Tempco introduces the all **NEW**
Next Generation **TEC** Controllers.

Our new, high-performance controllers are easy-to-use and feature an all new compact design. These Fuzzy Logic plus PID microprocessor-based process controllers incorporate bright, easy to read LCD displays, indicating process value and set point value.

The Fuzzy Logic technology enables a process to reach a predetermined set point in the shortest time, with minimal overshoot during power-up or external load disturbance. Consult Tempco with your Requirements.

---

**1/32 DIN Digital Control**

**TEC-2400** ($117.00)
- LCD Display
- 3 Programmable Outputs
- Ramp & Soak
- Heater Break Alarm
See Page 13-3A

**TEC-8400** ($146.25)
- LCD Display
- 2 Programmable Outputs
- 3 Alarms
- Ramp & Soak
- Heater Break Alarm
See Page 13-3E

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**1/16 DIN Digital Control**

**TEC-9400** ($122.50)
- LCD Display
- 3 Programmable Outputs
- Ramp & Soak
- Heater Break Alarm
See Page 13-3C

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**1/8 DIN Digital Control**

**TEC-8500** ($146.25)
- LCD Display
- 2 Programmable Outputs
- 3 Alarms
- Ramp & Soak
- Heater Break Alarm
See Page 13-3E

**TEC-8550** ($146.25)
- LCD Display
- 2 Programmable Outputs
- 3 Alarms
- Ramp & Soak
- Heater Break Alarm
- Horizontal Orientation
See Page 13-3E
**3/16 DIN Digital Control**

**TEC-7400** ($157.50)
- LCD Display
- 2 Programmable Outputs
- 1 Alarm
- Ramp & Soak
- Heater Break Alarm
See Page 13-3G

**TEC-4400** ($168.00)
- LCD Display
- 2 Programmable Outputs
- 3 Alarms
- Ramp & Soak
- Heater Break Alarm
See Page 13-3I

**TEC-6400** ($140.00)
- LCD Display
- 3 Programmable Outputs
- Ramp & Soak
- Heater Break Alarm
See Page 13-3K

(800) 323-6859 • Email: sales@tempco.com
Model TEC-2400 1/32 DIN Temperature Controller

Design Features
- 1/32 DIN size – 24 mm × 48 mm
- Fuzzy modified PID heat and cool control
- Universal input (TC, PT100, mA, V) with high accuracy 18-bit D-A
- Countdown display
- RS - 485 and Analog Retransmission Available
- Micro USB Programming Port
- Fast sampling rate (200 msec)
- Manual control & auto-tune function
- Wide range of alarm mode selection
- Lockout protection
- Bumpless transfer during failure mode
- Soft-start ramp & dwell timer
- Bright LCD display stabilized with digital filter
- High performance with low cost

Agency Approvals:
RoHS, REACH, WEEE

Hardware Code: TEC-2400 -  

Power Input BOX 1
4 = 90-250 VAC
5 = 11-40 VDC / 20-28 VAC

Output 1 — BOX 2
1 = Relay: 2A / 240 VAC
2 = Pulse DC for SSR drive: 5 VDC (30 mA max)
3 = Isolated, 4-20 mA (default), 0-20 mA
5 = Isolated VDC, 0-10 scalable
C = Pulse DC for SSR drive: 14 VDC (40mA max)

Output 2 / Alarm 1 BOX 3
0 = None
1 = Relay: 2A / 240 VAC
2 = Pulse DC for SSR drive: 5 VDC (30 mA max)
3 = Isolated, 4-20 mA (default), 0-20 mA
5 = Isolated VDC, 0-10 scalable
C = Pulse DC for SSR drive: 14 VDC (40mA max)

Option 1 BOX 4
0 = None
1 = RS-485 Interface
2 = 1 Event Input
3 = 1 CT Input

Option 2 BOX 5
0 = None
1 = Retransmit: 4-20mA / 0-20mA
2 = Retransmit: 0-10VDC
3 = Alarm 2 Relay: 2A / 240 VAC

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.

Transformer for Heater Break Alarm
(0-50 Amp current)
Part Number: TEC99998
Specifications on page 13-47

View Product Inventory @ www.tempco.com
Power Input
- Standard: 90-250 VAC, 47-63 Hz, 8VA, 4W maximum
- Optional: 11-40 VDC / 20-28 VAC, 47-63 Hz, 8VA, 4W maximum

Signal Input
- Resolution: 18 Bits
- Sampling Rate: 5 Times / Second (200msec)
- Maximum Rating: -2VDC minimum, 12VDC maximum
- Sensor Break Detection: Open sensor for Thermocouple and RTD inputs, sensor short for RTD input, below 1mA for 4-20mA input, below 0.25V for 1 - 5V input, not available for other inputs
- Sensor break responding time: Within 4 seconds for thermocouple and RTD inputs, 0.1 second for 4-20mA and 1-5V inputs

Event Input
- Number of Event Inputs: 1
- Logic Low: -10V minimum, 0.8V maximum
- Logic High: 2V minimum, 10V maximum

CT Input
- CT type: TEC99998
- Accuracy: ±2% of full scale reading, ±1 digit maximum
- Input Impedance: 294Ω
- Measurement Range: 0-50A AC
- Output of CT: 0-5V DC
- CT Mounting: Wall (Screw) mount
- Sampling Rate: 1 time/second

Output 1 /Output 2
- Type: Relay, pulsed voltage, linear voltage and linear current
- Relay Rating: 2A, 240V AC, 200000 life cycles for resistive load
- Pulsed Voltage: Source voltage 5V, Current limiting resistance 66Ω
- Linear Output Resolution: 15 Bits
- Isolation Breakdown Voltage: 1000 V AC
- Load Capacity of Linear Output: Linear current: 500Ω maximum, linear voltage: 10KΩ minimum

Alarm
- Relay Type: Form A
- Maximum Rating: 2A, 240VAC, 200000 life cycles for resistive load
- Alarm Functions: Dwell Timer, Deviation Low, Deviation High, Deviation Band Low, Deviation Band High, Process High, Process Low
- Alarm Mode: Latching, Hold, Normal, Latching/Hold
- Dwell Timer: 0.1-4533.6 minutes

