Power Input
- Standard: 90-250 VAC, 47-63 Hz, 10 VA, 5W maximum
- Optional: 11-26 VAC / VDC, 10 VA, 5W maximum

Signal Input
- Resolution: 18 bits
- Sampling Rate: 5 samples / second
- Accuracy: ±2.4% of span typical
- Maximum Rating: -2 VDC minimum, 12 VDC maximum (1 minute for mA input)
- Temperature Effect: ±1.5 μV / °C for all inputs except mA input
- Input: ±3.0 μV / °C for mA input
- Sensor Lead Resistance Effect: T/C: 0.2μV/ohm
- 3-wire RTD: 2.6°C/ohm of resistance difference of two leads
- Burn-out Current: 200nA
- Normal Mode Rejection Ratio (CMRR): 120 dB
- Common Mode Rejection Ratio (NMRR): 55 dB
- Sensor Break Detection: Sensor open for TC, RTD and mV inputs; sensor short for RTD input; below 1 mA for 4-20 mA input; below 0.25V for 1-5V input; unavailable for other inputs
- Sensor Break Response Time: Within 4 seconds for TC, RTD and mV inputs; 0.1 second for 4-20 mA and 1-5 V inputs

Output 1 / Output 2
- Relay Rating: 240 VAC, 2 Amp
- Pulsed Voltage: Source voltage 5V, Current limiting resistance 66Ω
- Linear Output — Characteristics
<table>
<thead>
<tr>
<th>Type</th>
<th>Zero</th>
<th>Tolerance</th>
<th>Span</th>
<th>Load</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-20 mA</td>
<td>3.6-4.0 mA</td>
<td>20-21 mA</td>
<td>500Ω max</td>
<td></td>
</tr>
<tr>
<td>0-20 mA</td>
<td>0 mA</td>
<td>20-21 mA</td>
<td>500Ω max</td>
<td></td>
</tr>
<tr>
<td>0-5 VDC</td>
<td>0 VDC</td>
<td>5-5.25 VDC</td>
<td>10 KΩ min</td>
<td></td>
</tr>
<tr>
<td>1-5 VDC</td>
<td>0.9-1.0 VDC</td>
<td>5-5.25 VDC</td>
<td>10 KΩ min</td>
<td></td>
</tr>
<tr>
<td>0-10 VDC</td>
<td>0 VDC</td>
<td>10-10.5 VDC</td>
<td>10 KΩ min</td>
<td></td>
</tr>
</tbody>
</table>
- Resolution: 15 bit analog to digital converter
- Output Regulation: 0.02% for full load change
- Output Settling Time: 0.1 sec. (stable to 99.9%)
- Isolation Breakdown Voltage: 1000 VAC
- Temperature Effect: ±0.01% of span/°C
- Solid State Relay (Triac) Output
  - Rating: 1A / 240 VAC
  - Inrush Current: 20A for 1 cycle
  - Min. Load Current: 50 mA rms
  - Max. Off-state Leakage: 3 mA rms
  - Max. On-state Voltage: 1.5 VAC rms
  - Insulation Resistance: 1000 Megohms minimum at 500 VDC
  - Dielectric Strength: 2500 VAC for 1 minute

Rear Terminal Connections

Output 2 / Alarm 1 — Programmable
- Alarm 1 Relay: Form A, (NO)
- Maximum rating: 240 VAC, 2 Amp
- Alarm Functions: Dwell timer
  - Deviation High / Low Alarm
  - Deviation Band High / Low Alarm
  - Process High / Low Alarm
  - Sensor Break Alarm
- Alarm Mode: Normal, Latching, Hold, Latching / Hold
- Dwell Timer: 0 - 4553.6 minutes

Data Communications
- Interface: RS-232 (1 unit), RS-485 (up to 247 units)
- Protocol: Modbus Protocol – RTU mode
- Address: 1-247
- Baud Rate: 0.3 - 38.4 Kbits/sec
- Data Bits: 7 or 8 bits
- Stop Bit: 1 or 2 bits
- Communication Buffer: 160 bytes

User Interface
- Dual 4-digit LED Display: 0.40" (10 mm) Red Process Display
- 0.51" (8 mm) Green Setpoint Display
- Keypad: 4 keys
- Programming Port: For automatic setup, calibration and testing

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 to 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°F
- Integral time: 0 - 1000 seconds
- Derivative time: 0 - 360 seconds
- Cycle Time: 0.1 - 90 seconds
- Manual Control: Heat (MV1) and Cool (MV2)
- Auto-tuning: Cold start and warm start
- Failure Mode: Auto-transfer to manual mode with sensor break or A-D converter damage
- Ramping Control: 0 - 900°F/min or 0 - 900°F/hr ramp rate

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 x 1-7/8 x 4-9/16" (48 x 48 x 116 mm) HxWxD
- Panel Cutout: 1-25/32 x 1-25/32" (45 x 45 mm) H x W
- Weight: 0.33 lb. (150 grams)

Approval Standards
- Safety: UL61010-1, CSA C22.2 No. 24-93
- EN61010-1 (IEC1010-1)
- EMC: EN61326
- Protective Class: Front Panel: IP50, optional NEMA 4X/IP65
  - Housing and Terminals: IP 20

Stock and Common Part Numbers
- (Power Input: 90-250 VAC, no data com, no NEMA 4X)

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Signal Input</th>
<th>Output 1</th>
<th>Output 2</th>
<th>Alarm</th>
</tr>
</thead>
<tbody>
<tr>
<td>TEC14001</td>
<td>tc</td>
<td>relay</td>
<td>relay</td>
<td>none</td>
</tr>
<tr>
<td>TEC14002</td>
<td>tc</td>
<td>relay</td>
<td>relay</td>
<td>none</td>
</tr>
<tr>
<td>TEC14003</td>
<td>tc</td>
<td>relay</td>
<td>relay</td>
<td>none</td>
</tr>
<tr>
<td>TEC14004</td>
<td>tc</td>
<td>4-20 mA</td>
<td>relay</td>
<td>none</td>
</tr>
<tr>
<td>TEC14005</td>
<td>RTD</td>
<td>relay</td>
<td>relay</td>
<td>none</td>
</tr>
<tr>
<td>TEC14006</td>
<td>RTD</td>
<td>relay</td>
<td>relay</td>
<td>none</td>
</tr>
<tr>
<td>TEC14007</td>
<td>RTD</td>
<td>DC pulse</td>
<td>relay</td>
<td>none</td>
</tr>
<tr>
<td>TEC14008</td>
<td>RTD</td>
<td>DC pulse</td>
<td>relay</td>
<td>none</td>
</tr>
</tbody>
</table>

Model TEC-9100 Specifications (1/16 DIN)