GENERAL

The Series 600 temperature controller is packaged in a panel-mounted 1/8 DIN case for easy removal or replacement. The controller responds to a thermocouple sensor and provides time proportioning control to a heater load. The output is solid state and switching occurs at the zero crossing of the A.C. supply. This reduces electrical noise and surges on the A.C. line. L.E.D. status indicators show the operator the load temperature relative to the setpoint.

FEATURES

- 115/230 VAC Operation (Field Selectable)
- Solid State Output (Triac)
- 5 to 50°F Proportional Band (Field Adjustable)
- Time Proportioning Control Mode
- Type "J" or "K" Thermocouple Input (Factory Selectable)
- Calibrated in °F and °C
- Open Sensor Protection
- Output Signal For Driving External O-Ima Meter
- Status L.E.D. Indicators Show The Load Temperature Relative To The Setpoint Temperature
- Internal Extractor For Removing Assembly From The Case
- Panel Saving, Exact 1/8 Din Case
- Custom Options Available On Special Order, Consult Factory
SPECIFICATIONS

• LINE VOLTAGE: All models 115/230 VAC ± 10%, 50/60 HZ. (Field Selectable).
• POWER CONSUMPTION: Less than 4 V.A. at 115 VAC, 60 HZ.
• OPERATING AMBIENT: 30 to 130°F.
• LOAD OUTPUT: Triac, rated at 10 amps., at 240 VAC, 50/60 HZ.
• INDICATION OUTPUT: An output signal (proportional to the load temperature) for driving an external O-Ima meter.
• SENSOR INPUT: Type "J" or Type "K" thermocouple (not both).
• CONTROL MODE: Time proportioning with a nominal one second cycle time at 50% duty cycle.
• PROPORTIONAL BAND: Internally adjustable over the range of 5°F to 50°F.
• STATUS INDICATORS: The controlled temperature relative to the chosen setpoint is indicated by three status indicators.
  1. If the control point is above * the setpoint, "HI" temperature condition, the RED L.E.D. will be on.
  2. If the control point is below * setpoint, "LO" temperature condition, the YELLOW L.E.D. will be on.
  3. If at control point and the controller is cycling, the GREEN L.E.D. will be on.
  *Greater than 2.5°F with the proportional band pot CCW and less than 35°F with proportional band pot CW.
• OPEN SENSOR PROTECTION: An open thermocouple will cause the controller output to turn off and the RED L.E.D. status indicator will turn on.
• SETPOINT CALIBRATION: ± 1% of set pot span or one minor scale division.
• SETPOINT STABILITY: Setpoint shift with line variation of ± 10% — less than 0.1% of span or 1°F.
• WARM UP TIME: Rated accuracy after operating 15 minutes at rated line voltage and ambient temperature of 75°F.
• THERMOCOUPLE COMPENSATION: Automatic.
• WEIGHT: Less than 24 oz.

ORDER INFORMATION

OUTPUT
A. 10 amp. Triac

TEMPERATURE RANGE CODE
600. 0 to 250°F/-18 to 121°C, Type "J"
601. 0 to 600°F/-18 to 315°C, Type "J"
602. 0 to 1000°F/-18 to 538°C, Type "J"
604. 0 to 2000°F/-18 to 1093°C, Type "K"

ACCESSORIES
1. O-Ima METER
   RANGE
   0-250°F   0-600°F   0-1000°F   0-2000°F
   ORDER NO. 7007-0001-0714 7007-0001-0707 7007-0001-0712 7007-0001-0711
2. EXTENDER BOARD
   ORDER NO. 007-1022
3. TRIAC
   ORDER NO. 802-291

EXAMPLE: 600A-0600-0000 = OUTPUT: 10 amp. TRIAC
   TEMPERATURE RANGE: 0-250 F/-18-121 C, TYPE J
1. Observe thermocouple type (check sticker on bottom of unit for proper T.C. type) and polarity (red lead is negative). Wherever possible, thermocouple leads should be twisted pairs routed separately from other wiring or equipment. Wherever heavy electrical currents are being switched or other electrically noisy devices are present, such as, contactors, solenoids, motors, etc. . . . It is recommended that shield thermocouple lead wire be used with the shield grounded at the sensor end only.

2. All wiring and fusing should conform to the National Electric Code NFPA70. Contact your local Board for additional information.

3. LI (hot side) should be the side that is fused and connected to the T2 terminal of the triac.

**PROPORTIONAL BAND ADJUST**

**PROCEDURE**

Initially turn Proportional Band (P.B.) Pot completely clockwise. To adjust Proportional Band rotate P.B. pot CCW 1/4 turn and observe system stability. Repeat until load temperature begins to hunt (becomes unstable). When hunting is observed, rotate slowly CW until the system becomes stable. Some systems may be stable enough to allow a minimum Proportional Band setting (completely CCW).

**NOTE:** To remove assembly from enclosure see Installation Information.
To install, remove the unit from its enclosure. First, remove the lens. This is done by inserting a small object into the lens notch and prying up to pop the lens out. The interior of the unit is being held in place entirely by the P.C. edge connector. There are no screws to remove to get the unit out of the enclosure. Behind the lens there is a black “extractor” on the left side fastened to the lower P.C. board. By prying this out, first by fingernail, then by finger, the leverage will force the unit out of its enclosure. Turn the installation screws (located inside the enclosure, at the rear) out approximately 1/4 inch. Carefully insert the unit into the panel cutout. Slide the mounting bracket back so that the ears spring free. Now turn the installation screws back in to secure the unit in place.

To re-install the unit, first swing the “extractor” to the left so it is flush with the P.C. board. Now slide the unit into the enclosure and very firmly press on the edge of the P.C. board until the unit is held firmly by the connector. Now the lens can be snapped into place by inserting the top first and pressing in on the bottom.

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**TROUBLESHOOTING CHART**

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<thead>
<tr>
<th>SYMPTOM</th>
<th>DIAGNOSIS</th>
<th>REMEDY</th>
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| None of the status L.E.D. indicators lit. | Check for presence or proper connection of A.C. input:  
  A.) If present and proper  
  B.) If not present and proper.             | Return unit to factory.  
  Connect per Electrical Connection diagram. |
| Red L.E.D. lit.              | 1. Open thermocouple. ...  
  2. Temperature above setpoint. ... | Repair or replace thermocouple.  
  Unit OK.                                   |
| Yellow L.E.D. lit.           | 1. Polarity reversed on thermocouple. ...  
  2. Temperature above setpoint. ... | Connect per Electrical Connection Diagram.  
  Unit OK.                                   |
| Load will not turn on.       | 1. Temperature at setpoint. ... | Repair or replace thermocouple.  
  Connect per Electrical Connection Diagram. |
| Load will not turn off.      | 1. Polarity reversed on thermocouple. ...  
  2. Check triac. Remove power and measure resistance from pin 6 to 7. If short circuited. ...  
  If not short circuited. ... | Order P/N 802-291 from factory.  
  Return unit to factory.  
  Adjust Proportional Band Pot per procedure. |
| Poor temperature control     | 1. Load temperature unstable. ... |                                                            |

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WWW

2/82