Data Communications
- Interface: RS-485
- Protocol: Modbus RTU
- Address: 1-247
- Parity Bit: None, Even or Odd
- Stop Bit: 1 or 2 Bits
- Data Length: 7 or 8 Bits
- Communication Buffer: 160 bytes

Rear Terminal Connections

Analog Retransmission
- Output Signal: 4-20 mA, 0-20 mA, 0-10V
- Resolution: 15 Bits
- Accuracy: ±0.05% of span ± 0.0025% / °C
- Load Resistance: 0-500Ω for current output, 10KΩ minimum for voltage output
- Isolation Breakdown: 1000VAC minimum
- Integral Linearity Error: ±0.005% of span
- Linear Output Ranges: 0-22.2mA (0-20mA / 4-20mA), 0-5.55V (0-5V, 1-5V), 0-11.1V (0-10V)

User Interface
- Keypad: 4 Keys
- Display Type: 4 digit LCD display
- No. of Display: 2
- Upper Display Size: 0.4" (10mm)
- Lower Display Size: 0.19" (4.8mm)

Programming Port
- Interface: Micro USB
- PC Communication Function: Automatic Setup, Calibration and Firmware Upgrade

Control Mode
- Output 1: Reverse (Heating) or Direct (Cooling) Action
- Output 2: PID cooling control, Cooling P band 50~300% of PB, Dead band -36.0 ~ 36.0 % of PB
- ON-OFF: 0.1-90.0(°F) hysteresis control (P band = 0)
- P or PD: 0-100.0 % offset adjustment
- PID: Fuzzy logic modified Proportional band 0.1 ~ 900.0°F, Integral time 0-3600 seconds, Derivative time 0-360.0 seconds
- Cycle Time: 0.1-90.0 seconds
- Manual Control: Heat (MV1) and Cool (MV2)
- Failure Mode: Auto transfer to manual mode while sensor break or A-D Converter damage
- Ramping control: 0 to 900.0°F / Minute or 0 to 900.0°F / Hour Ramp Rate

Environmental and Physical Specifications
- Operating Temperature: -10°C to 50°C
- Storage Temperature: -40°C to 60°C
- Humidity: 0 to 90 % RH (Non-Condensing)
- Insulation Resistance: 20MΩ minimum (@500V DC)
- Dielectric Strength: 2000V AC, 50/60 Hz for 1 Minute
- Vibration Resistance: 10 to 55 Hz, 10m/s2 for 2 Hours
- Shock Resistance: 200 m / s2 (20g)
- Moldings: Flame retardant polycarbonate
- Mounting: Panel
- Dimensions: W × H × D: 15/16 × 1-25/32 × 3-13/16 (22 × 45 mm)
- Weight: .26 lbs (160 g)

Environment and Common Part Numbers

Stock and Common Part Numbers

(800) 323-6859 • Email: sales@tempco.com
Model TEC-9400 1/16 DIN Temperature Controller

Design Features
- 1/16 DIN size – 48 mm × 48 mm
- Fuzzy modified PID heat and cool control
- Universal input (TC, PT100, mA, V) with high accuracy 18-bit D-A
- Countdown display
- RS - 485 and Analog Retransmission Available
- Micro USB Programming Port
- Fast sampling rate (200 msec)
- Manual control & auto-tune function
- Wide range of alarm mode selection
- Lockout protection
- Bumpless transfer during failure mode
- Soft-start ramp & dwell timer
- Bright LCD display stabilized with digital filter
- High performance with low cost

Agency Approvals:
RoHS, REACH, WEEE

Hardware Code: TEC-9400 -

<table>
<thead>
<tr>
<th>Option 1</th>
<th>BOX 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 = None</td>
<td></td>
</tr>
<tr>
<td>1 = RS-485 Interface</td>
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</table>

<table>
<thead>
<tr>
<th>Power Input</th>
<th>BOX 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 = 90-250 VAC</td>
<td></td>
</tr>
<tr>
<td>5 = 11-40 VDC / 20-28 VAC</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Alarm 2</th>
<th>BOX 4</th>
</tr>
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<tbody>
<tr>
<td>0 = None</td>
<td></td>
</tr>
<tr>
<td>1 = Relay: 2A / 240 VAC</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Option 3</th>
<th>BOX 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 = None</td>
<td></td>
</tr>
<tr>
<td>1 = Retransmit: 4-20 mA / 0-20 mA</td>
<td></td>
</tr>
<tr>
<td>2 = Retransmit: 0-10 VDC</td>
<td></td>
</tr>
<tr>
<td>3 = Relay: 2A / 240 VAC</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Option 4</th>
<th>BOX 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 = None</td>
<td></td>
</tr>
<tr>
<td>1 = Terminal Cover</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Output 1</th>
<th>BOX 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 = Relay: 2A / 240 VAC</td>
<td></td>
</tr>
<tr>
<td>2 = Pulse DC for SSR drive: 5 VDC (30 mA max)</td>
<td></td>
</tr>
<tr>
<td>3 = Isolated, 4-20 mA (default), 0-20 mA</td>
<td></td>
</tr>
<tr>
<td>5 = Isolated VDC, 0-10 scalable</td>
<td></td>
</tr>
<tr>
<td>C = Pulse DC for SSR drive: 14 VDC (40 mA max)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Output 2 / Alarm 1</th>
<th>BOX 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 = None</td>
<td></td>
</tr>
<tr>
<td>1 = Relay: 2A / 240 VAC</td>
<td></td>
</tr>
<tr>
<td>2 = Pulse DC for SSR drive: 5 VDC (30 mA max)</td>
<td></td>
</tr>
<tr>
<td>3 = Isolated, 4-20 mA (default), 0-20 mA</td>
<td></td>
</tr>
<tr>
<td>5 = Isolated VDC, 0-10 scalable</td>
<td></td>
</tr>
<tr>
<td>C = Pulse DC for SSR drive: 14 VDC (40 mA max)</td>
<td></td>
</tr>
</tbody>
</table>

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.

Transformer for Heater Break Alarm
(0-50 Amp current)
Part Number: TEC99998
Specifications on page 13-47

View Product Inventory @ www.tempco.com
**Power Input**
- Standard: 90-250 VAC, 47-63 Hz; 10 VA, 5W max.
- Optional: 11-40 VDC / 20 to 28 VAC, 47-63 Hz; 10 VA, 5W max.

