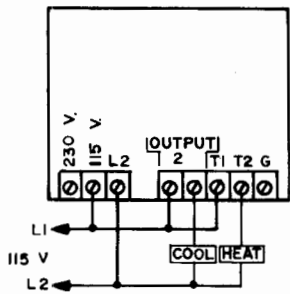
WATLOW WINONA, INC.

**DIMENSIONAL OUTLINE**

**SENSOR/INDICATION (UPPER BOARD)**



**CONTROL (LOWER BOARD)**



**ORDERING INFORMATION**

