

# Temperature Controllers



Models TEC-404 & TEC-405 1/4 DIN

## Models TEC-404 & TEC-405 1/4 DIN Temperature Controllers



Dial Setpoint and Display



TEC-405 has been discontinued. Refer to TEC-404 for replacement controllers or contact Tempco.

### Design Features

- \* 1/4 DIN size – 96 mm × 96 mm
- \* Model TEC-404 Temperature Control with dial/potentiometer setpoint
- \* Model TEC-405 Temperature Control with pushwheel setpoint
- \* Laser trimmed ASIC components
- \* On-off or time proportional selection
- \* Short panel depth – only 2.0" (51 mm) required
- \* Digital display, 0.56" (14 mm) red LED
- \* Wide selection of output options
- \* Universal power input, 90-264 VAC or 20-32 VAC/VDC
- \* Sensor break protection
- \* Good performance at a very low price

### Agency Approvals:



### Potentiometer Setpoint Hardware Code: TEC-404-



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 50/60 Hz
- 5 = 20-32 VAC 50/60 Hz, 20 - 32 VDC

#### Signal Input BOX 2

- 1 = Thermocouple: Type J
- 2 = Thermocouple: Type K
- 3 = RTD: 100 ohm PT, DIN 0.00385
- 4 = RTD: 100 ohm PT, JIS 0.00392
- 9 = Other

#### Standard Range Code

- (TEC-404 only) BOX 3
- 4 = 0 to 300°C      C = 50 to 550°F
  - 6 = 0 to 600°C      E = 50 to 850°F

Below available for large volume orders. Consult Tempco for more information.

- 2 = 0 to 100°C      A = 50 to 200°F
- 3 = 0 to 200°C      B = 50 to 400°F
- 5 = 0 to 400°C      D = 50 to 750°F
- 7 = 0 to 800°C      F = 50 to 1100°F
- 8 = 0 to 1200°C    G = 50 to 1400°F
- 9 = Other            H = 0 to 2200°F

#### Range code (TEC-405 only) BOX 3

- X = 0 to 499°F      C = 0 to 299°C
- V = 0 to 999°F      E = 0 to 499°C
- W = 0 to 1999°F    H = 0 to 999°C

Other ranges are available for large volume orders. Consult Tempco for more information.

#### Control Mode BOX 4

- 1 = On - Off (used for valves & solenoids)
- 2 = Proportional (common for electric heaters)

#### Output 1 BOX 5

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

#### Output 2 BOX 6

- 0 = Not Available

#### Alarm BOX 7

- 0 = None
- 1 = Relay: 3A / 240 VAC Deviation alarm

#### Communication BOX 8

- 0 = Not Available

### Power Input

**Standard:** 90 - 264 VAC, 50/60 Hz, 5VA  
**Optional:** 20 - 32 VAC 50/60 Hz, 20 - 32 VDC, 5VA

### Signal Input

**Accuracy:**  $\pm 1.0\%$  of full scale at 77°F/25°C  
**Thermocouple:** Type J or K  
**RTD:** 3-wire Pt100 DIN or JIS  
**Sampling Rate:** 3 samples per second  
**Cold Junction Compensation:**  $\pm 0.1^\circ\text{C} / 1^\circ\text{C}$   
**Common Mode Rejection Ratio (CMRR):** 120 dB  
**Normal Mode Rejection Ratio (NMRR):** 60 dB  
**Sensor Break Protection:** Upscale

### Output 1

**Relay Rating:** 5 Amp, 240 VAC  
**SSR drive:** Pulsed DC, 20 V at 20 mA maximum  
**Current Loop:** 4 - 20 mA, 0 - 20 mA, maximum load: 500Ω  
**Voltage:** 0 - 10 VDC, minimum load 500 KΩ

### Control

**Proportional Band:** 2.2% of span  
**ON-OFF Hysteresis:** 1% of span  
**Cycle time:** 20 seconds for relay output, 1 second for pulsed voltage output, 0.02 second for linear current or voltage output  
**Control Action:** Reverse Action

### Approval Standards

**Safety Standard:** UL3121-1  
 EN61326  
**Protective Class:** Front panel: IP 30  
 Housing and Terminals: IP 20

### Adjustment

**Setpoint:** Single turn wirewound potentiometer (TEC-404)  
**Setpoint Resolution:** 0.2% of span  
**Accuracy of Setpoint:**  $\pm 2\%$  of span  
**Repeatability of Setpoint:**  $\pm 0.1\%$  of span  
**Setpoint:** 3-digit or 4-digit pushwheel switch (TEC-405)  
**Manual Reset:** Adjustable up to 2.6% of span  
**Setpoint Resolution:**  $\pm 1$  Least Significant Digit  
**Accuracy of Setpoint:**  $\pm 1\%$  of span  
**Repeatability of Setpoint:**  $\pm 1$  Least Significant Digit

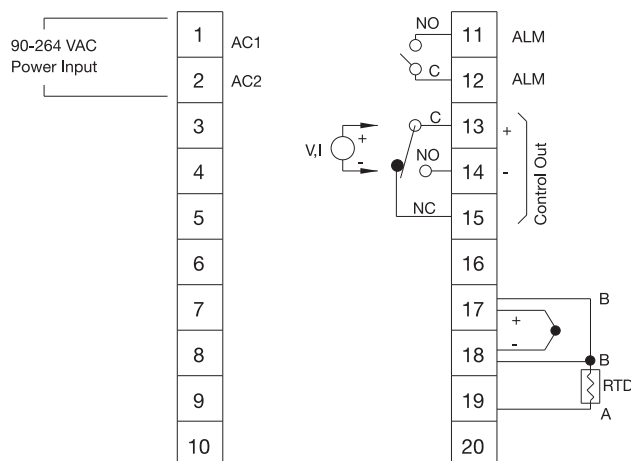
### Display

**Single 4-digit LED Display:** 0.56" (14 mm) Red

### Environmental and Physical

**Operating Temperature:** 32 to 122°F (0 to 50°C)  
**Humidity:** 0 to 90% RH, non-condensing  
**Dielectric Strength:** 2000 VAC, 50/60 Hz for 1 minute  
**Vibration:** 10 - 55 Hz, amplitude 1 mm  
**Shock:** 200 m/s<sup>2</sup> (20g)  
**Dimensions:** 3-3/4 × 3-3/4 × 2-9/16" (96 × 96 × 65 mm) H×W×D  
 Depth behind panel: 2" (53 mm)  
**Panel Cutout:** 3-5/8" × 3-5/8" (92 × 92 mm) H×W  
**Weight:** 0.55 lb. (250 grams)

### Rear Terminal Connections



### Potentiometer Setpoint TEC-404 Stock and Common Part Numbers (Power Input: 90-264 VAC, Proportional Mode)

Part Number	Signal Input	Range	Output	Alarm
TEC57401	J tc	50-850°F	relay	none
TEC57402	J tc	50-550°F	relay	none
TEC57403	K tc	50-850°F	relay	none
TEC57404	K tc	50-550°F	relay	relay
TEC57405	RTD	50-550°F	relay	none
TEC57406	J tc	0-300°C	relay	none
TEC57407	J tc	0-600°C	relay	none
TEC57408	K tc	0-300°C	relay	none
TEC57409	K tc	0-600°C	relay	none