**Signal Input**
- Resolution: 18 bits
- Sampling Rate: 5 Times / Second (200msec)
- Maximum Rating: -2 VDC minimum, 12 VDC maximum
- Sensor Break Detection: Sensor open for Thermocouple and RTD inputs, sensor short for RTD input, below 1mA for 4-20mA input, below 0.25V for 1-5V input, not available for other inputs
- Sensor Break Response Time: Within 4 seconds for Thermocouple and RTD inputs, 0.1 second for 4-20mA and 1-5V inputs

**Event Input**
- Number of Event Inputs: 2
- Logic Low: -10V minimum, 0.8V maximum
- Logic High: 2V minimum, 10V maximum

**CT Input**
- CT Type: TEC99998
- Accuracy: ±2% of Full Scale Reading, ± 1 digit maximum
- Input Impedance: 294Ω
- Measurement Range: 0-50A AC
- Output Impedance: 0-5V DC
- Output of CT: 0-5V DC
- CT Mounting: Wall (Screw) Mount
- Sampling Rate: 1 Time/Second

**Output 1 / Output 2**
- Relay Rating: 2A, 240V AC, 200000 Life Cycles for Resistive Load
- Pulsed Voltage: Source Voltage 5V, Current Limiting Resistance 66Ω
- Linear Output Resolution: 15 Bits
- Isolation Breakdown Voltage: 1000 V AC
- Load Capacity of Linear Output: Linear Current: 500Ω maximum, Linear Voltage: 10KΩ minimum

**Alarm**
- Maximum Rating: 2A, 240VAC, 200000 Life cycles for resistive load
- Alarm Functions: Dwell Timer, Deviation Low, Deviation High, Deviation Band Low, Deviation Band High, Process High, Process Low
- Alarm Mode: Latching, Hold, Normal, Latching/Hold
- Dwell Timer: 0.1 to 4553.6 Minutes

**Data Communications**
- Interface: RS-485
- Protocol: Modbus RTU
- Address: 1-247
- Baud Rate: 2.8 - 115.2 Kbits/sec
- Parity Bit: None, Even or Odd
- Stop Bit: 1 or 2 Bits
- Data Length: 7 or 8 Bits
- Communication Buffer: 160 bytes

**Stock and Common Part Numbers**
(All Stock Part Numbers Include Terminal Covers)
(Default Type "J" Thermocouple Input)

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Output 1</th>
<th>Out 2/Alm 1</th>
<th>Option 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>TEC19001</td>
<td>Relay</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>TEC19002</td>
<td>Relay</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>TEC19003</td>
<td>Relay</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>TEC19004</td>
<td>Pulse DC</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>TEC19005</td>
<td>Pulse DC</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>TEC19006</td>
<td>Pulse DC</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>TEC19007</td>
<td>4-20mA</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>TEC19008</td>
<td>4-20mA</td>
<td>Relay</td>
<td>Relay</td>
</tr>
</tbody>
</table>

**Rear Terminal Connections**
- OP1, OP2, or AL1

**Environmental and Physical Specifications**
- Operating Temperature: -10°C to 50°C
- Storage Temperature: -40°C to 60°C
- Humidity: 0 to 90% RH (Non-Condensing)
- Insulation Resistance: 20MΩ minimum (500V DC)
- Dielectric Strength: 2000V AC, 50/60 Hz for 1 Minute
- Vibration Resistance: 10 to 55 Hz, 10m/s² for 2 Hours
- Shock Resistance: 200 m / s² (20g)
- Moldings: Flame retardant polycarbonate
- Mounting: Panel
- Dimensions H x W x D: 1-7/8 x 1-7/8 x 2-3/8" (48 x 48 x 59 mm)
- Depth Behind Panel: 2" (50 mm)
- Cut Out Dimensions: 1-25/32 x 1-25/32" (45 x 45 mm)
- Weight: .35 lbs. (160 g)
Model TEC-8400 & Model TEC-8450 1/8 DIN Temperature Controllers

**Temperature Controllers**

**Model TEC-8400 & Model TEC-8450 1/8 DIN Temperature Controllers**

**Agency Approvals:**
- UL Listed
- RoHS, REACH, WEEE

**Design Features**
- 1/8 DIN size – 48 mm × 96 mm, horizontal: 96 mm × 48 mm
- Fuzzy modified PID heat and cool control
- Universal input (TC, PT100, mA, V) with high accuracy 18-bit D-A
- Countdown display
- RS - 485 and Analog Retransmission Available
- Micro USB Programming Port
- Fast sampling rate (200 msec)
- Manual control & auto-tune function
- Wide range of alarm mode selection
- Lockout protection
- Bumpless transfer during failure mode
- Soft-start ramp & dwell timer
- Bright LCD display stabilized with digital filter
- High performance with low cost

**Hardware Code:**

<table>
<thead>
<tr>
<th>Power Input</th>
<th>Box 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>90-250 VAC</td>
</tr>
<tr>
<td>5</td>
<td>11-40 VDC / 20-28 VAC</td>
</tr>
</tbody>
</table>

**Output 1 Box 2**

| 1 | Relay: 2A / 240 VAC |
| 2 | Pulse DC for SSR drive: 5 VDC (30 mA max) |
| 3 | Isolated, 4-20 mA (default), 0-20 mA |
| 5 | Isolated VDC, 0-10 scalable |
| C | Pulse DC for SSR drive: 14 VDC (40 mA max) |

**Output 2 / Alarm 1 Box 3**

| 0 | None |
| 1 | Relay: 2A / 240 VAC |
| 2 | Pulse DC for SSR drive: 5 VDC (30 mA max) |
| 3 | Isolated, 4-20 mA (default), 0-20 mA |
| 5 | Isolated VDC, 0-10 scalable |
| C | Pulse DC for SSR drive: 14 VDC (40 mA max) |

**Alarm 2 to 3 Box 4**

| 0 | None |
| 1 | Alarm 2: Relay: 2A / 240 VAC |
| 2 | Alarm 2 & 3: Relays: 2A / 240 VAC |

**Option 1 Box 6**

| 0 | None |
| 1 | RS-485 Interface & Remote Setpoint |

**Option 2 Box 7**

| 0 | None |
| 1 | 1 CT Input & Remote Setpoint |
| 2 | 2 CT Inputs & Remote Setpoint |

