

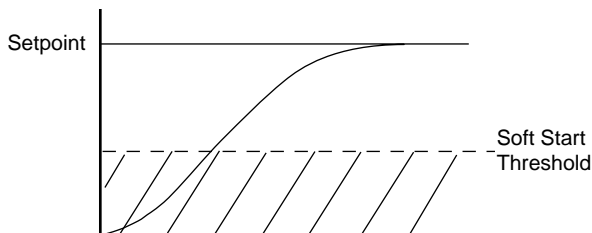
# TEMPERATURE CONTROLLERS

## 7SD, 7SM and 7SH 1/16 DIN 3-Digit Temperature Controllers

### Features:

- Thermocouple and RTD Input
- PID and Smart AT Autotuning
- NEMA 4X, IP65
- Programmable Soft Start Setpoint
- Alarm Standby
- Parameter Password Security
- Heat/Cool Control (7SH)

Designed specifically for equipment manufacturers who demand tight process control, the 7SD, 7SM and 7SH offer outstanding performance and a variety of features in a cost effective 1/16 DIN package. NEMA 4X faceplates allow these units to be used in applications in which washdowns and dust conditions exist. Thermocouple or RTD input and a 3 digit display provide complete coverage for plastics, packaging,

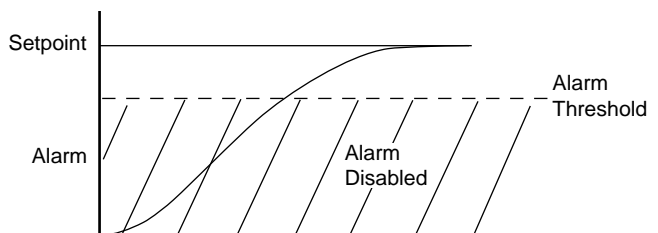


#### Soft Start Setpoint

A configurable threshold can be used to limit output power during initial startup (use this if the impedance of the heating load changes as the process temperature increases).



food, environmental chambers and other cost sensitive applications. The 7SD, 7SM and 7SH provide solutions for heating, heating plus alarm and heating/cooling applications. Alarms can be process, deviation or band type, direct or reverse, with manual reset. Easy to understand, set-up and use, these controllers provide exceptional value to the industrial user.



#### Alarm Standby

Alarm Standby can be used to mask alarm conditions if process low alarms are employed and the process has not yet reached the alarm threshold.

### Specifications:

<b>Control Modes:</b>	On/Off, PID with Smart AT Autotuning Heat, Heat-Cool (7SH) and Alarm
<b>Supply Voltage:</b>	100-240 Vac (+10%, -15%), 50/60 Hz or 24 Vac/Vdc (±10%)
<b>Operating Ambient:</b>	0-50°C, 20-85% RH non-condensing
<b>Inputs:</b>	T/C Types J, K, L & N (°C, °F); Pt 100 3W RTD (°C, °F) Ranges: See Table A, page 1-21

#### Output Ratings:

Output 1:	Time Proportioning Relay, 3A/250V, SPDT, Resistive (Control)
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:	Time Proportioning Relay, 1A/250V, SPST, Resistive (Cooling - 7SH only)
Output 2:	Alarm Relay, 1A/250V, SPST, Resistive

**Mounting:** Panel Mount

### Model 7SD - Deviation Display

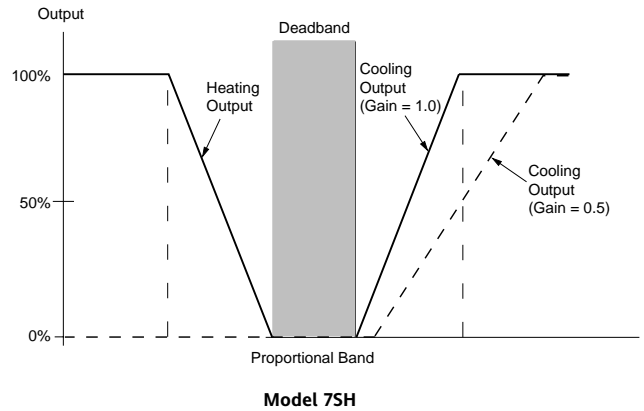
The 7SD is a 1/16 DIN heat (OP1) plus optional alarm (OP2) controller with a single 3 digit, 7 segment display, bargraph deviation display and front panel LED's to indicate heat ON, alarm ON and Autotune ENABLED. Configuration and calibration protection is afforded by both a configuration password and an internal jumper. When loss of sensor input occurs, the Auto Comp™ sensor break feature maintains control at the present percent output.

### Model 7SM - Dual Display

The 7SM has all the features of the 7SD (except the bargraph display) but with a dual 3 digit, 7 segment display to show both process value and setpoint.

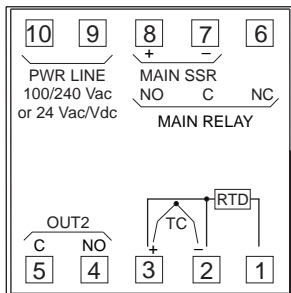
### Model 7SH - Heat/Cool

The 7SH controller is a 7SM with heat/cool capability (OP2 relay = Cool). The relative cooling gain can be set from 1.0 to 0.2 (1x to 5x the heating proportional band). Configurable overlap and deadband allows customization of the 7SH for unique process heat/cool requirements.



## Terminal Connections and Mounting:

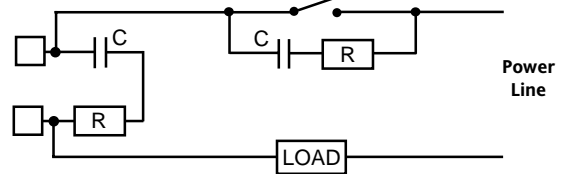
### 7SD, 7SH, 7SM



### 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. The OP1 and OP2 relays 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.

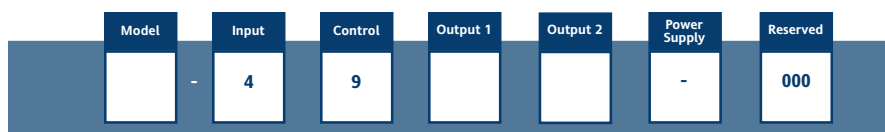


External Switch in Series with the Internal Contact  
Snubber Part Number: CZ140398

### Mounting

Dimensions: 48W x 48H x 100D 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: 160 gm

## Ordering Codes:



Model	Input	Control	Output 1	Output 2	Power Supply
7SD Deviation Display 7SH Heat/Cool Controller 7SM Dual Display Controller	4 T/C Type J, K, L & N (°C, °F) and Pt100 3W RTD (°C, °F)* * Ranges - See Table A, page 1-21	9 PID & Smart AT	1 Relay 6 SSR Drive	0 None 7SD & 7SM Only 1 Relay (for Alarm) 7SH Only 1 Relay (Cooling/Alarm)	7SD & 7SM Only 30 100 to 240 Vac 50 24 Vac/Vdc 7SH Only 03 100 to 240 Vac 05 24 Vac/Vdc