

Model TEC-9090 1/16 DIN Temperature Controller



Dual Display, Configurable for 2 Programmable Outputs!

Design Features

- * 1/16 DIN size – 48 mm × 48 mm
- * Fuzzy Logic PID Autotune heat & cool control
- * Short panel depth – only 3-7/8" (86 mm) required
- * Universal input, field configurable (Type J T/C default, PT100, mA, V) with high accuracy 18-bit D-A
- * Highly versatile – 6 types of inputs available
- * Optional relay alarm output
- * Universal input power 90-264 VAC or 20-32 VAC/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

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

Power Input BOX 1

- 4** = 90-264 VAC
- 5** = 20-32 VAC/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

Signal Input

Accuracy: ±.24% of span typical
Cold Junction Compensation: 0.1°C /°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 KΩ 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, 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°F/min (200°C/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: 1-7/8 × 1-7/8 × 3-3/4" (48 × 48 × 94 mm) H×W×D
 Depth behind panel: 3-3/8" (86 mm)
Panel Cutout: 1-25/32 × 1-25/32" (45 × 45 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