**Option 3 Box 8**

| 0 | None |
| 1 | Retransmit: 4-20 mA / 0-20 mA & Remote Setpoint |
| 2 | Retransmit: 0-10 VDC & Remote Setpoint |
| 4 | Alarm 4 Relay: 2A / 240 VAC, Retransmit: 4-20 mA / 0-20 mA & Remote Setpoint |
| 5 | Alarm 4 Relay: 2A / 240 VAC, Retransmit: 0-10 VDC & Remote Setpoint |

**Option 4 Box 9**

| 0 | None |
| 1 | Terminal Covers |
| 2 | 2 Programs each with 8 Segments of Ramp & Soak |
| 3 | Terminal Covers and Ramp & Soak Firmware |

**Transformer for Heater Break Alarm (0-50 Amp current)**

Part Number: TEC99998

Specifications on page 13-47

**TEC-8400 Rear Terminal Connections**

**TEC-8450 Rear Terminal Connections**

**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.

**View Product Inventory @ www.tempco.com**
Power Input
- Standard: 90-250 VAC, 47-63 Hz, 8VA, 4W maximum
- Optional: 11-40 VDC / 20-8 VAC, 47-63 Hz, 10VA, 5W maximum or 12VA, 6W maximum

Signal Input
- Resolution: 18 Bits
- Sampling Rate: 5 Times/Sec. (200msec)
- Maximum Rating: -2VDC minimum, 12VDC maximum
- Normal Mode Rejection Ratio (NMRR): 55dB
- Sensor Break Detection: Sensor open for thermocouple and RTD inputs, sensor short for RTD input, below 1mA for 4-20mA input, below 0.25V for 1-5V input, not available for other inputs
- Sensor Break Responding Time: Within 4 seconds for thermocouple and RTD inputs, 0.1 second for 4-20mA and 1-5V inputs

Remote Set Point Input
- Type: Linear current, Linear voltage
- Range: -3-27mA, -1.3-11.5V
- Accuracy: ±0.05 %
- Input Impedance: Current: 2.5Ω, Voltage: 1.5MΩ
- Resolution: 18 bits
- Sampling Rate: 1.66 times/second
- Maximum Rating: 280mA maximum for current input, 12VDC maximum for voltage input
- Temperature Effect: ±1.5μV / °C for voltage input, ±0.9μV / °C for current input
- Sensor Break Detection: Below 1mA for 4-20mA input, below 0.25V for 1-5V input, not available for other inputs

Event Input
- No. of Event Inputs: 6
- Logic Low: -10Vmin., 0.8V max.
- Logic High: 2V min., 10V max.
- CT Type: TEC99998
- Accuracy: ±2% of full scale reading, ± 1 digit max.
- Input Impedance: 294Ω
- Measurement Range: 0-50A AC
- Output of CT: 0-5V DC
- Sampling Rate: 1 time/second

Output 1 / Output 2
- Type: Relay, pulsed voltage, linear voltage and linear current
- Relay Rating: 2A, 240V AC, 200000 life cycles for resistive load
- Pulsed Voltage: Source voltage 5V, Current limiting resistance 220Ω
- Linear Output Resolution: 18 Bits
- Isolation Breakdown Voltage: 1000 VAC
- Load Capacity of Linear Output: Linear current: 500Ω maximum, Linear voltage: 10KΩ minimum

Alarm
- Relay Type: Form A
- Maximum Rating: 2A, 240VAC, 200000 life cycles for resistive load
- Alarm Functions: Dwell timer, Deviation low, Deviation high, Deviation band low, Deviation band high, Process high, Process low
- Alarm Mode: Latching, Hold, Normal, Latching/Hold
- Dwell Timer: 0.1-4553.6 minutes

Data Communication
- Interface: RS-485
- Protocol: Modbus RTU
- Address: 1-247
- Baudrate: 2.8-115.2 KBPS
- Parity Bit: None, Even or Odd
- Stop Bit: 1 or 2 bits
- Data Length: 7 or 8 bits
- Communication Buffer: 160 bytes

Stock and Common Part Numbers (8400)
(Default Type "J" Thermocouple Input)

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Output 1</th>
<th>Out 2/Alarm 1</th>
<th>Alarm 2 &amp; 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>TEC36001</td>
<td>Relay</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>TEC36002</td>
<td>Relay</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>TEC36003</td>
<td>Pulse DC</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>TEC36004</td>
<td>Pulse DC</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>TEC36005</td>
<td>Pulse DC</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>TEC36006</td>
<td>Pulse DC</td>
<td>None</td>
<td>(2) Relays</td>
</tr>
<tr>
<td>TEC36007</td>
<td>4-20mA</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>TEC36008</td>
<td>4-20mA</td>
<td>None</td>
<td>(2) Relays</td>
</tr>
</tbody>
</table>

Note: All Stock Part Numbers Include Terminal Covers

Stock and Common Part Numbers (8450)
( Default Type "J" Thermocouple Input)

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Output 1</th>
<th>Out 2/Alarm 1</th>
<th>Option 1</th>
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<tbody>
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<td>Relay</td>
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<td>TEC37002</td>
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</tr>
<tr>
<td>TEC37003</td>
<td>Pulse DC</td>
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<td>None</td>
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<tr>
<td>TEC37004</td>
<td>Pulse DC</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
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<td>None</td>
</tr>
<tr>
<td>TEC37006</td>
<td>Pulse DC</td>
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<td>None</td>
</tr>
<tr>
<td>TEC37007</td>
<td>4-20mA</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>TEC37008</td>
<td>4-20mA</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>
Model TEC-7400 3/16 DIN Temperature Controller

**Design Features**

- 3/16 DIN size – 72 mm × 72 mm
- Fuzzy modified PID heat and cool control
- Universal input (TC, PT100, mA, V) with high accuracy 18-bit D-A
- Countdown display
- RS - 485 and Analog Retransmission Available
- Micro USB Programming Port
- Fast sampling rate (200 msec)
- Manual control & auto-tune function
- Wide range of alarm mode selection
- Lockout protection
- Bumpless transfer during failure mode
- Soft-start ramp & dwell timer
- Bright LCD display stabilized with digital filter
- High performance with low cost

