

Temperature Controllers



Model TEC-9090 1/16 DIN

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The TEC-9090 is also available with a black faceplate.

Dual Display, Configurable for 2 Programmable Outputs!

Design Features

- * 1/16 DIN size – 48 mm × 48 mm
- * Fuzzy Logic PID heat and cool control
- * PID Control – Auto-tuning on cold or warm start
- * Short panel depth – only 3-7/8" (86 mm) required
- * Universal programmable sensor input
- * Highly versatile – 6 types of inputs available
- * Optional relay alarm output
- * Universal input power 90-264 VAC, 20-32 VAC/VDC or 10-18 VDC
- * Wide variety of alarm mode selections
- * Bright 0.40" (10 mm) red LED process display
- * 0.31" (8 mm) green LED setpoint display
- * High performance at a low price

Agency Approvals



Hardware Code: TEC-9090-

1	2	3	4	5	6	7	8	9
					0		0	

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.

Power Input BOX 1

- 4 = 90-264 VAC
- 5 = 20-32 VAC/VDC
- 6 = 10-18 VDC
- 9 = Other

Signal Input – (hardware jumper change between TC & RTD) BOX 2

- 5 = Thermocouple: Universal Configurable:
J, K, T, E, B, R, S, N (default: Type J)
- 6 = RTD: Universal Configurable: DIN or JIS
(default: alpha 0.00385/DIN)
- 9 = Other

Range code BOX 3

- 1 = Field configurable (default – max per input type)
- 9 = Other

Control Mode BOX 4

- 3 = Field Configurable
(default: PID reverse acting, °F)
- 9 = Other

Output 1 BOX 5

- 1 = Relay: 3A / 240 VAC
- 2 = Pulse DC for SSR drive: 20 VDC (20 mA max)
- 3 = 4-20 mA, linear (max load 500Ω)
- 4 = 0-20 mA, linear (max load 500Ω)
- 5 = 0-10 VDC, linear (min. impedance 10 KΩ)
- 6 = Triac-SSR output 1A / 240 VAC
- 9 = Other

Output 2 BOX 6

- 0 = None

Alarm BOX 7

- 0 = None
- 1 = Relay: 2A / 240 VAC, Field Configurable
- 9 = Other

Data Communications BOX 8

- 0 = None

Units – °F or °C BOX 9

- 1 = °F on faceplate
- 2 = °C on faceplate



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.



Power Input

Standard: 90-264 VAC, 47-63 Hz, 5VA, 5W maximum

Optional: 20-32 VAC/VDC, 5VA, 5W maximum or
10-18 VDC, 5W maximum

Signal Input

Accuracy: $\pm 0.24\%$ of span typical

Cold Junction Compensation: $0.1^{\circ}\text{C}/^{\circ}\text{C}$ ambient typical

Sensor Break Detection: Protection mode configurable

External Resistance: 100 ohms maximum

Normal Mode Rejection: 60 dB

Common Mode Rejection: 120 dB

Sampling Rate: 5 samples / second

Output 1

Relay Rating: 240 VAC, 3 Amp

Pulsed Voltage: Source voltage 20V (20 mA max)

Current: 4 - 20 mA, at 500Ω max

Current: 0 - 20 mA, at 500Ω max

Voltage: 0 - 10 VDC, at $10\text{ K}\Omega$ min

Solid State Relay (Triac) Output

Rating: 1A / 240 VAC

Inrush Current: 20A for 1 cycle

Min. Load Current: 50 mA rms

Dielectric Strength: 2500 VAC for 1 minute

Approval Standards

Safety: UL873, CSA22.2/142-87, IEC1010-1

EMC Emission: EN50081-1

EMC Immunity: EN50082-1

Protective Class: Front Panel: IP30
Housing and Terminals: IP 20

Alarm — Programmable

Alarm Relay: Form A, (NO)

Maximum rating: 240 VAC, 3 Amp

Alarm Functions: Dwell timer

Deviation High or Low Alarm

Deviation Band High or Low Alarm

Process High Alarm

Sensor Break Alarm

Dwell Timer: 0 - 6553.5 minutes

User Interface

Dual 4-digit LED Display: 0.40" (10 mm) Red Process Display
0.31" (8 mm) Green Setpoint Display

Keypad: 4 keys

Control Mode

Output 1: Reverse (heating) or direct (cooling) action

On-Off: 0 - 20% of span hysteresis control (P band = 0)

P or PD: 0 - 100.0% offset adjustment

PID: Fuzzy logic modified

Proportional band: 0.1 - 360°F (0 - 200°C)

Integral time: 0 - 3600 seconds

Derivative time: 0 - 1000 seconds

Cycle Time: 0 - 120 seconds

Auto-tuning: Cold start and warm start

Ramping Control: 0 - $360^{\circ}\text{F}/\text{min}$ ($200^{\circ}\text{C}/\text{min}$)

Environmental and Physical

Operating Temperature: 14 to 122°F (-10 to 50°C)

Humidity: 0 to 90% RH, non-condensing

Dielectric Strength: 2000 VAC, 50/60 Hz for 1 minute

Dimensions: $1\text{-}7/8 \times 1\text{-}7/8 \times 3\text{-}3/4"$ ($48 \times 48 \times 94\text{ mm}$) H×W×D
Depth behind panel: $3\text{-}3/8"$ (86 mm)

Panel Cutout: $1\text{-}25/32 \times 1\text{-}25/32"$ ($45 \times 45\text{ mm}$) H×W

Weight: 0.37 lb. (170 grams)

Stock and Common Part Numbers
(Power Input: 90-264 VAC)

Part Number	Signal Input	Out 1	Alarm
TEC11002	TC	relay	relay
TEC11001	TC	relay	none
TEC11007	TC	4-20 mA	none
TEC11003	TC	DC pulse	none
TEC11009	RTD	relay	none
TEC11010	RTD	DC pulse	none

Rear Terminal Connections

