

# TEMPERATURE CONTROLLERS

## 7SP 1/16 DIN 4-Digit Controller Programmer

### Features:

- Universal Input (7 T/C, RTD, mV, V, mA)
- PID and Smart AT Autotuning
- NEMA 4X, IP65
- One 4 Segment Program with Initial Wait
- Tracking and Guaranteed Soak
- Logic Input for Program Start

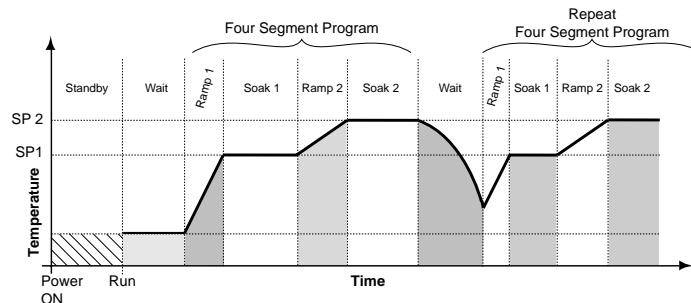


The 7SP 1/16 DIN Controller/Programmer provides fully configurable ramp/soak capability in a PID controller with autotuning in which multiple setpoints, soak duration and controlled ramps are required. It features a dual 4 digit display, 4 front panel pushbuttons and 9 status indicators, giving the operator full information and access to profile and control parameters. Programming features include logic input (SP1 or SP2 select) and front panel program start, event output during program

execution, guaranteed soak, ramp tracking, manual mode selection, end-of-cycle indication, and configurable number of repeats and soak times. Alarms can be process, deviation or band type, direct or reverse, with masking and automatic or manual reset. Light and compact, the 7SP is ideal for such applications as environmental chamber control in which multiple temperature cycles are required. A NEMA 4X faceplate enables its use in dust or washdown conditions.

### 4 Segment Program

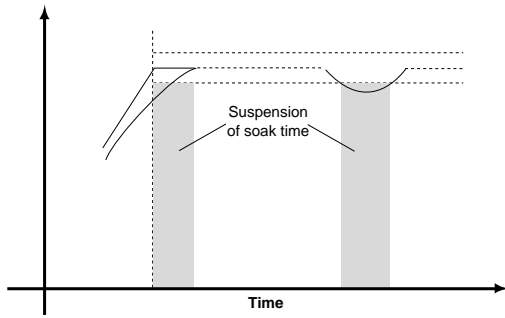
A single 4 segment program is available which can be repeated from 1 to 100 times. Separate delay segments can be defined for the first step and all "wait" steps after a repeat.



### Specifications:

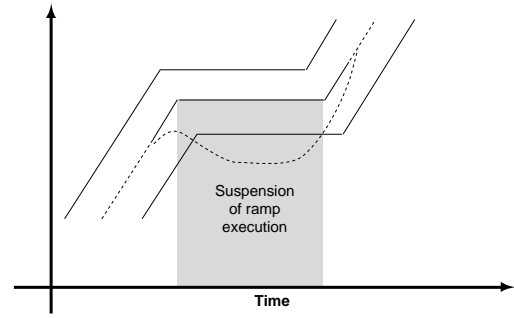
<b>Control Modes:</b>	PID with Smart AT Autotuning, Standby, Manual
<b>Supply Voltage:</b>	100-240 Vac (+10%, -15%), 50/60 Hz
<b>Operating Ambient:</b>	0-50°C, 20-85% RH non-condensing
<b>Inputs:</b>	T/C Types J, K, L, N, R, S & T (°C, °F); Pt 100 3W RTD (°C, °F) Ranges: See Table B, page 1-21; mA <sub>dc</sub> , mV <sub>dc</sub> , V <sub>dc</sub>
<b>Logic Input:</b>	for setpoint select (SP1 or SP2), requires contact rated at 0.5 mA, 5 Vdc minimum

<b>Output Ratings:</b>	
Output 1:	Time Proportioning Relay, 4A/250V, SPST, Resistive (Control)
Output 2:	Time Proportioning Logic SSR (unisolated)
Logic Level 1:	14 Vdc ±20% @ 20 mA max. (700 Ω min.)
Logic Level 0:	24 Vdc max. ±20% @ 1mA
Less than 0.5 Vdc	
Output 2:	Alarm 1 or Event 1, Relay, 2A/250V, SPST, Resistive
Output 3:	Alarm 2 or End-of-Cycle, Relay, 2A/250V, SPST, Resistive
<b>Mounting:</b>	Panel Mount



### Guaranteed Soak

Guaranteed Soak assures that the product receives adequate process time at all required setpoints. Internal comparators continually verify that process values are within acceptable ranges and only decrement timers when acceptable values are found.



### Ramp Tracking

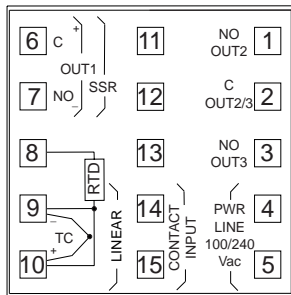
If the process is upset during a ramp, the controller will seek to apply the ramp after the process stabilizes.

### Other Features

The 7SP offers auto/manual selection, alarm standby, Auto Comp™ sensor break and password security.

## Terminal Connections and Mounting:

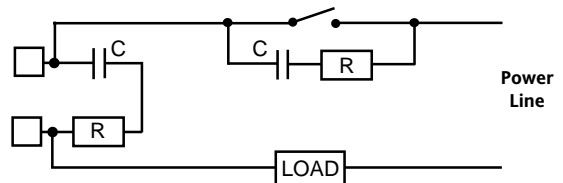
### 7SP



### Wiring

Do not run input wires with power cabling. Ground shields at one point only. Use compensating cable for thermocouple wiring. For logic input, use an external contact with a rating >0.5 mA, 5 Vdc. 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 48H x 122D mm  
Cutout: 45W x 45H mm (-0, +0.6 mm)  
60 mm min. center-to-center vertical spacing  
75 mm min. center-to-center horizontal spacing  
Weight: 450 gm

## Ordering Codes:

Model	Input	Control	Output 1	Output 2	Output 3	Power Supply	Reserved
7SP	9	3		1	1	3	000

Input	Control	Output 1	Output 2	Output 3	Power Supply
9 T/C Type J, K, L, N, R, S & T (°C, °F) Pt100 3W RTD (°C, °F)* 0 to 20 mAdc & 4 to 20 mAdc 0 to 60 mVdc & 12 to 60 mVdc 0 to 5 Vdc & 1 to 5 Vdc 0 to 10 Vdc & 1 to 10 Vdc	3 PID & Smart AT	1 6 Relay SSR Drive	1 Relay (Alarm 1/Event 1)	1 Relay (Alarm 2/ End-of-Cycle)	3 100 to 240 Vac

\* Ranges - See Table B, page 1-21