

TEMPERATURE CONTROLLERS

7EC 1/8 DIN 4-Digit Dual Display Temperature Controller with Analog Output

Features:

- Universal Input (7 T/C, RTD, mV, V, mA)
- PID and Smart AT Autotuning
- NEMA 4X, IP65
- Algorithms for Heat or Heat/Cool Control
- Up to 4 Outputs, 3 Independent Alarms
- Control Output Disable Function
- Remote Selection of up to 4 Setpoints
- Digital Communications

Designed for equipment manufacturers requiring analog process control functions and a full suite of advanced features, the 7SC offers outstanding performance as a 4-digit 1/8 DIN controller. The 7SC is configurable for heat or heat/cool PID control with Smart AT auto or adaptive tuning, universal inputs, up to 4 outputs (including one analog output) and up to 3 independent alarms. It is ideal for demanding applications in plastics, rubber fibers, annealing, small ovens, and other processes requiring 4 digit accuracy. The 7SC has a bright dual display for process temperature and setpoint, and 10 LED beacons for operating status. The analog and two relay outputs can be programmed as heating +2



alarms or heating/cooling + alarm. Alternately, OP2 can be an SSR logic output. The isolated analog output can alternatively be programmed as a re-transmission of the PV or operating SP. OP4 can be configured as Alarm 3. Alarms can be process, deviation or band type, direct or reverse, with masking and programmable automatic or manual reset. An alarm standby feature allows masking of alarm conditions until the PV reaches the low alarm threshold. A non-isolated 24 Vdc transducer power supply is a standard feature. Optional RS-485 communications are available for connection to supervisory computers. A NEMA 4X front panel allow the 7SC to work in washdown or dusty environments.

Specifications:

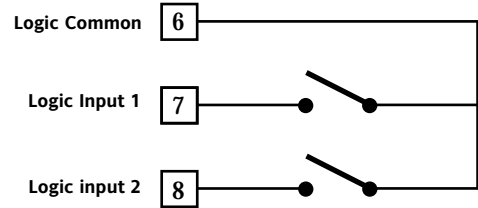
Control Modes:	PID with Smart AT Autotuning
Supply Voltage:	100-240 Vac (+10%, -15%), 50/60 Hz
Operating Ambient:	0-50°C, 20-85% RH non-condensing
Inputs:	T/C Types J, K, L, N, R, S & T (°C, °F); Pt 100 3W RTD (°C, °F) Ranges: See Table G, page 1-21; mAdc, mVdc, Vdc
Logic Inputs (2):	for setpoint select (SP, SP2, SP3, SP4), requires contacts rated at 0.5 mA, 5 Vdc min.
Aux Transducer Power Supply:	Non-isolated 24 Vdc (±10%) rated at 25 mAdc, short circuit protected
Mounting:	Panel Mount or DIN Rail

Output Ratings:	
Output 1:	0 to 20 mA or 4 to 20 mA, isolated (500Ω max.) Control Out (Heat or Cool) or Retran of PV or SP
Output 2:	Relay, 3A/250V, SPST, NO/NC Selectable, Resistive Time Proportioning Heat or Cool, Alarm 1 Jumper Selectable Logic SSR (unisolated) Logic Level 1: 14 Vdc ±20% @ 20 mA max. (700 Ω min.) 24 Vdc max. ±20% @ 1mA Logic Level 0: Less than 0.5 Vdc Time Proportioning Heat or Cool
Output 3:	Relay, 2A/250V, SPST, Resistive Time Proportioning Heat or Cool, Alarm 2
Output 4:	Relay, 2A/250V, SPST, Resistive Optional Alarm 3

Serial Communications: EIA RS-485 Modbus®, JBUS

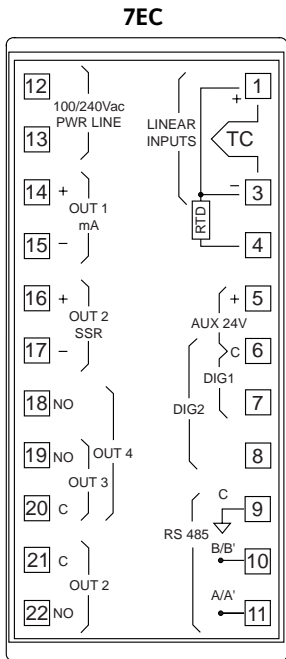
A Variety of Standard and Optional Features

Among the 7EC's standard features are bumpless auto/manual transfer, password security and Auto Comp® sensor break. The 7EC also has an "output off" function which disables the control output, allowing the instrument to operate as an indicator but return smoothly to control when the output is again enabled. The 7EC is equipped with 2 logic inputs used to select between up to 4 setpoints. Transfer can be step or ramp, with different configurable rates for ramp up and ramp down.



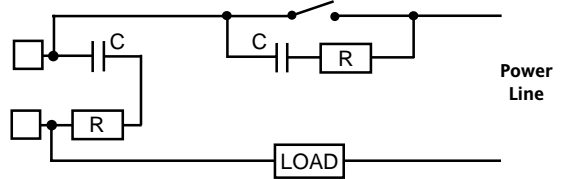
SP1 - SP4 Select

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 116D 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	Outputs 2 & 3	Options	Power Supply	Reserved
7EC	9	3	7	1		3	000

Input	Control	Output 1	Outputs 2 & 3
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	7 0 to 20 mAdc or 4 to 20 mAdc, programmable as heating, cooling or analog retransmission	1 OP2 Jumper Selectable SPST Relay or SSR (Control/Alarm) and OP3 SPST Relay (Control/Alarm)

* Ranges - See Table G, page 1-21

Options	Power Supply
2 OP4 Relay (Alarm)	3 100 to 240 Vac
3 OP4 Relay (Alarm) plus RS-485	