

Temperature Controllers



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

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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: ± 1 Least Significant Digit
Accuracy of Setpoint: $\pm 1\%$ of span
Repeatability of Setpoint: ± 1 Least Significant Digit

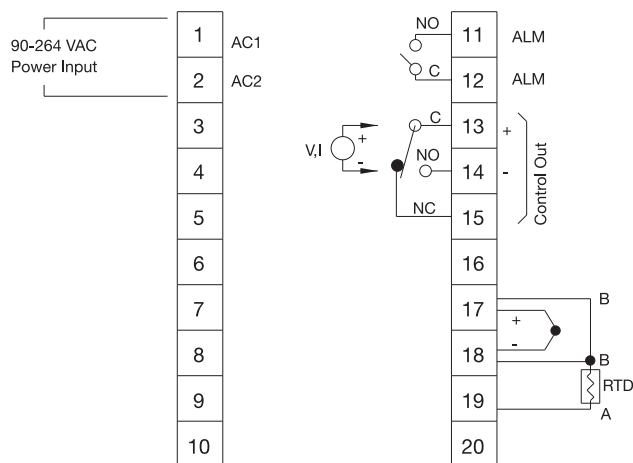
Display

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/s² (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