**Agency Approvals:**

RoHS, REACH, WEEE

**Hardware Code:** TEC-7400 -

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**

- 4 = 90-250 VAC
- 5 = 11-40 VDC / 20-28 VAC

**Output 1**

- BOX 2
  - 1 = Relay: 2A / 240 VAC
  - 2 = Pulse DC for SSR drive: 5 VDC (30 mA max)
  - 3 = Isolated, 4-20 mA (default), 0-20 mA
  - 5 = Isolated VDC, 0-10 scalable
  - C = Pulse DC for SSR drive: 14 VDC (40 mA max)

**Output 2 / Alarm 1**

- BOX 3
  - 0 = None
  - 1 = Relay: 2A / 240 VAC
  - 2 = Pulse DC for SSR drive: 5 VDC (30 mA max)
  - 3 = Isolated, 4-20 mA (default), 0-20 mA
  - 5 = Isolated VDC, 0-10 scalable
  - C = Pulse DC for SSR drive: 14 VDC (40 mA max)

**Alarm 2 to 3**

- BOX 4
  - 0 = None
  - 1 = Alarm 2: Relay: 2A / 240 VAC
  - 2 = Alarm 2 and 3: Relays: 2A / 240 VAC

**Event Inputs**

- BOX 5
  - 0 = None
  - 1 = 6 Event Inputs

**Option 1**

- BOX 6
  - 0 = None
  - 1 = RS-485 Interface & Remote Setpoint

**Option 2**

- BOX 7
  - 0 = None
  - 1 = 1 CT Input and Remote Setpoint
  - 2 = 2 CT Inputs and Remote Setpoint

**Option 3**

- BOX 8
  - 0 = None
  - 1 = Retransmit: 4-20 mA / 0-20 mA and Remote Setpoint
  - 2 = Retransmit: 0-10 VDC and Remote Setpoint
  - 3 = Alarm 4 Relay: 2A / 240 VAC and Remote Setpoint

**Option 4**

- BOX 9
  - 0 = None
  - 1 = Terminal Covers
  - 2 = Ramp and Soak Firmware
  - 3 = Terminal Covers and Ramp and Soak Firmware

**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.

**Transformer for Heater Break Alarm**

(0-50 Amp current)

Part Number: TEC99998
Specifications on page 13-47

**Stock and Common Part Numbers**

(All Stock Part Numbers Include Terminal Covers)
(Warning Type "J" Thermocouple Input)

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Output 1</th>
<th>Out 2/ Alm 1</th>
<th>Option 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>TEC45001</td>
<td>Relay</td>
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<td>None</td>
</tr>
<tr>
<td>TEC45002</td>
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<td>(2) Relays</td>
</tr>
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<td>None</td>
</tr>
<tr>
<td>TEC45005</td>
<td>Pulse DC</td>
<td>Relay</td>
<td>None</td>
</tr>
<tr>
<td>TEC45006</td>
<td>Pulse DC</td>
<td>none</td>
<td>(2) Relays</td>
</tr>
<tr>
<td>TEC45007</td>
<td>4-20mA</td>
<td>Relay</td>
<td>none</td>
</tr>
<tr>
<td>TEC45008</td>
<td>4-20mA</td>
<td>(2) Relays</td>
<td></td>
</tr>
</tbody>
</table>

**View Product Inventory @ www.tempco.com**

13-3G
Power Input
Standard: 90-250 VAC, 47-63 Hz, 12VA, 6W maximum
Optional: 11-40 VDC / 20-8 VAC, 47-63 Hz, 12VA, 6W maximum

Signal Input
Resolution: 18 Bits
Sampling Rate: 5 Times / Second (200msec)
Maximum Rating: -2VDC minimum, 12VDC maximum
Sensor Break Detection: Sensor open for thermocouple and RTD inputs, sensor short for RTD input, below 1mA for 4-20mA input, below 0.25V for 1-5V input, not available for other inputs
Sensor break responding time: Within 4 seconds for thermocouple and RTD inputs, 0.1 second for 4-20mA and 1-5V inputs

Remote Set Point Input
Type: Linear current, Linear voltage
Range: -3-27mA, -1.3-11.5V
Input Impedance: Current: 2.5Ω, Voltage: 1.5MΩ
Resolution: 18 bits
Sampling Rate: 1.66 times/second
Maximum Rating: 280mA maximum for current input, 12VDC maximum for voltage input
Temperature Effect: ±1.5μV / °C for voltage input,
±0.3μV / °C for current input
Sensor Break Detection: Below 1mA for 4-20mA input, below 0.25V for 1-5V input, not available for other inputs

Event Input
Number of Event Inputs: 2
Logic Low: -10V minimum, 0.8V maximum
Logic High: 2V minimum, 10V maximum

CT Input
CT type: TEC99998
Accuracy: ±2% of full scale reading, ± 1 digit maximum
Input Impedance: 294Ω
Measurement Range: 0-50A AC
Output of CT: 0-5V DC
CT Mounting: Wall (Screw) mount
Sampling Rate: 1 time/second

Output 1 / Output 2
Type: Relay, pulsed voltage, linear voltage and linear current
Relay Rating: 2A, 240V AC, 200000 life cycles for resistive load
Pulsed Voltage: Source voltage 5V, Current limiting resistance 66Ω
Linear Output Resolution: 15 Bits
Isolation Breakdown Voltage: 1000 V AC
Load Capacity of Linear Output: Linear current: 500Ω maximum, Linear voltage: 10KΩ minimum

Alarm
Relay Type: Form A
Maximum Rating: 2A, 240VAC, 200000 life cycles for resistive load
Alarm Functions: Dwell timer, Deviation low, Deviation high, Deviation band low, Deviation band high, Process high, Process low
Alarm Mode: Latching, Hold, Normal, Latching/Hold
Dwell Timer: 0.1-4553.6 minutes

Data Communications
Interface: RS-485
Address: 1-247
Parity Bit: None, Even or Odd
Data Length: 7 or 8 Bits
Communication Buffer: 160 bytes
Protocol: Modbus RTU
Baud Rate: 2.8 - 115.2 Kbits/sec

