Temperature Controller

FEATURES

- Relay output
- Din package
- Front panel molded from high impact Lexan polycarbonate
- RTD, thermistor or T.C. sensors
- 120/240 VAC operation (field selectable)
- Line isolated
- Proportional control
- Adjustable time proportioning
- Manual reset
- Load power indication

GENERAL DESCRIPTION

This Temperature Controller is designed for use with either RTD, thermistor or thermocouple sensors, depending on the application. The controller provides an adjustable time proportioning SPST relay output with an adjustable proportional band and manual reset to match the thermal characteristics of the controlled load. The panel mount din case features an easily read dial scale and high resolution set pot of instrument quality to provide excellent set point accuracy. The high torque feature of the pot prevents set point changes due to equipment vibration.

SPECIFICATIONS:

OUTPUT: Relay S.P.D.T.

CONTACT RATING: 10 Amp. resistive at 120 VAC, 5 Amp. resistive at 240 VAC, 50 VA inductive.

LINE VOLTAGE: 120/240 VAC ± 10%, 50/60 Hz.

POWER CONSUMPTION: 2.0 VA (controller only).

INDICATION: Load light in knob indicates when driving current is applied to output relay coil.

OPERATING AMBIENT: 30 to 130°F.

CONTROL ACCURACY: Typically ± ½°C, depending on design of thermal system.

SET POINT CALIBRATION: Based on 50% duty cycle.

SET POINT CALIBRATION ACCURACY:
- ± 1% of span, RTD and Thermistor Models.
- ± 1% of span for T.C. resistance of less than 100 ohms, T.C. Models.

SET POINT SHIFT W/AMBIENT:
Typically 5 microvolts/°F, ambient referred to the input, T.C. Models.
Typically ± 1°F, RTD and Thermistor Models.

SET POINT SHIFT W/LINE VOLTAGE:
± 10% change in line voltage will produce a set point shift of less than ± .25% of span.

ISOLATION: T.C. Models, T.C. input to load and line.
D.C. Resistance 10¹¹ Ohms Capacitance 50 pf
RTD and Thermistor Models—sensor and control circuitry are isolated from line and load.

SENSOR PROTECTION:
T.C. Models—In the event of an open sensor, load power will de-energize.
RTD Models—In the event of an open sensor, load power will de-energize.
Thermistor Models—In the event of a shorted sensor, load power will de-energize.

COLD JUNCTION COMPENSATION:
T.C. Models (Automatic), T.C. is connected directly to unit.

PROPORTIONAL BAND: Adjustable, typically 5 to 50°F.

TIME PROPORTIONING: Adjustable 2 to 20 seconds.

MANUAL RESET: Adjustable over 100% of proportional band.
ORDERING INFORMATION

Specify model number, temperature range, and sensor.

Model 30-01-01 RTD (100 ohms Plat.) Model
Model 30-03-01 Thermistor Model
Model 30-06-01 Thermocouple Model

Temperature Range: See Range Chart I.
FEATURES
Plug-in Design
Relay output, plug-in for easy replacement
Null indication
Power on indication (L.E.D.)
Load indication (L.E.D.)
120/240 VAC operation (field selectable)
Automatic reset (field selectable)
Anti-reset
Adjustable proportional band
ON/OFF or adjustable cycle time (field selectable)
DIN Package
Front panel molded of high impact Lexan polycarbonate

GENERAL DESCRIPTION
The Model 30-06-02 plug-in din temperature controller utilizes a plug-in relay output and is designed for use with thermocouple sensors. The unit features an analog drum set point potentiometer and null indication. The unit provides an adjustable proportional band and is field selectable for ON/OFF mode or control with an adjustable cycle time. The unit also provides automatic reset but is supplied with reset disabled. An anti-reset is provided which would inhibit reset action when outside the proportional band. The unique plug-in feature allows the operator easy access to the controller for selection of control modes or controller replacement without removing any external wiring or main case mounting.

SPECIFICATIONS:
OUTPUT: Relay S.P.D.T. (Form C).
CONTACT RATING:
10 A resistive at 120 VAC, 5 A resistive at 240 VAC, 50 VA inductive.
LINE VOLTAGE:
120/240 VAC ± 10%, 50/60 Hz. (Selected with internal jumper-unit supplied with connection for 120 VAC operation.)
POWER CONSUMPTION: Less than 6.0 VA.
INDICATION:
Analog null meter ± 100% of proportional band. Load light is on when driving current is applied to output relay coil. Power on light indicates power applied to unit.
OPERATING AMBIENT: 30 to 130°F.
CONTROL ACCURACY:
Typically ± 1/2°C, depending on design of thermal system.
SET POINT CALIBRATION ACCURACY:
± 1% of span for thermocouple resistance of less than 100 ohms.
SET POINT SHIFT W/AMBIENT:
Typically 5 microvolts/°F ambient referred to the input.
SET POINT SHIFT W/LINE VOLTAGE:
± 10% change in line voltage will produce a set point shift of less than ± .25% of span.
ISOLATION: Thermocouple input to load and line.
D. C. Resistance: 10¹¹ ohms. Capacitance: 50 pF
SENSOR PROTECTION:
In the event of an open sensor, load power will de-energize. Can be converted to downscale protection by adding 10 meg internal resistor.
COLD JUNCTION COMPENSATION:
Automatic, thermocouple is connected directly to unit.
PROPORTIONAL BAND: Adjustable 5°F ± 1 to 50°F ± 5.
CYCLE RATE:
Adjustable 5 sec. ± 1 to 30 sec. ± 5. Unit supplied connected as proportional unit with adjustable cycle time but can be converted to ON/OFF control by adding internal jumper.
RESET:
Automatic and fixed time constant, equivalent to 0.5 repeats per minute. Controller supplied with a jumper wire across reset capacitor to disable auto-reset function. To enable reset function, remove jumper wire by cutting between turret terminals. Reset time constant can be changed to suit application by replacing "R" on turret terminals.

<table>
<thead>
<tr>
<th>R15</th>
<th>C5</th>
<th>Repeats per minute</th>
</tr>
</thead>
<tbody>
<tr>
<td>470K</td>
<td>25 mfd</td>
<td>5.0</td>
</tr>
<tr>
<td>4.7 Meg</td>
<td>25 mfd</td>
<td>0.5 (standard)</td>
</tr>
<tr>
<td>10 Meg</td>
<td>120 mfd</td>
<td>0.05</td>
</tr>
</tbody>
</table>

ANTI-REST:
Standard, inhibits auto reset function at limit of proportioning band.
STANDARD MOUNTING

ALTERNATE MOUNTING

<table>
<thead>
<tr>
<th>MODE</th>
<th>JUMPERS</th>
<th>BOARD#</th>
</tr>
</thead>
<tbody>
<tr>
<td>120 VAC Line</td>
<td>Use W1, W3</td>
<td>A007-798</td>
</tr>
<tr>
<td>240 VAC Line</td>
<td>Remove W1, W3 Add W2</td>
<td>A007-798</td>
</tr>
<tr>
<td>Downscale</td>
<td>Add R25 (10 meg.)</td>
<td>A007-797</td>
</tr>
<tr>
<td>Protection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>On/Off Control</td>
<td>Add W2</td>
<td>A007-797</td>
</tr>
<tr>
<td>Reset Enable</td>
<td>Remove W1</td>
<td>A007-797</td>
</tr>
</tbody>
</table>

ORDERING INFORMATION

Specify model number, temperature range and thermocouple type.

Model 30-06-02
Temperature Ranges — See Chart I