

## 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-

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
- 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, 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°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

