

Temperature Controllers

Models TEC-4500 & TEC-9500



Model TEC-4500 1/4 DIN & Model TEC-9500 1/16 DIN Ramp & Soak Temperature Controls



Configurable for 5
Programmable Outputs

Agency Approvals



Configurable for 4
Programmable Outputs

Design Features

- * Ramp & Soak Programmable Control
- * Nine recipes (profiles) available using 64 segments maximum per recipe
- * Event Input – one of 8 functions can be chosen: start run mode, hold mode, abort recipe, manual mode, failure transfer, turn off, segment advance, select 2nd set of PID parameters
- * Event Output – 3 relays are available. Can be programmed to any segment or end of recipe
- * Analog Retransmission – optional mA or VDC transfer of PV or SV values
- * Highly accurate universal input with 18 bit analog to digital converter
- * Bright 0.40" (10mm) red LED process display
- * Fast sample rate – 200ms
- * Fuzzy Logic PID Autotune heat and cool control – 2 sets of values can be used
- * Optional RS-485 or RS-232 communications interface
- * Programming port available for PC connection allowing quick set-up
- * Lockout protection guards against unauthorized setting changes
- * Bumpless transfer allows continued temperature control if sensor fails
- * Universal input, field configurable (Type J T/C default, PT100, mA, V) with high accuracy 18-bit D-A
- * Short panel depth required



Note: Detailed information on features common to digital microprocessor-based TEC temperature controls and the complete Table of Input Range and Accuracy can be found on page 13-46.

Hardware Code: TEC-4500-



Power Input BOX 1

- 4 = 90-250 VAC, 50-60 Hz
- 5 = 11-26 VAC / VDC

Hardware Code: TEC-9500-



A Part Number based on the hardware code and any software pre-programming will be issued at time of order.

Standard lead time is stock to 2 weeks.

Signal Input – Universal, can be programmed in the field BOX 2

- 1 = Universal input (factory default = TC type J)
Thermocouple: J, K, T, E, B, R, S, N, L, C, P
RTD: PT100 DIN, PT100 JIS (0 to 60mV)
- 5 = Voltage: 0-10V, 0-5V, 1-5V, 0-1V
- 6 = DC Current: 0-20 mA (default), 4-20 mA
- 9 = Other

Output 1 BOX 3

- 1 = Relay: 2A / 240 VAC
- 2 = Pulse DC for SSR drive: 5 VDC (30 mA max)
- 3 = Isolated 4-20mA / 0-20 mA
- 4 = Isolated 1-5V / 0-5V/0-10VDC
- 6 = Triac-SSR output 1A / 240 VAC
- C = Pulse DC for SSR drive: 14 VDC (40 mA max)
- 9 = Other

Output 2 BOX 4

- 0 = None
- 1 = Relay: 2A / 240 VAC
- 2 = Pulse DC for SSR drive – 5 VDC (30 mA max)
- 3 = Isolated 4-20mA / 0-20 mA
- 4 = Isolated 1-5V / 0-5V/0-10V
- 6 = Triac-SSR output 1A / 240 VAC
- 7 = Isolated 20V @ 25 mA DC, Output Power Supply
- 8 = Isolated 12V @ 40 mA DC, Output Power Supply
- A = Isolated 5V @ 80 mA DC, Output Power Supply
- C = Pulsed voltage to drive SSR, 14V/40mA
- 9 = Other

Output 3 BOX 5

- 0 = None
- 1 = Relay: 2A / 240 VAC
- 2 = Pulse DC for SSR drive – 5 VDC (30 mA max)
- 6 = Triac-SSR output 1A / 240 VAC
- 7 = Isolated 20V @ 25 mA DC, Output Power Supply
- 8 = Isolated 12V @ 40 mA DC, Output Power Supply
- A = Isolated 5V @ 80 mA DC, Output Power Supply
- C = Pulsed voltage to drive SSR, 14V/40mA
- 9 = Other

Output 4 BOX 6 (TEC-4500 only)

- 0 = None
- 1 = Relay: 2A / 240 VAC
- 2 = Pulse DC for SSR drive – 5 VDC (30 mA max)
- 3 = Retransmission 4-20mA (default), 0-20 mA
- 4 = Retransmission 1-5 VDC (default)/ 0-5VDC, 0-10 VDC
- 6 = Triac-SSR output 1A / 240 VAC
- 7 = Isolated 20V @ 25 mA DC, Output Power Supply
- 8 = Isolated 12V @ 40 mA DC, Output Power Supply
- A = Isolated 5V @ 80 mA DC, Output Power Supply
- C = Pulsed voltage to drive SSR, 14V/40mA
- 9 = Other

CONTINUED

Output 5 BOX 7

- 0 = None
- 3 = Retransmission 4-20mA / 0-20 mA
- 4 = Retransmission 1-5V / 0-5V/0-10V
- 7 = Isolated 20V @ 25 mA DC, Output Power Supply
- 8 = Isolated 12V @ 40 mA DC, Output Power Supply
- A = Isolated 5V @ 80 mA DC, Output Power Supply
- D = Isolated RS-485 interface
- E = Isolated RS-232 interface