Analog Retransmission
Output Signal: 4-20 mA, 0-20 mA, 0-10V
Resolution: 15 Bits
Accuracy: ±0.05% of span ± 0.0025% / °C
Load Resistance: 0-500Ω for current output, 10KΩ minimum for voltage output
Isolation Breakdown: 1000VAC minimum
Integral Linearity Error: ±0.005% of span
Linear Output Ranges: 0-22.2mA (0-20mA / 4-20mA), 0-5.55V (0-5V, 1-5V), 0-11.1V (0-10V)

User Interface
Keypad: 4 Keys
Display Type: 4 digit LCD display
No. of Display: 3
Upper Display Size: 0.58" (15mm)

Programming Port
Interface: Micro USB
PC Communication Function: Automatic Setup, Calibration and Firmware Upgrade

Control Mode
Output 1: Reverse (Heating) or Direct (Cooling) Action
Output 2: PID cooling control, Cooling P band 50-300% of PB, Dead band -36.0 ~ 36.0 % of PB
ON-OFF: 0.1-90.0 (°F) hysteresis control (P band = 0)
P or PD: 0-100.0 % offset adjustment
PID: Fuzzy logic modified Proportional band 0.1 ~ 900.0°F, Integral time 0–3600 seconds, Derivative time 0-360.0 seconds
Cycle Time: 0.1-90.0 seconds
Manual Control: Heat (MV1) and Cool (MV2)
Failure Mode: Auto transfer to manual mode while sensor break or A-D Converter damage
Ramping Control: 0 to 900.0°F / Minute or 0 to 900.0°F / Hour Ramp Rate

Profiler
Availability: Option
No. of Segments / Program: 4 / 8 / 16

Environmental and Physical Specifications
Operating Temperature: -10°C to 50°C
Storage Temperature: -40°C to 60°C
Humidity: 0 to 90 % RH (Non-Condensing)
Insulation Resistance: 20MΩ minimum (@500V DC)
Dielectric Strength: 2000V AC, 50/60 Hz for 1 Minute
Vibration Resistance: 10 to 55 Hz, 10m/s² for 2 Hours
Shock Resistance: 200 m / s² (20g)
Moldings: Flame retardant polycarbonate
Mounting: Panel
Dimensions W × H × D: 2-27/32 × 2-27/32 × 2-3/8" (68 × 68 mm)
Cut Out Dimensions: 2-1/16 × 2-1/16" (68 × 68 mm)
Weight: 0.41 lbs. (190 g)

Rear Terminal Connections

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Temperature Controllers
Model TEC-7400 Specifications (3/16 DIN)

Since 1972
Temperature Controllers

Model TEC-4400 1/4 DIN

Design Features

- 1/4 DIN size – 96 mm × 96 mm
- Fuzzy modified PID heat and cool control
- Universal input (TC, PT100, mA, V) with high accuracy 18-bit D-A
- Countdown display
- RS - 485 and Analog Retransmission Available
- Micro USB Programming Port
- Fast sampling rate (200 msec)
- Manual control & auto-tune function
- Wide range of alarm mode selection
- Lockout protection
- Bumpless transfer during failure mode
- Soft-start ramp & dwell timer
- Bright LCD display stabilized with digital filter
- High performance with low cost

Agency Approvals:

RoHS, REACH, WEEE

Hardware Code: TEC-4400 -

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 = 90-250 VAC
5 = 11-40 VDC / 20-28 VAC

Output 1  BOX 2

1 = Relay: 2A / 240 VAC
2 = Pulse DC for SSR drive: 5 VDC (30 mA max)
3 = Isolated, 4-20 mA (default), 0-20 mA
5 = Isolated VDC, 0-10 scalable
C = Pulse DC for SSR drive: 14 VDC (40 mA max)

Alarm 2 to 3  BOX 4

0 = None
1 = Alarm 2: Relay: 2A / 240 VAC
2 = Alarm 2 and 3: Relays: 2A / 240 VAC

Event Inputs  BOX 5

0 = None
1 = 6 Event Inputs

Option 1  BOX 6

0 = None
1 = RS-485 Interface and Remote Setpoint

Option 2  BOX 7

0 = None
1 = 1 CT Input and Remote Setpoint
2 = 2 CT Inputs and Remote Setpoint

Option 3  BOX 8

0 = None
1 = Retransmit: 4-20 mA / 0-20 mA and Remote Setpoint
2 = Retransmit: 0-10 VDC and Remote Setpoint
3 = Alarm 4 Relay: 2A / 240 VAC and Remote Setpoint
4 = Alarm 4 Relay: 2A / 240 VAC, Retransmit: 4-20 mA / 0-20 mA and Remote Setpoint
5 = Alarm 4 Relay: 2A / 240 VAC, Retransmit: 0-10 VDC and Remote Setpoint

Option 4  BOX 9

0 = None
1 = Terminal Covers
2 = Ramp and Soak Firmware
3 = Terminal Covers and Ramp and Soak Firmware

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.

Transformer for Heater Break Alarm
(0-50 Amp current)
Part Number: TEC99998
Specifications on page 13-47

Stock and Common Part Numbers
(All Stock Part Numbers Include Terminal Covers)
( Default Type "J" Thermocouple Input)

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Output 1</th>
<th>Out 2 / Alm 1</th>
<th>Alarm 2 &amp; 3</th>
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<tr>
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<td>None</td>
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<tr>
<td>TEC44002</td>
<td>Relay</td>
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<td>TEC44003</td>
<td>Relay</td>
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<td>None</td>
</tr>
<tr>
<td>TEC44004</td>
<td>Pulse DC</td>
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<td>(2) Relays</td>
</tr>
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<td>None</td>
</tr>
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<td>TEC44007</td>
<td>4-20mA</td>
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<td>(2) Relays</td>
</tr>
<tr>
<td>TEC44008</td>
<td>4-20mA</td>
<td>None</td>
<td>(2) Relays</td>
</tr>
</tbody>
</table>

View Product Inventory @ www.tempco.com
### Power Input
- **Standard:** 90 to 250 VAC, 47–63 Hz, 12VA, 6W maximum
- **Optional:** 11 to 40 VDC / 20 to 28 VAC, 47–63 Hz, 12VA, 6W maximum

