

TEMPERATURE CONTROLLERS

7EM 1/8 DIN 3-Digit Dual Display Temperature Controller

Features:

- Thermocouple and RTD Input
- PID and Smart AT Autotuning
- NEMA 4X, IP65
- 100 to 240 Vac Switching Power Supply
- Algorithms for Heat or Heat/Cool Control
- Up to 3 Outputs
- Up to 2 Independent Alarms
- Control Output Disable Function
- Optional Heater Breakdown Detection

Designed specifically for equipment manufacturers who demand tight process control, the 7EM offers outstanding performance and a variety of features in an 1/8 DIN package. The cost effective 7EM is a configurable, Smart AT autotuning heat or heat/cool controller with thermocouple and RTD inputs. It is ideal for applications such as extrusion, food and environmental chambers in which the input range does not exceed 999. It has a bright dual display for process temperature and setpoint and 4 LED beacons for operating status. The 7EM has 3



outputs. OP1 can be a time proportioned relay or SSR for heating. OP2 features a relay or SSR for time proportioned cooling or Alarm 2. OP3 is an optional relay Alarm 2. Alarms can be process, deviation or band type, direct or reverse, with automatic or manual reset, plus a unique optional heater breakdown alarm. The 7EM is available with a 100-240 Vac switching power supply or an optional 24 Vac/Vdc supply. Easy to understand, configure and use, the 7EM provides exceptional value to the industrial user.

Specifications:

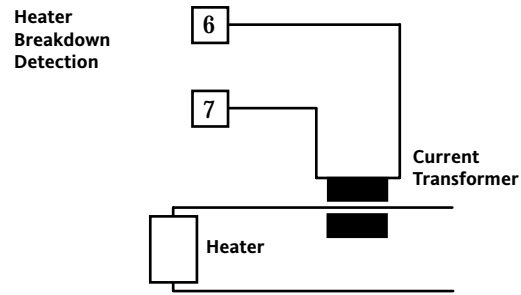
Control Modes:	PID with Smart AT Autotuning, Standby Alarm Sequence
Supply Voltage:	100-240 Vac (+10%, -15%), 50/60 Hz or 24 Vac/Vdc ($\pm 10\%$)
Operating Ambient:	0-50°C, 20-85% RH non-condensing
Inputs:	T/C Types J, K, L, and N (°C, °F); Pt 100 3W RTD (°C, °F) Ranges: See Table E, page 1-21
Current Transformer Input:	(Heater Breakdown Detection) 10 Ω impedance, 50 mA ac max.

Output Ratings:	
Output 1:	Relay, 3A/250V, SPDT, Resistive Time Proportioning Heating Jumper Selectable Logic SSR (unisolated) Logic Level 1: 14 Vdc $\pm 20\%$ @ 20 mA max. (700 Ω min.) 24 Vdc max. $\pm 20\%$ @ 1mA Logic Level 0: Less than 0.5 Vdc
Output 2:	Relay, 2A/250V, SPST, Resistive Time Proportioning Cooling, Alarm 1 Jumper Selectable Logic SSR (unisolated) Logic Levels as OP1
Output 3:	Relay, 2A/250V, SPST, Resistive, NO only Optional Alarm 2 Relay or Heater Breakdown

Mounting: Panel Mount

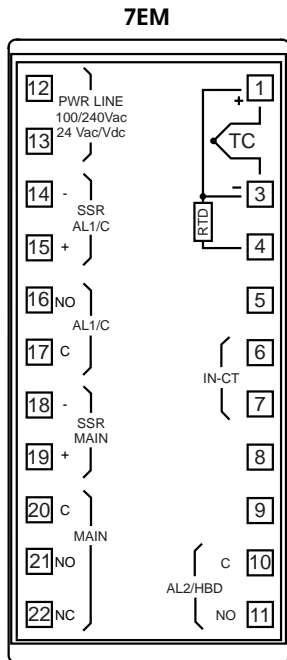
A Variety of Standard and Optional Features

Among the 7EM's standard features are ramp to setpoint, soft start power limiting, sensor break protection, and a standby alarm sequence to mask alarm conditions until the PV reaches the low alarm threshold. There is also an "output off" function which disables the control output, allowing the 7EM to operate as an indicator. The optional Heater Breakdown Detection feature allows measurement of the load by a current transformer, displaying the full scale load current and signaling an alarm condition to Alarm 2 when the current is below a programmed threshold.



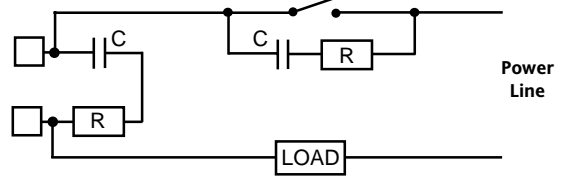
CT Part Number: 7ER-Rx000-000
 x = 1 (10A); x = 2 (25A); x = 4 (50A); x = 5 (100A)

Terminal Connections and Mounting:



Wiring

Do not run input wires with power cabling. Ground shields at one point only. Use compensating cable for thermocouple wiring. Non-isolated logic outputs depend on the SSR for isolation. Relay outputs are internally protected by a varistor. When inductive loads (such as mercury contactors) are used, or external switches are connected in series with internal contacts, high voltage transients may affect performance of the instrument. In this case it is recommended to install an additional RC snubber network across the contacts as shown. Contact Barber-Colman.



External Switch in Series with the Internal Contact
 Snubber Part Number: CZ140398

Mounting

Dimensions: 48W x 96H x 89D mm
 Cutout: 45W (-0, +0.6) x 92H (-0, +0.8) mm
 125 mm min. center-to-center vertical spacing
 60 mm min. center-to-center horizontal spacing
 Weight: 400 gm max.

Ordering Codes:

Model	Input	Control	Output 1	Output 2	Output 3	Power Supply	Reserved
7EM	4	3	1	1			000

Input	Control	Output 1	Output 2	Output 3
4 T/C Type J, K, L & N (°C, °F) Pt100 3W RTD (°C, °F)*	3 PID & Smart AT	1 Jumper Selectable SPDT Relay or SSR Drive (Heating)	1 Jumper Selectable SPST Relay or SSR Drive (Cooling/Alarm 1)	0 None 1 Relay (Alarm 2) 2 Relay (Alarm 2) plus Hbd Input*
Power Supply 3 100 to 240 Vac 5 24 Vac/Vdc		*Order current transformer separately.		