Power Input
Standard: 90-264 VAC, 47-63 Hz, 15 VA, 7W maximum
Optional: 11-26 VAC / VDC, 15 VA, 7W maximum

Signal Input
Input 1
Resolution: 18 bits  Sampling Rate: 5 samples / second
Accuracy: ±24% 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: 200mA
Common Mode Rejection Ratio (CMRR): 120 dB
Normal 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

Input 2
Resolution: 18 bits
Sampling Rate: 1.66 times per second
Sensor Break Response Time: 0.5 second
Types: Current Transducer: 0 to 50 Amp
Manual Control: Heat (MV1) and Cool (MV2)
Auto-tuning: Cold start and warm start
Output 1 or Output 2 / Alarm 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>Tolerance</th>
<th>Tolerance</th>
<th>Span</th>
<th>Capacity</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>
<td></td>
</tr>
<tr>
<td>20 mA</td>
<td>0-20 mA</td>
<td>20 mA</td>
<td>20 mA max</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0-5 VDC</td>
<td>0 VDC</td>
<td>5.25 VDC</td>
<td>10 KΩ min</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-5 VDC</td>
<td>0.9-10 VDC</td>
<td>5.25 VDC</td>
<td>10 KΩ min</td>
<td></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>
<td></td>
</tr>
</tbody>
</table>

Resolution: 15 bit analog to digital converter
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

Temperature Controllers
Since 1972

Model TEC-2500 Specifications (1/32 DIN)

Alarm 1 / Alarm 2
Alarm 1: 5 VDC logic output
Alarm 2 Relay: Form A, (NO)  Maximum rating: 240 VAC, 2 Amp
Alarm Functions:
Dwell timer
PV1-PV2 High / Low Alarm
Deviation Band High / Low Alarm
Loop Break Alarm
PV2 High / Low Alarm
Sensor Break Alarm
Alarm Mode: Normal, Latching, Hold, Latching / Hold
Dwell Timer: 0 - 6553.5 minutes

Data Communications
Interface: RS-232 (1 unit), RS-485 (up to 247 units)
Protocol: Modbus Protocol – RTU mode

User Interface
Single 4-digit LED Displays: 0.4” / 10 mm
Keypad: 3 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 1-255% of PB
On-Off: 0.1 - 100.0°F hysteresis control (P band = 0)
P or PD: 0 - 100.0% offset adjustment
PID: Fuzzy logic modified
Proportional band: 0.1 - 900°F (500°C)
Integral: 0 - 1000 seconds
Derivative: 0 - 360 seconds
Cycle Time: 0.1 - 100 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
Power Limit: 0 - 100% for output 1 and output 2
Remote Setpoint: Programmable range for voltage or current input
Digital Filter: Time constant: settable from 0.2 to 60 seconds

Analog Retransmission
Analog Retransmission Functions: PV1, PV2, PV1-PV2, PV2-PV1, setpoint, MV1, MV2, PV-SV deviation value
Output Signal: 4-20 / 0-20 mA, 0-1, 0-5, 1-5, 0-10 VDC
Accuracy: ±0.05 % of span, ±0.0025 %/°C

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: 1-3/4 × 2 × 4-3/8” (26.5 × 50 × 110.5 mm) HxWxD
Depth behind panel: 3-7/8” (98 mm)
Panel Cutout: 7/8” × 1-1/2” (22 × 45 mm) HxW
Weight: 0.26 lb. (120 grams)

Approval Standards
Safety Standard: UL 3121-1, CSA C22.2 No. 24-93
EN61010-1 (IEC1010-1)
EMC: EN61325

Protective Class: Front Panel: NEMA 4X / IP65
Housing and Terminals: IP 20

Part Number | Signal Input | Out 1 | Out 2 / Alarm 2 | °F/°C
-------------|-------------|-------|----------------|------
TEC02001     | tc          | relay | none           | -F
TEC02002     | tc          | relay | none           | -F
TEC02003     | tc          | 4-20 mA | none | -F
TEC02004     | tc          | 4-20 mA | none | -F
TEC02005     | tc          | DC pulse | none | -F
TEC02006     | tc          | DC pulse | none | -F
TEC02007     | tc          | 4-20 mA | none | -F
TEC02008     | tc          | DC pulse | none | -F

Stock and Common Part Numbers
(Power Input: 90-264 VAC, w/ alarm 1, no data com)

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