### Signal Input
- **Resolution:** 18 Bits
- **Sampling Rate:** 5 Times/Second (200msec)
- **Maximum Rating:** -2V DC minimum, 12V DC maximum
- **Sensor Break Detection:** Sensor open for Thermocouple and RTD inputs, sensor short for RTD input, below 1mA for 4-20mA input, below 0.25V for 1-5V input, not available for other inputs
- **Sensor Break Response Time:** Within 4 seconds for Thermocouple and RTD inputs, 0.1 second for 4-20mA and 1-5V inputs

### Remote Set Point Input
- **Type:** Linear current, linear voltage
- **Range:** -3-27mA, -1.3-11.5V
- **Accuracy:** ±0.05%
- **Input Impedance:** Current: 2.5Ω, Voltage: 1.5MΩ
- **Resolution:** 18 bits
- **Sampling Rate:** 1.66 times/second
- **Maximum Rating:** 280mA maximum for Current Input, 12V DC maximum for Voltage Input
- **Sensor Break Detection:** Below 1mA for 4-20mA input, below 0.25V for 1-5V input, not available for other inputs

### Event Input
- **Number of Event Inputs:** 6
- **Logic Low:** -10V minimum, 0.8V maximum
- **Logic High:** 2V minimum, 10V maximum

### CT Input
- **Type:** TEC99998
- **Accuracy:** ± 2% of full scale reading, ± 1 digit maximum
- **Input Impedance:** 294Ω
- **Measurement Range:** 0-50A AC
- **Output of CT:** 0-5V DC
- **CT Mounting:** Wall (Screw) mount
- **Sampling Rate:** 1 time/second

### Output 1 / Output 2
- **Type:** Relay, pulsed voltage, linear voltage and linear current
- **Relay Rating:** 2A, 240VAC, 200000 life cycles for resistive load
- **Pulsed Voltage:** Source voltage 5V, Current limiting resistance 66Ω
- **Linear Output Resolution:** 15 Bits
- **Isolation Breakdown Voltage:** 1000V AC
- **Load Capacity of Linear Output:** Linear current: 500Ω maximum, Linear voltage: 10KΩ minimum

### Alarm
- **Relay Type:** Form A
- **Maximum Rating:** 2A, 240VAC, 200000 life cycles for resistive load
- **Alarm Functions:** Dwell Timer, Deviation Low, Deviation High, Deviation Band Low, Deviation Band High, Process High, Process Low
- **Alarm Mode:** Latching, Hold, Normal, Latching/Hold
- **Dwell Timer:** 0.1-4553.6 minutes

### Data Communications
- **Interface:** RS-485
- **Protocol:** Modbus RTU
- **Address:** 1-247
- **Baud Rate:** 2.8 - 115.2 Kbits/sec
- **Parity Bit:** None, Even or Odd
- **Stop Bit:** 1 or 2 Bits
- **Data Length:** 7 or 8 Bits
- **Communication Buffer:** 160 bytes

---

### Analog Retransmission
- **Output Signal:** 4-20 mA, 0-20 mA, 0-10V
- **Resolution:** 15 Bits
- **Accuracy:** ±0.05% of span ± 0.0025% / °C
- **Load Resistance:** 0-500Ω for current output, 10KΩ minimum for voltage output
- **Isolation Breakdown:** 1000VAC minimum
- **Linear Output Ranges:**
  - 0-22.2mA (0-20mA / 4-20mA), 0-5.55V (0-5V, 1-5V), 0-11.1V (0-10V)

### User Interface
- **Keypad:** 4 Keys
- **Display Type:** 4 digit LCD display
- **No. of Display:** 3
- **Upper Display Size:** 0.98” (25mm)
- **Lower Display Size:** 0.55” (14mm)

### Programming Port
- **Interface:** Micro USB
- **PC Communication Function:** Automatic Setup, Calibration and Firmware Upgrade

### Control Mode
- **Output 1:** Reverse (Heating) or Direct (Cooling) Action
- **Output 2:** PID cooling control, Cooling P band 50-300% of PB, Dead band -36.0 ~ 36.0 % of PB
- **ON-OFF:** 0.1-900.0°F hysteresis control (P band = 0)
- **P or PD:** 0-100.0 % offset adjustment
- **PID:** Fuzzy logic modified Proportional band 0.1 ~ 900.0°F, Integral time 0-3600 seconds, Derivative time 0-360.0 seconds
- **Cycle Time:** 0.1-90.0 seconds
- **Manual Control:** Heat (MV1) and Cool (MV2)
- **Failure Mode:** Auto transfer to manual mode while sensor break or A-D Converter damage
- **Ramping Control:** 0 to 900.0°F / Minute or 0 to 900.0°F / Hour Ramp Rate

### Environmental and Physical Specifications
- **Operating Temperature:** -10°C to 50°C
- **Storage Temperature:** -40°C to 60°C
- **Humidity:** 0 to 90 % RH (Non-Condensing)
- **Insulation Resistance:** 20MΩ minimum (@500V DC)
- **Dielectric Strength:** 2000V AC, 50/60 Hz for 1 Minute
- **Vibration Resistance:** 10 to 55 Hz, 10ms/2 for 2 Hours
- **Shock Resistance:** 200 m / s2 (20g)
- **Moldings:** Flame retardant polycarbonate
- **Mounting:** Panel
- **Dimensions W x H x D:** 3-3/4 x 3-3/4 x 2-3/8” (96 x 96 x 59 mm)
- **Depth Behind Panel:** 2” (50 mm)
- **Cut Out Dimensions:** 3-5/8 x 3-5/8” (92 x 92 mm)
- **Weight:** 0.64 lbs. (290 g)

---

### Rear Terminal Connections

---

(800) 323-6859 • Email: sales@tempco.com
Temperature Controllers

Model TEC-6400 DIN Rail Mount

Model TEC-6400 DIN Rail Mount Temperature Controller

Design Features

- DIN Rail Mount, 35 mm
- Fuzzy modified PID heat and cool control
- Universal input (TC, PT100, mA, V) with high accuracy 18-bit D-A
- Countdown display
- RS - 485 and Analog Retransmission Available
- Micro USB Programming Port
- Fast sampling rate (200 msec)
- Manual control & auto-tune function
- Wide range of alarm mode selection
- Lockout protection
- Bumpless transfer during failure mode
- Soft-start ramp & dwell timer
- Bright LCD display stabilized with digital filter
- High performance with low cost

