Model TEC-920 Specifications (1/16 DIN)

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% 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 ±3.0 μV / °C for mA input

Pulsed Voltage: Source voltage 5V, Current limiting resistance 66Ω

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>Span</th>
<th>Load</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tolerance</td>
<td>3.6-4.0 mA</td>
<td>20-21 mA</td>
<td>500Ω max</td>
</tr>
<tr>
<td>4-20 mA</td>
<td>0 mA</td>
<td>5-5.25 VDC</td>
<td>10 KΩ min</td>
</tr>
<tr>
<td>0-20 mA</td>
<td>0 VDC</td>
<td>5-5.25 VDC</td>
<td>10 KΩ min</td>
</tr>
<tr>
<td>1-5 VDC</td>
<td>0.9-1.0 VDC</td>
<td>5-10 VDC</td>
<td>10 KΩ min</td>
</tr>
<tr>
<td>1-10 VDC</td>
<td>0 VDC</td>
<td>10-10.5 VDC</td>
<td>10 KΩ min</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

Output 2 / Alarm 1 — Programmable
- Alarm 1 Relay: Form A, (NO) Maximum rating: 240 VAC, 2 Amp
- Alarm Functions:
  - 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 - 455.6 minutes

Interface:
- Protocol: Modbus Protocol – RTU mode
- Address: 1-247
- Baud Rate: 0.3 - 38.4 Kbits/sec
- Data Bits: 7 or 8 bits
- Parity Bit: None, Even or Odd
- Stop Bit: 1 or 2 bits
- Communication Buffer: 160 bytes

User Interface
- Single 4-digit LED Displays: 0.4” / 10 mm
- Keypad: 4 keys
- Programming Port: For automatic setup, calibration and testing

Control Mode
Output 1: Reverse (heating) or direct (cooking) 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)
- Storage Temperature: -40 to 140°F (-40 to 60°C)
- Humidity: 0 to 90% RH, non-condensing
- Dielectric Strength: 2000 VAC, 50/60 Hz for 1 minute
- Dimensions: 1-7/8” x 1-25/32” x 3-3/4” (45 x 48 x 94 mm) HxWxD Depth behind panel: 3-3/8” (86 mm)
- Panel Cutout: 1-25/32” x 1-25/32” (45 x 45 mm) H x W
- Weight: 0.31 lb. (140 grams)

Approval Standards
- Safety: UL61010C-1, CSA C22.2 No. 24-93
- EN61010-1 (IEC1010-1)
- EMC: EN61326
- Protective Class: Front Panel: IP30
  Housing and Terminals: IP 20

Rear Terminal Connections

Stock and Common Part Numbers
(Power Input: 90-250 VAC)

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Signal Input</th>
<th>Out 1</th>
<th>Out 2 / Alarm 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>TEC15001</td>
<td>tc</td>
<td>relay</td>
<td>none</td>
</tr>
<tr>
<td>TEC15002</td>
<td>tc</td>
<td>relay</td>
<td>none</td>
</tr>
<tr>
<td>TEC15003</td>
<td>4-20 mA</td>
<td>none</td>
<td>none</td>
</tr>
<tr>
<td>TEC15004</td>
<td>tc DC pulse</td>
<td>none</td>
<td>relay</td>
</tr>
<tr>
<td>TEC15005</td>
<td>RTD</td>
<td>relay</td>
<td>none</td>
</tr>
<tr>
<td>TEC15006</td>
<td>RTD</td>
<td>DC pulse</td>
<td>none</td>
</tr>
<tr>
<td>TEC15007</td>
<td>RTD</td>
<td>DC pulse</td>
<td>relay</td>
</tr>
</tbody>
</table>

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