Power Input

Standard: 90-250 VAC, 47-63 Hz, 12 VA, 5W maximum
Optional: 11-26 VAC / VDC, 12 VA, 5W maximum

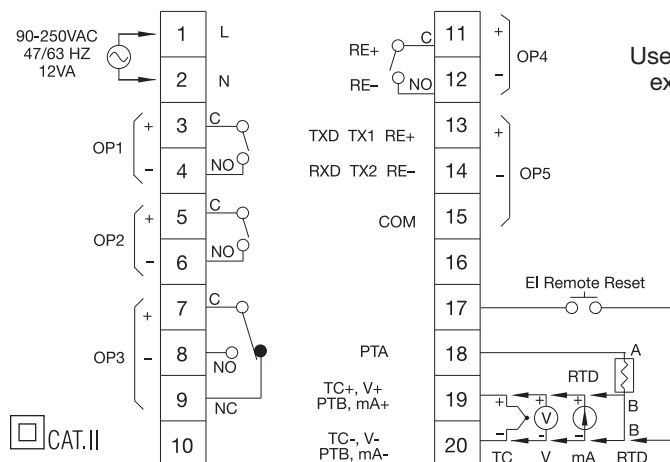
Signal Input

Resolution: 18 bits **Sampling Rate:** 5 samples / second
Accuracy: $\pm 0.24\%$ of span typical
Maximum Rating: -2 VDC minimum, 12 VDC maximum (1 minute for mA input)
Temperature Effect: $\pm 1.5 \mu V / ^\circ C$ for all inputs except mA input $\pm 3.0 \mu V / ^\circ C$ for mA input
Sensor Lead Resistance Effect: T/C: $0.2 \mu V / \text{ohm}$ 3-wire RTD: $2.6^\circ C / \text{ohm}$ of resistance difference of two leads
Burn-out Current: 200nA
Common Mode Rejection Ratio (CMRR): 120 dB
Normal Mode Rejection Ratio (NMRR): 55 dB
Sensor Break Detection: Sensor open for TC, RTD and mV inputs; Sensor short for RTD input; Below 1 mA for 4-20 mA input; Below 0.25V for 1-5V input; Unavailable for other inputs
Sensor Break Response Time: Within 4 seconds for TC, RTD and mV inputs; 0.1 second for 4-20 mA and 1-5 V inputs

TEC-4500 Stock and Common Part Numbers (Power Input: 90-250 VAC)

Part Number	Signal Input	Out 1	Out 2	Out 3
TEC58001	TC	relay	none	relay
TEC58002	TC	relay	relay	none
TEC58003	TC	relay	relay	relay
TEC58004	TC	4-20 mA	none	none
TEC58005	TC	4-20 mA	none	relay
TEC58006	TC	5VDC pulse	none	none
TEC58007	TC	5VDC pulse	none	relay

TEC-4500 1/4 DIN Rear Terminal Connections



Case Options BOX 8

- 0 = Panel mount standard
- 1 = Panel mount with NEMA 4X/IP65 front panel
- 2 = DIN rail mount adapter (TEC-9500 only)

Recipe

Number of recipes: 9
Number of Segments per recipe:
 Recipe 1, 2, 3, 4: 16
 Recipe 5, 6, 7: 32
 Recipe 8, 9: 64

Event Outputs: 3

Environmental and Physical

Operating Temperature: 14 to 122°F (-10 to 50°C)
Storage Temperature: -40 to 140°F (-40 to 60°C)
Humidity: 0 to 90% RH, non-condensing
Dielectric Strength: 2000 VAC, 50/60 Hz for 1 minute

Dimensions:

TEC-4500: 3-3/4 x 3-3/4 x 2-9/16" (96 x 96 x 65 mm) HxWxD
Depth behind panel: 2" (53 mm)
Panel Cutout: 3-5/8" x 3-5/8" (92 x 92 mm) HxW
Weight: .55 lb. (250 grams)
TEC-9500: 1-7/8 x 1-7/8 x 4-9/16" (48 x 48 x 116 mm) HxWxD
Depth behind panel: 4-1/8" (104.8 mm)
Panel Cutout: 1-25/32" x 1-25/32" (45 x 45 mm) HxW
Weight: .33 lb. (150 grams)

Approval Standards

Safety: UL61010C-1
 CSA: C22.2 No. 24-93
 EN61010-1 (IEC1010-1)
Protective Class: IP30 front panel, indoor use, IP65 front panel with option
EMC: EN61326

TEC-9500 Stock and Common Part Numbers (Power Input: 90-250 VAC)

Part Number	Signal Input	Out 1	Out 2	Out 3
TEC18001	TC	relay	none	none
TEC18002	TC	relay	relay	none
TEC18003	TC	4-20 mA	none	none
TEC18004	TC	4-20 mA	relay	none
TEC18005	TC	5VDC pulse	none	none
TEC18006	TC	5VDC pulse	relay	none

TEC-9500 1/16 DIN Rear Terminal Connections