Agency Approvals:

RoHS, REACH, WEEE

Hardware Code: TEC-6400 -

Power Input  BOX 1
4 = 90-250 VAC
5 = 11-40 VDC / 20-28 VAC

Output 1  BOX 2
1 = Relay: 2A / 240 VAC
2 = Pulse DC for SSR drive: 5 VD (30 mA max)
3 = Isolated, 4-20 mA (default), 0-20 mA
5 = Isolated VDC, 0-10 scalable
C = Pulse DC for SSR drive: 14 VDC (40mA max)

Output 2 / Alarm 1  BOX 3
0 = None
1 = Pulse DC for SSR drive: 5 VDC (30 mA max)
3 = Isolated, 4-20 mA (default), 0-20 mA
5 = Isolated, VDC, 0-10 scalable
C = Pulse DC for SSR drive: 14 VDC (40mA max)

Option 1  BOX 4
0 = None
1 = RS-485 Interface
2 = 1 Event Input EI 1
3 = 1 CT Input (CT 1)

Option 2  BOX 5
0 = None
1 = Retransmit: 4-20mA / 0-20mA
2 = Retransmit: 0-10 VDC
3 = Alarm 2 Relay: 2A / 240 VAC
4 = 1 Event Input EI 2
5 = 1 CT Input (CT 2)

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.

Transformer for Heater Break Alarm
(0-50 Amp current)
Part Number: TEC99998
Specifications on page 13-47

View Product Inventory @ www.tempco.com
Power Input
Standard: 90-250 VAC, 47-63 Hz, 8VA, 4W maximum
Optional: 11-40 VDC / 20-8 VAC, 47-63 Hz, 8VA, 4W maximum

Signal Input
Resolution: 18 Bits
Sampling Rate: 5 Times / Second (200msec)
Maximum Rating: 2VDC minimum, 12VDC maximum
Sensor Break Detection: Sensor open for thermocouple and RTD inputs, sensor short for RTD input, below 1mA for 4-20mA input, below 0.25V for 1-5V input, not available for other inputs
Sensor break responding time: Within 4 seconds for thermocouple and RTD inputs, 0.1 second for 4-20mA and 1-5V inputs

Event Input
Number of Event Inputs: 1
Logic Low: -10V minimum, 0.8V maximum
Logic High: 2V minimum, 10V maximum

CT Input
CT type: CT98-1
Accuracy: ±2% of full scale reading, ± 1 digit maximum
Input Impedance: 294Ω
Measurement Range: 0-50A AC
Output of CT: 0-5V DC
CT Mounting: Wall (Screw) mount
Sampling Rate: 1 time/second

Output 1 /Output 2
Type: Relay, pulsed voltage, linear voltage and linear current
Relay Rating: 2A, 240V AC, 200000 life cycles for resistive load
Pulsed Voltage: Source voltage 5V, Current limiting resistance 66Ω
Linear Output Resolution: 15 Bits
Isolation Breakdown Voltage: 1000 V AC
Load Capacity of Linear Output: Linear current: 500Ω maximum, Linear voltage: 10KΩ minimum

Alarm
Relay Type: Form A
Maximum Rating: 2A, 240VAC, 200000 life cycles for resistive load
Alarm Functions: Dwell timer, Deviation low, Deviation high, Deviation band low, Deviation band high, Process high, Process low
Alarm Mode: Latching, Hold, Normal, Latching/Hold
Dwell Timer: 0.1-4553.6 minutes

Data Communications
Interface: RS-485
Parity Bit: None, Even or Odd
Stop Bit: 1 or 2 Bits
Data Length: 7 or 8 Bits
Communication Buffer: 160 bytes

Analog Retransmission
Output Signal: 4-20 mA, 0-20 mA, 0-10V
Resolution: 15 Bits
Accuracy: ±0.05% of span ± 0.0025% / °C
Load Resistance: 0-50Ω for current output, 10KΩ minimum for voltage output
Isolation Breakdown: 1000VAC minimum
Linear Output Ranges: 0-22.2mA (0-20mA / 4-20mA), 0-5.55V (0-5V, 1-5V), 0-11.1V (0-10V)

Environmental and Physical Specifications
Operating Temperature: -10°C to 50°C
Storage Temperature: -40°C to 60°C
Humidity: 0 to 90 % RH (Non-Condensing)
Insulation Resistance: 20MΩ minimum (at 500V DC)
Dielectric Strength: 2000V AC, 50/60 Hz for 1 Minute
Vibration Resistance: 10 to 55 Hz, 10m/s2 for 2 Hours
Shock Resistance: 200 m / s² (20g)
Moldings: Flame retardant polycarbonate
Mounting: DIN Rail, 35 mm
Dimensions W x H x D: (96 × 22.5 × 83 mm)
Depth Behind Panel (mm): n/a
Cut Out Dimensions (mm): n/a
Weight: .35 lbs. (160 g)

Control Mode
Output 1: Reverse (Heating) or Direct (Cooling) Action
Output 2: PID cooling control, Cooling P band 50~300% of PB, Dead band -36.0 ~ 36.0 % of PB
ON-OFF: 0.1-90.0 (°F) hysteresis control (P band = 0)
P or PD: 0-100.0 % offset adjustment
PID: Fuzzy logic modified Proportional band 0.1 ~ 900.0°F, Integral time 0-3600 seconds, Derivative time 0-360.0 seconds
Cycle Time: 0.1-90.0 seconds
Manual Control: Heat (MV1) and Cool (MV2)
Failure Mode: Auto transfer to manual mode while sensor break or A-D Converter damage
Ramping Control: 0 to 900.0°F / Minute or 0 to 900.0°F / Hour Ramp Rate

Rear Terminal Connections

Stock and Common Part Numbers
(All Stock Part Numbers Include Terminal Covers)
(Default Type “J” Thermocouple Input)

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Output 1</th>
<th>Out 2/ Alm 1</th>
<th>Option 2</th>
</tr>
</thead>
<tbody>
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<td>Relay</td>
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<td>None</td>
</tr>
<tr>
<td>TEC80002</td>
<td>Relay</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>TEC80003</td>
<td>Relay</td>
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